ANGLIA RUSKIN UNIVERSITY

FACULTY OF HEALTH, SOCIAL CARE AND EDUCATION

Assessment of Health-Related Quality of Life in Patients with Multiple Sclerosis in the Outpatient Setting:

A Mixed Methods Study

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A thesis in part fulfilment of the requirements of Anglia Ruskin University for the Degree of Professional Doctorate

Submitted: September 2018

Acknowledgements

I would like to acknowledge the considerable help and support given by many people during this epic academic journey, without which I could not have completed my thesis. I would like to thank the patients and staff who took the time to participate in this study as this research would not have been possible without you. In particular my colleagues in the neurology department who have provided unstinting support and encouragement, Consultant Neurologist, Dr. Ioannis Zoukos and Clinical Nurse Specialist for Multiple Sclerosis, Julie Wester. I would also like to thank the library staff for their amazing ability to source journal articles.

I would like to thank my supervisors, Dr Sarah Burch and Dr Hilary Bungay for their inspiration, valuable comments, positive criticism, feedback and support throughout this project. They have guided this work throughout its completion with their knowledge and expertise. They have steered me through the process of becoming an academic writer and gaining my PrD.

I would also like to express my gratitude to the MS Society for the PrD funding, grant 970, which I was awarded in 2013, and without which this research would not have been possible.

Lastly, I would like to acknowledge how the support and love of my family has sustained and helped me throughout this time. In particular, my husband Chris, who has never failed in his belief that I could complete this PrD. I thank him for his continuous support and encouragement. Also thank you to my children, Caitlin and Toby (now young adults) for their enduring patience over the time it has taken me to complete this thesis.

ANGLIA RUSKIN UNIVERSITY

Abstract

FACULTY OF HEALTH, SOCIAL CARE AND EDUCATION

PROFESSIONAL DOCTORATE

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH MULTIPLE SCLEROSIS IN THE OUTPATIENT SETTING: A MIXED METHODS STUDY

HELEN WILLIS

September 2018

Health-related quality of life (HRQoL) is often adversely affected in multiple sclerosis (MS). It has been extensively researched but to date there is little published describing its assessment in routine clinical practice. This study examines whether there is a role for the assessment of HRQoL in patients with MS in daily clinical practice. The research was undertaken at two NHS hospital outpatient departments in the UK.

The first phase of this explanatory sequential mixed methods study was designed to gather information on the physical and psychological dimensions of HRQoL using the Multiple Sclerosis Impact Scale version 2 (MSIS-29v2) in a longitudinal prospective panel study of 311 patients. The impact of interventions on HRQoL was measured through subsequent assessments. In the second phase, a grounded theory-based approach was followed. Information concerning the views and experiences of fifteen patient-participants and two healthcare professionals of using a HRQoL measure within a routine outpatient consultation was gathered through semi-structured interviews and explored with thematic analysis.

The results support the use of the MSIS-29v2 in the outpatient setting as a means of facilitating the discussion of HRQoL issues for which interventions may be offered, and heightening healthcare professionals' awareness of patient problems. Shared decision-making was promoted and an awareness of the different levels of involvement patients wanted in their care revealed. Those interviewed valued the use of the MSIS-29v2, describing how they became more aware of the impact that MS was having on them; subsequently many reported that they became more active participants in the management of their MS. A change in HRQoL following interventions was not consistently demonstrated, possibly due to the heterogeneity of MS and short time scale of the research. However, the research demonstrates the value to both patients and healthcare professionals of using a HRQoL measure in daily clinical practice.

Keywords: Multiple sclerosis, Quality of life, Health-related quality of life, Health-related quality of life measures.

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LIST OF ABBREVIATIONS

CNS MS	Clinical Nurse Specialist for Multiple Sclerosis
DMT	Disease Modifying Therapy
EDSS	Expanded Disability Status Scale
FES	Functional Electrical Stimulation
GT	Grounded Theory
HCP	Healthcare Professional
HRQoL	Health-Related Quality of Life
HTQ	Health Transition Question
MID	Minimally Important Difference
MS	Multiple Sclerosis
MSIS-29	Multiple Sclerosis Impact Scale
MSIS-29v2	Multiple Sclerosis Impact Scale version 2
PPMS	Primary Progressive Multiple Sclerosis
PREM	Patient-Reported Experience Measure
PROM	Patient-Reported Outcome Measure
PwMS	Person/People with MS
QoL	Quality of Life
RES	Rapidly Evolving Severe Relapsing-Remitting Multiple Sclerosis
RRMS	Relapsing-Remitting Multiple Sclerosis
SDC	Smallest Detectable Change
SPMS	Secondary Progressive Multiple Sclerosis

Chapter 1

Background to Thesis

1.1 PERSONAL AND PROFESSIONAL EXPERIENCE

As a clinical nurse specialist for multiple sclerosis (CNS MS) I have always endeavoured to give high quality patient-centred care to my patients. On commencing work as a CNS MS in 2007, within an acute care setting, I had minimal knowledge of multiple sclerosis (MS). Over the last eleven years I have attended courses, conferences and extensively read around the subject to develop my knowledge of MS.

When exploring topics for this research it was important to select a topic of interest to both myself and my colleagues. It is my belief that healthcare should aim to optimise health-related quality of life (HRQoL). Hence, I came to this project with a particular set of experiences which have informed this research. Reflecting on my practice whilst working in the field of MS, I recognised that the experiences of patients living with MS and the impact of the condition are not always easily explored during outpatient appointments. My clinical expertise, as suggested by Edwards and Chalmers (2002) was the very reason that I initiated this topic of research.

When selecting the area for my research, I considered there to be a gap in my professional practice and in that of the neurology department where I work. Despite assessment of patients during an outpatient consultation, no formal appraisal of HRQoL is made; research suggests such assessments are essential to determine the impact of a disease as well as potential effects of treatment interventions (Visschedijk, et at., 2004; Solari, 2005; Amato and Portaccio, 2007; Turpin, et al., 2007; Baumstarck, et al., 2013). During an outpatient appointment most patients communicate their health needs and problems; following discussions of possible treatment options an informed decision is reached by the patient concerning their future health care. Some patients however divulge little or no information which can make it difficult to determine whether they have any issues for which interventions could be considered and appropriate care offered. Consequently, I believed some clinic appointments were not as effective and structured as they could be and that I was not always offering the best care to my patients. Thus, I determined I wished to explore whether the use of an appropriate HRQoL measure could potentially have a positive impact on the care and support of patients with MS and improve the patient experience.

1.2 RATIONALE & BACKGROUND INFORMATION

The chronic progressive condition multiple sclerosis is characterised by numerous symptoms, all of which can adversely affect the health-related quality of life of both patients and their families. As one of the leading causes of neurological disability in young adults, Wu, et al. (2007) suggest that MS has enormous implications for the current and future health-related quality of life of people diagnosed with this condition. It is well documented that many people who live with a long-term illness, such as rheumatoid arthritis or multiple sclerosis, may experience a decline in their quality of life (Rudick, et al., 1992; Somerset, Sharp and Campbell, 2002; Mackenzie, et al., 2014).

Health-related quality of life is considered to be an important measure of health and disease impact in patients with multiple sclerosis as MS symptoms affect many aspects of everyday living. In 1988 Slevin, et al. (1988) suggested that inclusion of HRQoL assessment in routine care should be considered essential, as health professionals often underestimate the difficulties people have with activities of daily living and social routines. This view was reiterated by Bandari, et al. (2010) who proposed that, as MS-specific HRQoL tools have the potential to discern true changes in an MS patient's HRQoL, they should be routinely included in the healthcare programme of every patient, the information obtained influencing the health of the patient through targeted healthcare interventions. Beiske, et al. (2012) also recognised measurement of HRQoL as an important consideration in the assessment and management of patients with MS, describing how instruments have been developed to help healthcare providers accurately and completely assess an MS patient's HRQoL, particularly when determining disease-related aspects likely to impact on patients' lives. I would argue that assessing HRQoL is an essential part of a comprehensive evaluation of a patient.

Within the literature many views are presented concerning the goals of healthcare in long-term conditions. Brunet, et al. (1996), Lankhorst, et al. (1996), Solari, et al. (1999) and Rotstein, et al. (2000) describe how in the management of incurable chronic conditions, such as multiple sclerosis, the goal of healthcare is often to optimise a patient's health-related quality of life and improve patients' well-being. Carr, Gibson and Robinson (2001) go further suggesting that a primary aim of treatment in chronic disease should be the enhancement of quality of life by minimising the impact of the disease, a view echoed by Miller (2002) who also

suggests that the goal of treatments for MS should be to reduce disease impact on patients' lives and to assure that interventions do no harm. Wu, et al. (2007) suggest that this may be achieved by maximising function, thereby enhancing satisfaction with life. However, Bandari, et al. (2010) who advocate that long-term preservation of HRQoL should be considered a critical marker of therapeutic success, and Beiske, et al. (2012) who describe how maintenance of patients' HRQoL is an important treatment goal, are arguably more realistic in their views due to the chronic progressive nature of MS. Alternatively, Kuspinar, Rodriguez and Mayo (2012) suggest that the management of MS is rehabilitative or palliative as the condition is incurable. Given these different points of view it is apparent that HRQoL as an outcome measure may be used to determine both clinical success and also as a palliative goal.

Quality of life is a subjective concept and thus Skevington (1999) argues the best person to assess it is the individual themselves. A measure of the success in reaching any of the goals described above can only be made with direct information from patients about how they experience the illness and the effects of treatments (Miller, 2002). This view is corroborated by Riazi, et al. (2003a) who describes an increasing recognition that health care should be evidence-based and that healthcare evaluations should incorporate the patient's perspective. HRQoL measurement allows this as such assessments are multidimensional and include physical, psychological, social functioning, and well-being components (Santana and Feeny, 2009).

Whilst Mitchell, et al. (2005) and Solari (2005) asserted that measures of HRQoL were being used with increasing frequency in the assessment of multiple sclerosis in routine clinical practice as an outcome measure for assessing disease progression, evaluating treatment and managing care, current literature indicates that their use in clinical practice as opposed to research is still uncommon. This is despite the extent of the evidence which demonstrates that the use of a measure of health-related quality of life in routine clinical practice has the potential to improve the quality of healthcare and outcomes by promoting detection of physical and psychological problems and, monitoring disease and treatment (Greenhalgh and Meadows, 1999; Lohr and Zebrack, 2009; Santana and Feeny, 2009). In 2012, the work of Snyder, et al. (2012) described how patients' reports on their functioning and well-being were still only rarely collected in a standardised fashion in routine clinical practice. Indeed, the current paucity of literature regarding assessment of HRQoL of patients with MS

during routine clinical practice and also on patients' views concerning such assessments highlights the existence of a theory/practice gap in nursing knowledge regarding the quality of life of patients with MS.

The growing numbers of individuals suffering from MS highlights the need for further research to gain a greater understanding of this condition. At a time when no cure has been developed, the best option for optimising health-related quality of life is by ensuring that patients are offered appropriate treatments and interventions thereby enabling them to successfully adjust to and cope with living with MS. Research aimed at identifying the impact of MS on people with the disease, and subsequently offering successful interventions to optimise quality of life, is therefore timely and important. This study has the potential to demonstrate that using a HRQoL measure in routine clinical practice can improve the care of patients with MS.

1.3 ORIGINALITY

For many years there has been increasing interest in the use of health-related quality of life assessment in daily clinical practice (Detmar, et al., 2002) to determine the significance of the impact of MS on the lives of patients. Many authors including Gray, McDonnell and Hawkins (2009) suggest that various generic and disease-specific measures may be used to measure HRQoL in patients. Whilst van Winsen, et al. (2010) describe how the ability to detect improvement using HRQoL measures is sparsely studied, Bandari, et al. (2010) suggest that further research is needed to better understand the limitations of MS-specific HRQoL tools in clinical research and practice. Baumstarck, et al. (2013, p.4) state that, 'to our knowledge there are no studies that have explored the effect of assessing QoL in MS care management'. This research explores these issues from the perspective of both those with MS and healthcare professionals in the outpatient setting of a district hospital.

Although there are a growing number of studies concerning the area of assessment of HRQoL in patients with MS these predominantly focus on the psychometric properties of HRQoL measures or factors affecting HRQoL. However, there appears to be no published work describing the benefit to patients with MS, from their perspective, of using such instruments in routine clinical practice, and little research concerning longitudinal assessment of HRQoL in routine clinical practice. Thus, I determined

there to be scope for clinically relevant research into the assessment of HRQoL and its value to people with MS, leading in part, to better overall care and optimised HRQoL for those with MS. No qualitative studies collecting information from the perspective of people with MS were retrieved. Such studies could offer an insight into the advantages and disadvantages of assessment of HRQoL, helping guide both researchers and clinicians when deciding whether to include a measure in routine care. This gap provided a rationale for the second phase of this research, when the perspective of patients with MS was explored. This study is the first to consider the assessment of HRQoL in MS from a patient perspective. It is unique in its focus on an in-depth investigation into the patient experience of HRQoL assessment.

1.4 AIMS AND OBJECTIVES OF THE STUDY

The aim of this study was to explore and subsequently understand and evaluate whether there is a role for assessment of HRQoL in patients with MS in daily clinical practice.

The objectives were:

- To determine if it is feasible to assess HRQoL in daily practice in the outpatient setting.
- To determine if the results of HRQoL assessment can be used to inform therapeutic interventions.
- To assess the impact of interventions on HRQoL in patients with MS through the assessment of HRQoL.
- To explore patients' opinions about HRQoL assessment during an outpatient appointment.

These objectives gave rise to the research questions listed below.

1.5 RESEARCH QUESTIONS

The research questions are broad as the literature review identified a lack of evidence concerning the use of a measure for assessing HRQoL in daily clinical practice, and the patient perspective of such an assessment.

The key question for this research is:

- Is there a role for the assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice?

This gives rise to the following:

- Is assessment of HRQoL in patients with MS feasible in daily clinical practice?
- Can the results of HRQoL assessment be used to inform therapeutic interventions?
- Can a HRQoL measure detect change in HRQoL after the implementation of interventions?
- Does assessment of HRQoL with an appropriate measure make a meaningful difference to patients?

1.6 THESIS STRUCTURE

This chapter provides the background to the thesis, describes its originality and lists the research questions. As not everyone is familiar with MS and its ramifications an overview of this condition is given in chapter 2. Within chapter 3, the literature pertaining to the research is presented thereby providing context for assessment of HRQoL in the outpatient setting. As a result of my literature review, I discuss my underlying conceptual framework. Chapter 4 describes the methodology, and subsequently the methods for the two phases of this mixed methods study. The results of the two phases are presented and discussed in chapters 5 and 6. Subsequently, in chapter 7 the findings are drawn together and discussed in relation to the research questions. Finally, conclusions are presented in chapter 8.

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Chapter 2

Review of Multiple Sclerosis

2.1 INTRODUCTION

Within this chapter key information about multiple sclerosis is presented and discussed. Firstly, a definition of multiple sclerosis is given, the prevalence of MS identified and the different aetiological theories for why individuals develop the condition considered. Additionally, the process of diagnosis is described and some of the difficulties patients encounter in receiving a diagnosis highlighted. The different types of multiple sclerosis are discussed, symptoms described, and a brief introduction to the impact of MS given. Finally, treatment options are presented. Thus, this chapter introduces the research, highlighting key information about MS essential for understanding the development, design and implementation of this research.

2.2 DEFINITION OF MULTIPLE SCLEROSIS

Multiple sclerosis is an acquired chronic immune-mediated inflammatory condition of the central nervous system, affecting both the brain and spinal cord (NICE CG186, 2014). It is an incurable progressive condition and is the most common disabling condition affecting young adults (Noseworthy, et al., 2000; Compston and Coles, 2002; Morales-Gonzáles, et al., 2004).

2.3 PREVALENCE

Linked with both the genetic and environmental risk factors, the prevalence of MS varies around the world. It is found most commonly in countries populated by those of primarily European ancestry, such as Ireland, the United Kingdom, South East Australia, New Zealand, Sweden, Finland and Southern Canada/Northern United States (Compston and Coles, 2008). MS is also more common in countries that are further away from the equator. Migration from low-risk region to high-risk regions before the age of fifteen is associated with an increased risk (Compston and Coles, 2008). Whilst there are approximately 100,000 people with MS in the UK (MS Society, 2017; MS Trust, 2017), it is estimated that more than 2.5 million people are affected worldwide (Compston and Coles, 2008). These numbers are increasing, with more than 100 people being diagnosed per week in the UK (MS Society, 2018). About 1 in 600 people in the UK will develop MS (MS Trust, 2017). The average prevalence across the UK is approximately 125 per 100 000 (Giovannoni, 2004).

MS is most often diagnosed between the ages of 20 and 40 (Simone, et al., 2002) but can be diagnosed in both younger and older people, including children. It is more common in women than men, with research suggesting that the MS prevalence ratio of women to men has increased markedly during the last decades (2.3–3.5:1), indicating a true increase in MS among women but not men (Compston and Coles, 2002; Confavreux and Compston, 2005; Orton, et al., 2006; Ahlgren, Odén, and Lycke., 2011).

2.4 WHO DEVELOPS MS

Although MS is not strictly a hereditary disease, there is an increased chance of MS developing in close relatives of affected people. For example, a person with a mother or father with a diagnosis of MS has a 1 in 67 chance of developing MS (MS Trust, 2017); someone with a brother or sister with MS has a risk of 1 in 37 of developing MS (MS Trust, 2017). These figures compare with a risk of 1 in 600 in the general population.

2.5 AETIOLOGY AND PATHOPHYSIOLOGY

Whilst the aetiology of MS is unknown, and its parthenogenesis poorly understood, research suggests that a combination of genetic, infectious and environmental factors may play a role in its development (Noseworthy, et al., 2000; Burgess, 2010a; Giovannoni, Foley and Brandes, 2012).

MS is characterised by the development of demyelinating lesions (destruction of myelin around the nerve fibres) as shown in Figure 1 in the brain and spinal cord, which ultimately result in long-term disability. An auto-immune response causes inflammation and subsequently demyelination along the axon of neurons, leading to axonal loss and brain atrophy (Compston and Coles, 2002). As damage to the neurons can occur anywhere throughout the central nervous system, people with MS experience a wide variety of symptoms and often marked physical disability.

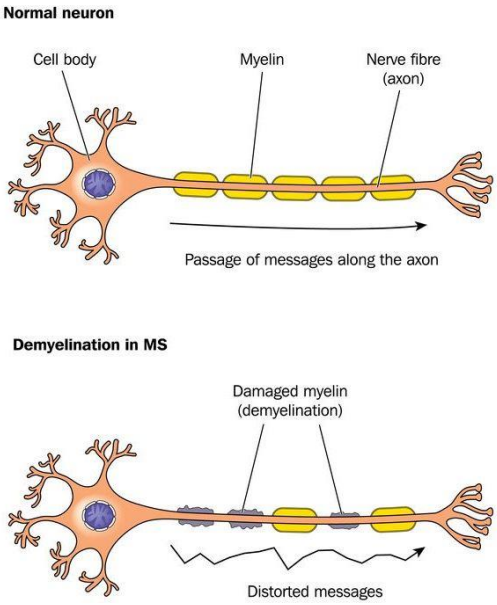

Figure 1 Damage to the myelin sheath

(Natural Knowledge 24/7, 2018)

It is not known why some people develop MS whilst other do not. It is believed that in those people genetically predisposed to MS, an abnormal immune response to environmental triggers results in immune-mediated acute, and then chronic, inflammation. The initial phase of inflammation is followed by a phase of progressive degeneration of the affected cells in the nervous system. There is increasing evidence that low levels of vitamin D and smoking are two of the environmental factors that may result in the development of MS.

2.6 DIAGNOSIS

Multiple sclerosis can be difficult to diagnose as it is a complex condition with many different symptoms. There is no single definitive test for MS (Calabresi, 2004). Diagnosis is primarily one of exclusion as all the symptoms of MS may also be symptoms of other conditions. Diagnosis involves taking a medical history from the patient to identify past and present symptoms and performing a clinical examination. Diagnostic tests including an MRI scan, blood tests and possibly a lumbar puncture are carried out. Diagnosis is dependent on identifying multiple central nervous system lesions over time using an MRI scan. The white spots in Figure 2 indicate lesions in the brain.

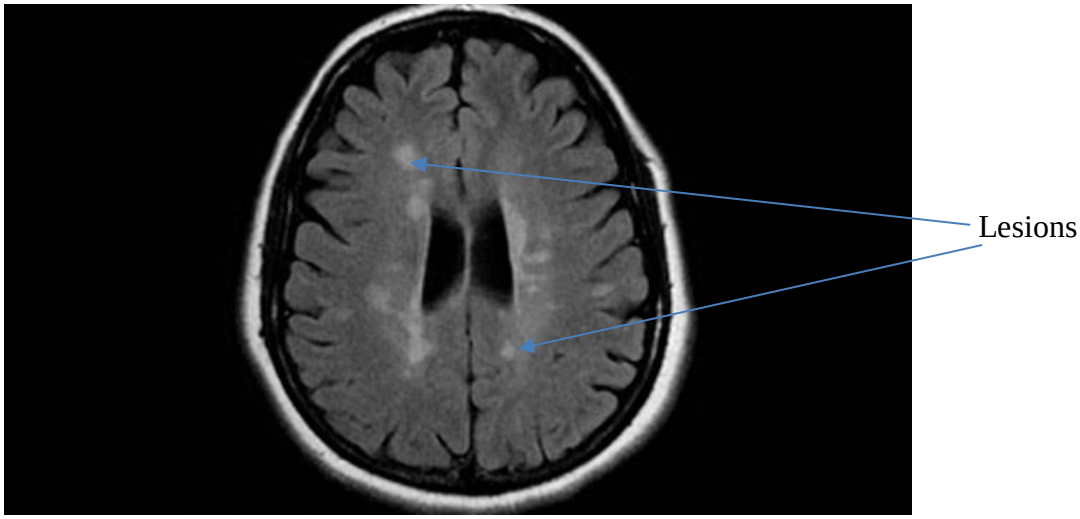

Figure 2 Brain MRI showing active lesions

(Pietrangelo, 2017)

2.6.1 Diagnostic Difficulties

The onset of MS may be insidious or sudden (Calabresi, 2004). It is often hard to pinpoint exactly when MS begins, as the early signs and symptoms can be very minor, such that a person may not consider seeking medical advice. Hence, it is not uncommon for a definitive diagnosis to take several months, or even longer. Sometimes a 'watch and wait' approach is required to see how symptoms develop as this can help distinguish MS from the other possibilities. This can be very frustrating and worrying for patients. Sufferers often describe a confusing and short-lived array of symptoms, which often cannot be observed directly by health professionals. Furthermore, these symptoms can fluctuate rapidly. The differing symptoms may have been experienced over many years and have often reduced or settled. For some people the symptoms may have seemed unimportant. Sometimes there seem to be other very reasonable explanations. For example, being incredibly tired could be due to a new baby in the family; stumbling more could be due to getting older or wearing in a new pair of shoes. This may lead to misdiagnosis. For other people there will be a sudden more severe attack which demands hospital attention; a diagnosis of MS may follow very quickly, perhaps within days. Some people will be told that the cause of their symptoms cannot be found. This can be hard to accept, and it may be years before the correct diagnosis of MS can be given. The use of magnetic resonance imaging has however enabled the diagnosis of MS to become quicker and more accurate.

2.7 CLASSIFICATION OF MS

For the purposes of this research MS was classified into four groups: relapsing-remitting MS (RRMS), secondary progressive MS (SPMS), primary progressive MS (PPMS) and benign MS. Each of these groups is described below. Rapidly evolving severe relapsing-remitting multiple sclerosis (RES) is briefly discussed as having this type of MS influences the choice of drugs for which patients may be eligible.

2.7.1 Relapsing-Remitting MS (RRMS)

Approximately 80-85% of people with MS are diagnosed with relapsing-remitting MS (Weinshenker, et al., 1989b; Noseworthy, et al., 2000; Confavreux and Vukusic, 2006; Compston and Coles, 2008; Tremlett, et al., 2010). RRMS is generally diagnosed between the ages of 20 and 40. Approximately three times as many women as men are diagnosed with RRMS. It is characterised by episodes of acute neurological dysfunction (relapses, attacks or exacerbations) followed by by periods of good or complete recovery - a remission (Figure 3). The Association of British Neurologists (ABN, 2009) guidelines define a relapse:

> *'A relapse is defined as the onset of new symptoms or the worsening of pre-existing symptoms attributable to demyelinating disease lasting for more than 24 hours and preceded by improving or stable neurological status for at least 30 days from the onset of the previous relapse in the absence of infection, fever or significant metabolic disturbance'.*

The symptoms of neurological dysfunction increase over a few days to several weeks before reaching a maximum. Relapses may persist for weeks or months and can vary in their level of intensity. Remission occurs once the symptoms settle down. A relapse may or may not result in disability; typically, recovery is most rapid and complete in the early stages of the disease.

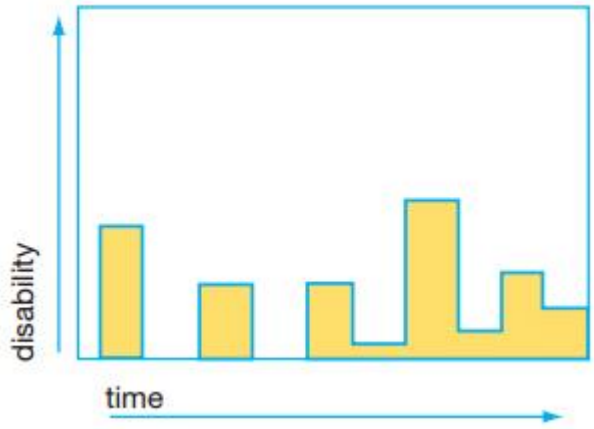

Figure 3 Pattern of relapsing-remitting MS

(MS Trust, 2018)

The frequency of relapses, the severity of symptoms experienced and the length of time between attacks are unpredictable. It can be difficult to determine what is a fluctuation in symptoms (a day-to-day worsening or improvement) and what is a relapse. The rate of relapses rarely exceeds 1.5 per year (Compston and Coles, 2008). Although recovery from relapses may become less complete over time as some residual damage to the myelin may result (Compston and Coles, 2002) the level of disability will remain largely stable between relapses.

2.7.2 Secondary Progressive MS (SPMS)

Approximately 58% of people with RRMS will eventually enter a progressive phase known as secondary progressive MS (SPMS) (Weinshenker, et al., 1989a; Confavreux and Vukusic, 2006). The median time to develop SPMS is nineteen years from diagnosis (Tremlett, Zhao and Devonshire, 2008). SPMS is characterised by increasing disability, rather than by relapses followed by recovery as shown in Figure 4 (Weinshenker, et al., 1989a; Lublin and Reingold, 1996). Most people with secondary progressive MS don't tend to recover completely from a relapse. People's experience of SPMS can vary widely. Some people find that the increase or progression of disability is very gradual, whilst for others it can occur more quickly. SPMS can be hard to diagnose; neurologists will look for at least six months of clear progression before they use the term ‘secondary progressive’.

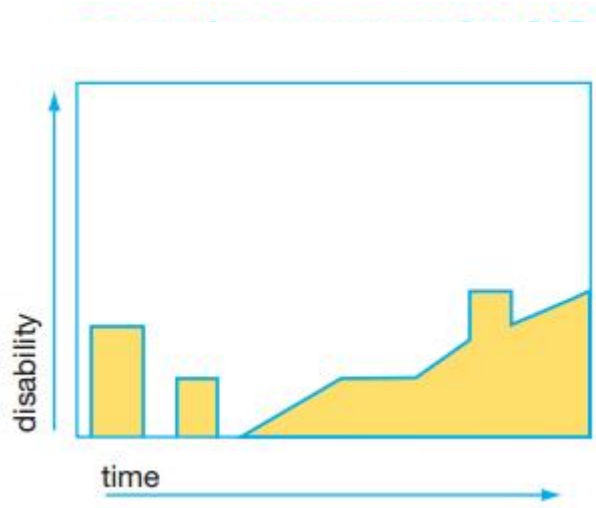

Figure 4 Disability progression in secondary progressive MS

(MS Trust, 2018)

A small number of people are diagnosed with secondary progressive MS from the outset (MS Society, 2018); these people may have experienced relapses in the past which were either mild or their significance missed. Alternatively, they may have lesions in areas of the brain or spinal cord that do not give rise to any symptoms.

2.7.3 Rapidly Evolving Severe Relapsing-Remitting MS (RES)

This is a less common form of relapsing-remitting MS in which a person with MS has two or more disabling relapses in one year and evidence of increasing numbers of lesions on two consecutive MRI scans. The term is used in relation to the eligibility for two disease-modifying drugs Natalizumab (Tysabri) and Fingolimod (Gilenya).

2.7.4 Primary Progressive MS (PPMS)

Approximately 10-20% of people with MS are diagnosed with primary progressive MS which is characterised by a gradual progressive clinical course; disability increases from the outset (Noseworthy, et al., 2000).

PPMS is typically diagnosed in people in their forties or fifties but can be diagnosed earlier or later than this. There is a similar incidence among men and women (Noseworthy, et al., 2000). From onset individuals experience a continual worsening of symptoms with no distinct relapses or remissions (Figure 5), the patient's symptoms may eventually level off; in others, they may continue to worsen (MS Trust, 2017).

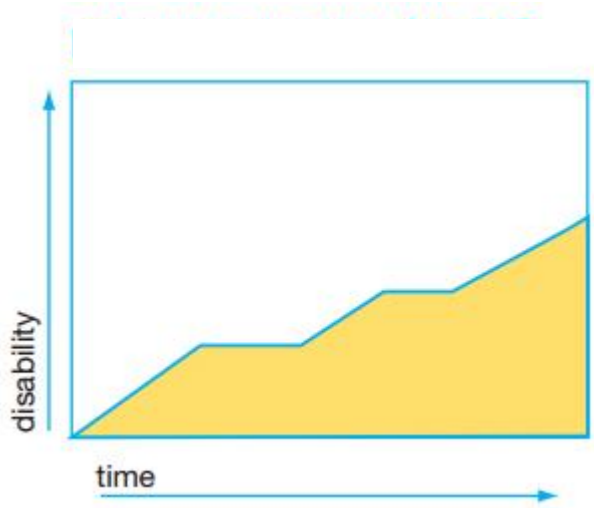

Figure 5 Typical pattern of primary progressive MS

(MS Trust, 2018)

People with PPMS often experience many of the same symptoms as those with RRMS. PPMS is associated with chronic, debilitating symptoms that often affect the individual's most productive years and everyday life (Compston and Coles, 2008; Zwibel and Smrtka, 2011).

2.7.5 Benign MS

Benign MS is a form of relapsing-remitting MS with very mild attacks separated by long periods with no symptoms. Between 5% to 40% of patients with MS have a benign course with little or no disability after 15-25 years of follow-up (Hawkins and McDonnell, 1999). The phrase 'benign MS' is sometimes used inaccurately to describe a period with few or no symptoms following diagnosis. However, as the defining characteristic of benign MS is the long-term absence of symptoms, it can only be diagnosed retrospectively after ten or more years. This type of MS does not progress, and neurological symptoms remain unchanged long after diagnosis. Even patients diagnosed with benign MS experience MS-related problems and a relapse can still occur even after many years of the illness being inactive (Jopson and Moss-Morris, 2003). The term should be used with caution and can only describe an individual's past experience of MS.

2.8 SYMPTOMS OF MS

The two main types of symptoms associated with MS- physical and psychological are discussed below.

2.8.1 Physical Symptoms

2.8.1.1 Primary Symptoms

Regardless of the disease type, patients with MS commonly experience multiple symptoms including spasticity, muscle weakness, movement disorders, fatigue, bladder, bowel and sexual dysfunction, pain, visual disturbances, changes in cognitive function, abnormal sensations and dysphagia (Mohr, et al., 1999; Noseworthy, et al., 2000; Calabresi, 2004). These are known as primary symptoms of MS and occur as a direct result of demyelination. Some of these disabling symptoms are invisible to the observer but all have the potential to reduce quality of life. The occurrence of these symptoms varies within and between patients based on the extent and location of the lesions and on MS relapses and progression. The symptoms may fluctuate in severity on a daily basis. Common symptoms in MS are interrelated; one symptom can exacerbate another or can be caused by the treatment of another symptom. For example, neuropathic pain relief medication can adversely affect cognitive function. Neurological impairments and disabilities may thus vary considerably in nature and severity. In addition, patients with MS can also experience a number of secondary symptoms.

2.8.1.2 Secondary Symptoms

Secondary symptoms occur as an indirect result of the primary symptoms of MS. For example, patients with bladder dysfunction, often experience urinary tract infections. Inactivity can result in loss of muscle tone and weakness (not necessarily related to demyelination) and lack of mobility can result in the development of pressure sores. Although secondary symptoms can often be treated, neurologists and health professionals often aim to avoid them completely by treating the primary symptoms (National MS Society, 2017).

2.8.1.3 Tertiary Symptoms

As a direct consequence of experiencing primary and/or secondary symptoms, people with MS may develop social, vocational and emotional problems, known as tertiary symptoms. Tertiary symptoms can be considered to be the ‘trickle down’ effects of

the disease on life (National MS Society, 2017). For example, if a patient is no longer able to drive or walk, they may not be able to hold down a job. Additionally, the stress and strain of dealing with MS often alters social networks and sometimes fractures relationships. Problems with bladder control, tremor or swallowing may cause people to withdraw from social interactions and become isolated.

2.8.2 Psychological Symptoms

People with MS may also experience a range of psychological symptoms: e.g. depression, anxiety, hopelessness, and suicide ideation. Depression is one of the most common symptoms of MS and occurs in as many as 50-60% of patients (Bakshi, et al., 2000; Feinstein, 2011). It is three times more common among people with MS than in the general population or in persons with many other chronic disabling conditions. Depression may be both a primary and a tertiary symptom as it can be caused by the disease process itself and/or triggered by challenges such as those discussed above. Emotional changes also occur in some people with MS. These can be a reaction to the stresses of living with MS as well as the result of neurological changes. Bouts of depression, mood swings, irritability, and episodes of uncontrollable laughter and crying pose significant challenges for people with MS and their families.

Thus, it is evident that as a potentially highly disabling disorder with considerable personal, social and economic consequences, MS can profoundly affect individuals on both a physical and psychological level. These physical and psychological factors, both dimensions of HRQoL, may be modified through interventions and/or treatments potentially resulting in an improved health-related quality of life. A definition of health-related quality of life and a discussion of how it is affected in people with MS is provided in chapter 3.

2.9 THE IMPACT OF MS

The effect each of the types of MS can have on patients' lives varies markedly. Individuals with benign MS may live relatively unaffected by the condition, however the course of relapsing-remitting, secondary progressive and primary progressive course is likely to have severe consequences for both the patient and their family. Even patients who have been diagnosed with the same type of MS can be affected

differently, since the course of the illness and symptoms varies from individual to individual; Lublin and Reingold (1996) describe the disease course of MS as 'highly variable'. Also, the type of MS may change over time. Individuals are therefore faced with high levels of uncertainty and unpredictability which is reinforced by the wide and confusing number of symptoms associated with MS, some of which may be transitory. It is therefore unsurprising that MS can potentially have a considerable impact on all areas of the patient's life, including their HRQoL This is an important area of focus for my research particularly if care management is to optimise HRQoL.

People with MS can live for many years after diagnosis with significant impact on their ability to work, as well as an adverse and often highly debilitating effect on their quality of life and that of their families. Emotional and psychological adjustment to MS can be difficult because of the diversity of symptoms, absence of a cure, limited availability of medical treatment, and uncertainty about the future effect of one's physical disabilities (Lublin, et al., 2014). McCabe, Stokes and McDonald (2009) propose that the ways in which a person with MS copes with the condition would also be expected to impact on HRQoL. Despite this, MS has little effect on longevity (Weinshenker, 1995; Ragonese, et al., 2008).

The extent to which MS can affect each aspect of a person's life is determined largely by both the physical and psychological symptoms of the condition (described in sections 2.8.1 and 2.8.2), many of which are subjective and therefore difficult to measure (Ford, et al., 2001a). The number and severity of physical symptoms experienced often places a variety of limitations on the patient's day-to-day activities. Furthermore, the psychological impact of living with MS can have considerable implications for everyday life. The impact of MS can influence future, self-confidence and self-esteem, families and employment prospect (Edwards, Barlow and Turner, 2008). I would suggest that only by considering the symptoms and uncertainty from the patient's perspective can effective management strategies be considered. I would propose that this could be achieved using an appropriate HRQoL measure, thereby forming the basis of part of this research.

2.10 TREATMENTS

Once an individual receives a confirmed diagnosis of MS they are faced with the reality that there is no available cure for this condition. Before 1993, MS treatments were directed towards symptom management (Keenan, 2002; Newsome, et al., 2016). However, there are now many drug treatments available which either aim to reduce relapse rates (disease modifying therapies) or help to manage and alleviate specific symptoms. Many views are portrayed in the literature concerning treatment aims; Schwartz and Frohner (2005) suggest that the main goal of treatment is to delay progression, relieve symptoms, and optimise quality of life, a view with which Miller and Allen (2010) concur. They also propose that enhancing coping strategies to improve HRQoL should be a major components of MS care, and that quantitative methods measuring HRQoL can be an important part of assessing a patient's treatment needs. Hadgkiss, et. al. (2012) suggest that maintenance of function and HRQoL should be the focus of treatment.

2.10.1 Symptom Management

The dominant view in the literature reviewed is that there should be a multi-disciplinary approach to the care of people with MS. Noseworthy, et al. (2000) suggest that as patients with multiple sclerosis face enormous prognostic uncertainty, they must become well informed about their illness, this being best accomplished with a multi-disciplinary approach. Tappenden, et al. (2001) describe how management involves the multi-disciplinary team and includes physiotherapy, psychiatric and social support and disability aids, whilst Crayton and Rossman (2006) suggest that optimal management of MS symptoms is clinically challenging, requiring a comprehensive multimodal and individualised approach. They suggest that both pharmacologic and non-pharmacologic modalities are recommended, with the goals of improving or maintaining function and preserving quality of life. Smrtka, et al. (2010) discuss how a team of coordinated, skilled and expert healthcare clinicians are essential to the delivery of timely and appropriate care. This approach is expanded upon by Papeix, et al. (2015) who suggest that as the clinical presentation of MS is often complex, with motor symptoms, ataxia, cognitive difficulties, bladder dysfunction, pain, visual deficits, depression and fatigue, a multi-disciplinary approach of care with different MS specialists and allied health professionals is

frequently needed. Additionally, the NICE Guideline, 'Multiple sclerosis in adults: management' (CG186, 2014) describes how MS care should be patient-centred and follow a coordinated multidisciplinary approach. Potential members of the multi-disciplinary team involved in the long-term care of people with MS are shown in Figure 6 below.

The majority of treatment for MS involves managing the individual symptoms and related complications. Depending on the symptom, management may involve drug therapy, input from therapists and/or the development of self-management strategies. A number of drugs are available to treat the specific symptoms of MS. For example, Amitriptyline is often used to relieve neuropathic pain such as burning sensations, pins and needles or stabbing pains while Oxybutynin is given for bladder dysfunction. The impact of chronic disease on a patient's health-related quality of life can be minimised, or even improved, by helping them adjust their expectations and adapt to their changed clinical status. This may be done by encouraging the use assistive devices such as walking sticks, wheelchairs, and scooters. Other treatment options include exercise, cognitive therapy, and complementary and alternative therapies.

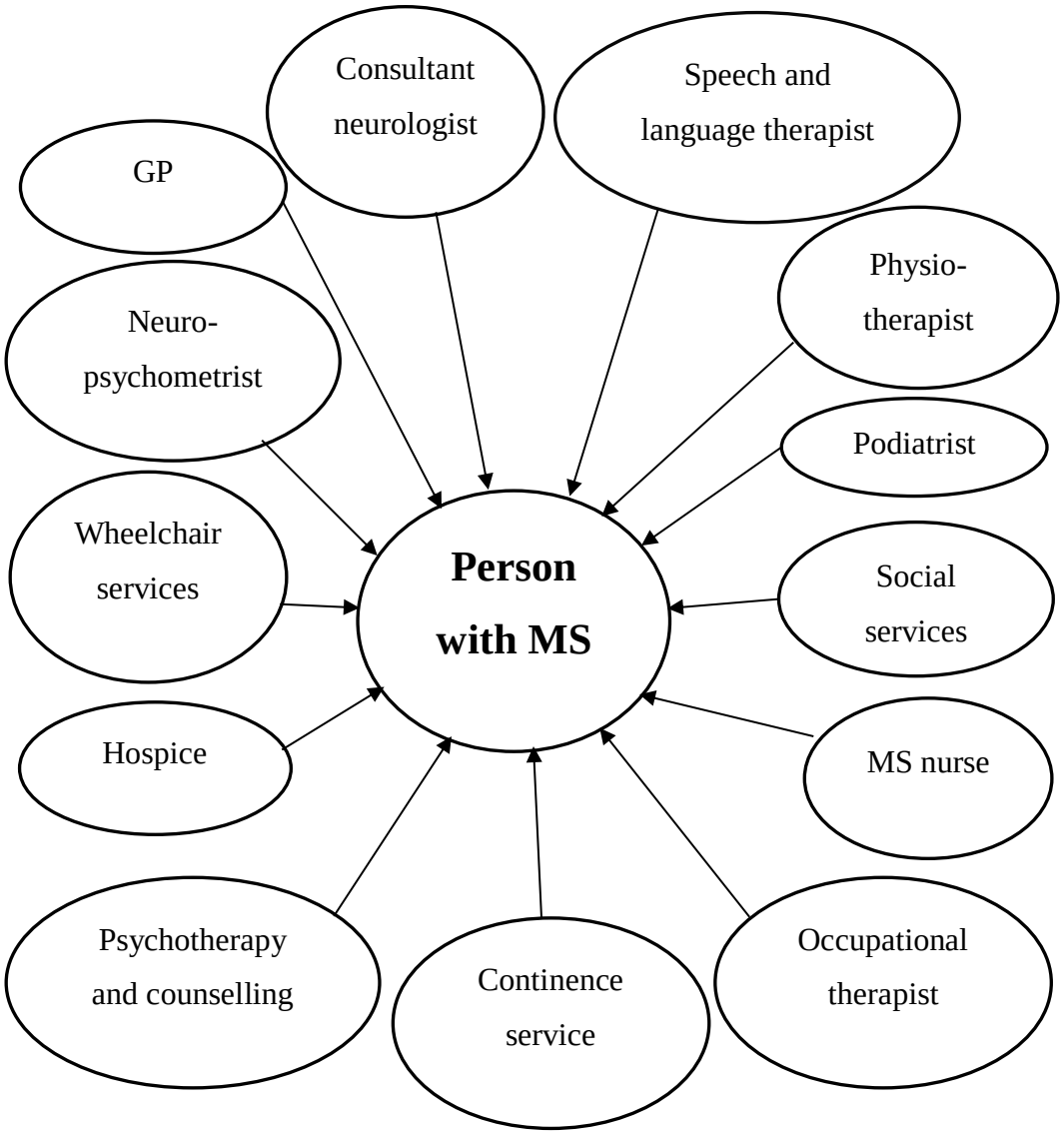

Figure 6 Multi-disciplinary patient-centred approach to the care of the person with MS

2.10.2 Disease Modification

Over the last 15 years the management of MS has changed from one of symptom control to one of disease modification (Shaw, 2008). Disease modifying therapies (DMT) are predominantly licensed for use in patients with relapsing-remitting MS, although the use of some may be continued in patients who develop secondary progressive MS. These drugs aim to decrease the frequency of clinical relapses and reduce the accumulation of physical disability. However, some of these treatments (interferon beta-1a {Avonex and Rebif}, interferon beta-1b {Betaferon} and glatiramer acetate {Copaxone}) have only a modest benefit on the course of the

disease (Filippini, Munari, and Incorvaia, 2003). Teriflunomide (Aubagio) and peginterferon beta-1a (Plegridy) also have a modest effect on the reduction of relapse rate. More recent disease modifying therapies, such as alemtuzumab (Lemtrada), dimethyl fumarate (Tecfidera), fingolimod (Gilenya), and natalizumab (Tysabri) reduce the number of relapses considerably and delay disease progression.

2.10.3 Treatment Choice

Because of the variety of drugs available to either reduce the number of relapses or ameliorate symptoms there is a large variation in how people choose to treat their condition. Some patients do not take any medication, either DMT or symptomatic relief, simply persevering with their symptoms, whereas others can find themselves taking many drugs, each with their own side effects. Patients may find the side effects of individual drugs intolerable and chose to live with the symptoms untreated. Hence, whilst drug therapy is important in the care of people with MS, the comprehensive care of the individual requires a multi-disciplinary approach, where patients are appropriately managed by effectively addressing the course of the disease and its resultant symptoms (Newsome, et al., 2016).

As members of the multi-disciplinary team, clinical nurse specialists for MS play a key role in providing holistic care to a person with MS (PwMS). Only by understanding the disease and disease process can the patient and their family participate actively in making informed decisions about their treatment. Through assessment of HRQoL it is likely that there will be a greater shared understanding of symptoms, potentially resulting in the initiation of appropriate interventions which links to this research.

2.11 SUMMARY

As a chronic progressive disease, which may be difficult to diagnose, receiving a diagnosis of MS can be difficult for some people to cope with. The uncertainty for the future coupled with the numerous symptoms, treatments options and lack of cure all require consideration with regards the care of a person with MS. The impact of physical and psychological symptoms on daily life varies from person to person but may be assessed using a HRQoL measure and appropriate care strategies proposed. A

patient-centred multi-disciplinary approach is central to the management of this chronic condition.

The following chapter focuses on the assessment of health-related quality of life. A literature review is used to present and discuss the concepts surrounding this wide topic, with a choice of measure for assessment in the outpatient department resulting from the review.

Chapter 3

Literature Review

3.1 INTRODUCTION

Health-related quality of life in patients with multiple sclerosis is a much-researched topic, the literature frequently indicating the profound effect this condition can have on the lives of people with MS. Within this chapter, a description of the current literature pertaining to the assessment of health-related quality of life in MS is presented providing the background and justification for this thesis. Establishing the *status quo* within the current MS health-related quality of life literature allowed the two phases to develop from the work of others. By obtaining a detailed knowledge of the topic, it was possible to design relevant studies to fill the literature gaps.

A description of the concepts of quality of life and health-related quality of life sets the scene. Subsequently the impact of multiple sclerosis on health-related quality of life is described.

The process of an outpatient appointment is key to delivering high quality care. Only by considering patient choice and patient expectations of health care, through an effective consultation when patient views are respected and preferences considered, can this be achieved. Models of consultation, and the role of patient involvement and patient activation in decision making are examined and the concept of patient-centred care related to these, thereby enabling an understanding of how individual patients may interact during an appointment when the assessment of HRQoL is discussed and interventions proposed.

The background to the assessment of health-related quality of life in MS and reasons for such assessments are considered within this chapter. The effectiveness of the use of HRQoL measures in routine clinical practice in improving the process and outcomes of patient care is discussed and related to patient-centred care. Barriers to the use of such measures are examined.

Health-related quality of life may be measured using both generic and disease-specific tools. Throughout this chapter, the various requirements of the measure for this research are introduced and measures included for consideration or discounted accordingly. Subsequently, the rationale for the chosen HRQoL measure for this research is presented.

3.2 SEARCH STRATEGY

A narrative stance was taken for the literature review of this research. As such the literature review was less focused but wider ranging in scope than a systematic review as described by Bryman (2008). The preliminary literature review indicated the importance of assessing HRQoL in daily clinical practice but suggested that it was not routinely measured. No information was found concerning the relevance of such an assessment to people with MS, from their perspective.

A multiple search strategy was adopted to identify literature related to the assessment of health-related quality of life in multiple sclerosis. Additionally, literature pertaining to communication and models of consultation, patient involvement in consultations, patient-centred care, and types of decision-making was identified through the Athens search tool using the following databases: British Nursing Index (BNI), Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane Library, EMBASE, MEDLINE, PsycINFO, NICE and the HTA (Health Technology Assessment) reports.

The electronic database search strategy was developed using keywords, including 'multiple sclerosis', 'quality of life', 'health-related quality of life', 'assessment', 'intervention', 'efficacy of treatment' and 'longitudinal study'. These terms were combined; truncated versions of the key words were also used. Author searching, snowballing, hand searching and scrutinising reference lists of the included papers also occurred. The main search covered the period January 1980-August 2018 however older papers of interest were also included. A large time frame was used as interest in health-related quality of life in MS first began in the 1980s.

Email alerts of the 'table of contents' from relevant journals were registered for by the author and reviewed as received. The following journals were monitored: Applied Research in Quality of Life, British Journal of Nursing, International Journal of MS Care, Journal of Mixed Methods Research, Journal of Neuroscience Nursing, Multiple Sclerosis and Related Disorders, Multiple Sclerosis International, Multiple Sclerosis Journal, and Quality of Life.

3.3 QUALITY OF LIFE AND HEALTH-RELATED QUALITY OF LIFE

To begin to be able to understand health-related quality of life from the perspective of a person with multiple sclerosis, an understanding of the concepts of quality of life and health-related quality of life is required. Both concepts are explored in the following text. Health-related quality of life is subsequently related to multiple sclerosis, thereby providing context for the following literature review where the rationale for assessing health-related quality of life and subsequently planning care to optimise or maintain it is developed.

3.3.1 Quality of Life

Quality of life (QoL) as a concept is derived from the social and behavioural sciences. QoL is a universally recognised term but its meaning is difficult to define. The WHOQOL Group (1995, p.1405) defines quality of life as:

> *'…an individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.'*

WHOQOL Group (1995) describe QoL as a broad ranging concept which is affected in a complex way by a person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment. In 1996 Brunet, et al. (1996) suggested that QoL is difficult to conceptualise as it is affected by economic, political, cultural and spiritual factors, which are not generally considered to fall under the purview of healthcare professionals. The WHOQOL definition highlights the view that quality of life is subjective, includes both positive and negative facets of life and is multi-dimensional, a point which aligns with Slevin, et al. (1988) who suggest that what constitutes quality of life is a personal and individual question, this lending itself to a philosophical rather than a scientific approach.

Whilst Cella, et al. (1996) describe QoL as a person's subjective sense of wellbeing or global satisfaction with important aspects of life, Calman (1984) suggests that quality of life is determined by the extent to which our hopes and ambitions are matched by experience. Calman (1984) also suggests that a key aim of health care should be to 'narrow the gap between a patient's hopes and aspirations and what

actually happens'. In a chronic condition, such as MS, I believe that this indicates management of expectations thereby maximising wellbeing rather than health is the key to success; I would suggest this could potentially be achieved through structured appointments when the patient's opinion of how MS impacts on them is considered.

As an observation from the literature review, the dominant view of 'quality of life' is that it refers to an individual's total wellbeing and includes all emotional, social and physical aspects of the individual's life. It can only be described and measured by that individual. Major factors that contribute to QoL are the ability to perform daily activities and the level of well-being and satisfaction with life (Arnoldus, et al., 2000).

When the term 'quality of life' is used in relation to medicine and healthcare it is termed 'health-related quality of life'. HRQoL is distinguished from QoL because it is based on health domains which can be measured and quantified.

3.3.2 Health-Related Quality of Life

Health-related quality of life (HRQoL) is a discrete component of QoL. HRQoL is conceptualised as those aspects of life quality or function which are influenced by health status, i.e. it focuses on the impact health status has on quality of life (Morales-Gonzáles, et al., 2004). This is broadly compatible with the World Health Organisation definition of health, namely that health is 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO, 1946). This definition proposes that health is a dynamic multidimensional concept that captures these domains of well-being simultaneously.

Many definitions of health-related quality of life are given in the literature, these being broadly similar. Rothwell, et al. (1997) suggest that HRQoL focuses on the patient as a whole and encompasses several important domains of health, including general well-being, social function, and psychological function which, whilst not directly related to neurological impairment or disability, are considered by patients to be more important determinants of their health status than impaired physical function alone. HRQoL is also considered to be a multidimensional construct that includes aspects of life quality or function affected by health status, such as physical health and symptoms, psychosocial factors, and psychological and emotional dimensions of one's well-being (Vickrey, et al.; 1995; Benito-León, et al., 2003; Mitchell, et al., 2005; Buchanan, Huang and Kaufman, 2010). As a term, HRQoL refers to an individual's assessment

of how a health problem and its treatment affect his/her ability to perform activities and roles the she/he values (Cella, et al., 1996; Fischer, et al., 1999). Carr, Gibson and Robinson (2001, p.1240) consider that 'health-related quality of life is the gap between our expectations of health and our experience of it'. Bandari, et al. (2010) describe HRQoL as the distillation of almost every aspect of the patient's existence, including perception of treatment benefit and functional decrements of disease progression, a definition which I would suggest is particularly pertinent to this research.

It is evident from the literature that many years of research have led to a consensus notion of HRQoL as a multidimensional concept which usually investigates four health-related domains; psychological functioning (well-being and emotional status), social functioning, physical status and, disease and treatment-related symptoms. The psychological domain deals with the emotional concomitants of illness whilst the social domain considers the impact of illness on social interactions with the family, friends, work colleagues and within the community. The physical/biological domain is concerned with the effects of illness on a person's ability to carry out their normal day-to-day activities (Chadwick, Baker and Jacoby, 1993). The work of Wilson and Cleary (1995) also describes how most conceptualisations of HRQoL include the dimensions of physical, social and role-functioning as well as mental health and general health perceptions with important concepts such as vitality, pain and cognitive function subsumed under these broader categories.

There are a number of potential determinants of HRQoL. These include disease related variables such as disability status (Lobentanz, et al., 2004; Fernández, et al., 2011), disease duration (Benito-León, et al., 2002), fatigue (Janardhan and Bakshi, 2002; Pittion-Vouyovitch, et al., 2006), depression (Amato, et al., 2001a; Lobentanz, et al., 2004), cognition (Fernández, et al., 2011), sociodemographic variables including age and sex (Pfaffenberger, et al., 2006; Turpin, et al., 2007), and marital status (Wu, et al., 2007; Fernández, et al., 2011). Fernández, et al. (2011) also identified educational level and time since last relapse as determinants of HRQoL in a large sample of patients with MS representing all the major subtypes of the disease. More recently Lysandropoulos and Havrdova (2015) described how HRQoL in patients with MS is determined by several factors including coping with the MS diagnosis, understanding the disease and the disease process, dealing with the hidden symptoms such as fatigue,

cognitive impairment and sexual function and managing the many associated personal challenges such as social isolation, family issues and working difficulties.

The determinants of HRQoL may interact with each other; Janardhan and Bakshi (2002), Mitchell, et al. (2005) and Hoogs, et al. (2011) all suggest that HRQoL has both physical and psychological components that interact with each other. Ford, et al. (2001a) describe how endogenous factors (such as coping skills, gender, ethnicity, religious beliefs) interact with an individual's health status to determine the overall impact of the disease on HRQoL. HRQoL is also influenced by psychosocial characteristics, a key aspect of which is patient activation, defined as 'the patients' ability to take an active role in managing their health' (Mosen, et al., 2007). Mosen, et al. (2007) add that the interplay between the patients' social circumstances and their psychological ability to cope with chronic illness is reflected in their ability (knowledge, skills and confidence) for self-management, which is important in behavioural dimensions of chronic disease management such as healthy lifestyle (diet and exercise), self-care and medication adherence.

A critical element of HRQoL is that it reflects the patient's assessment of the impact of their illness, not the healthcare professional's perspective (Hobart, 1997). Visschedijk, et al. (2004) agree suggesting that HRQoL essentially reflects an evaluation of health and well-being from the patient's perspective. It refers to how an individual perceives their illness and associated treatments to be impacting on their ability to live life in the way that they wish.

In most studies, the HRQoL of patients with MS is measured in terms of physical symptoms, mobility, emotional life and social interaction (Hakim, et al., 2000; Miller, et al., 2003). However, as a concept, Bowling (2014) suggests health-related quality of life can be complex to analyse as it is mediated by several inter-related variables, including self-related constructs such as self-efficacy, self-esteem and perceived control over life. Cognitive mechanisms such as expectations of life, level of optimism or pessimism and aspirations can also affect subjective evaluations. The highly variable nature of MS and response shift will also affect the measurement and analysis of HRQoL.

As an observation, the terms QoL and HRQoL are often used interchangeably within much of the literature reviewed but typically relate to the health-related quality of life

of a patient. As HRQoL appears to have become the dominant term in much of the literature I have used this term throughout.

Within the following section, the concept of HRQoL is related specifically to multiple sclerosis. The clinical context of MS was described in chapter 2.

3.3.3 Impact of Multiple Sclerosis on Health-Related Quality of Life

The concept of HRQoL has been applied to numerous conditions such as epilepsy (Edefonti, et al., 2011), Parkinson's disease (Soh, et al., 2013) and cancer (Detmar, et al., 2002). It has been particularly useful for capturing the patient perceptions of these conditions in daily life and is especially useful in chronic conditions. In this section I review how the concept is considered in relation to MS.

The impact of multiple sclerosis on health-related quality of life has been studied extensively over the last thirty years. MS has been found to have a significant impact on health-related quality of life for individuals at all stages of the disease (Miller and Allen, 2010).The long-term neurodegenerative effects of MS can impact on physical, cognitive, psychological, emotional and social functioning (Vickrey, et al., 1995; Rothwell, et al., 1997; Compston and Coles, 2008), each having the potential to reduce health-related quality of life (Benito-León, et al., 2003; Morales-Gonzáles, et al., 2004; Buchanan, Huang and Kaufman, 2010; Buhse, Banker and Clement, 2014).

The impact of MS on HRQoL is widely recognised. Vickrey, et al. (1995), Hermann, et al. (1996), Rothwell, et al. (1997), Nortvedt, et al. (1999), Janardhan and Bakshi (2002), Benedict, et al. (2005), Mitchell, et al. (2005), and Buhse, Banker and Clement (2014) all describe how health-related quality of life is adversely affected by MS, suggesting that it is substantially impaired compared with the general population. These findings are further described by McCabe and McKern (2002) who found that, when comparing quality of life between patients with MS and people in the general population, those with MS experienced lower levels of quality of life in the objective and subjective dimensions of the domains of physical health, psychological adjustment, social relationships and environmental adjustment. Studies have also shown that people with MS have lower HRQoL scores than populations with other chronic conditions such as rheumatoid arthritis (Rudick, et al., 1992), inflammatory bowel disease, (Rudick, et al., 1992), diabetes and epilepsy (Hermann, et al., 1996),

and Parkinson's disease (Riazi, et al., 2003a). The lower scores may be due to the unique pattern of symptoms of MS and in particular the hidden symptoms such as fatigue and stamina. Devins, et al. (1993) describes a greater impact of illness intrusiveness in MS than in rheumatoid arthritis; I would propose that this could be affecting overall HRQoL in MS.

The symptoms of MS are individual, the range of functional, psychological and cognitive limitations varying from one individual to another. Numerous authors describe the influence of MS symptoms on patients. For example, Morales-Gonzáles, et al. (2004) suggest that the core symptoms of MS impact considerably upon the activities of daily living of patients. Lobentanz, et al. (2004) describe reduced physical functioning in people with MS compared to the general population. Whilst Hadgkiss, et al. (2012) suggest that the impact of MS on employment status, social and family relationships, sexual satisfaction, enjoyment of life, and emotional well-being can be profound, White (2012) describes how MS has a significant effect on patients' lives affecting many areas of functioning.

The psychological impact of living with MS can have considerable implications for everyday life. Depressive symptoms, difficulties with ambulation and employment limitations due to health are considered the main indicators of reduced quality of life in patients with MS (Vickrey, et al., 1995; Aronson, 1997). People with MS are more likely to suffer with fatigue (Amato, et al., 2001a; Lobentanz, et al., 2004) and depression (Amato, et al., 2001a; Montel and Bungenert, 2007) than the general population, and are more likely to be unemployed (Aronson, 1997; Ford, et al., 2001b). More than 75% of people with MS are unemployed within ten years of onset (Tripoliti, et al., 2007).

In 2000 Rätsep, et al. (2000) discussed the importance of acknowledging the numerous individual differences in emotional and psychological adjustment to disease, even when severely impaired. The ways in which quality of life is affected by disabilities is not solely determined by the disabilities themselves but also by their impact or importance for a patient. Whilst stress, depression and feelings of isolation may all occur as a consequence of the disease and associated treatments, mood, coping ability, self-efficacy, autonomy, independence, dignity and future plans will all be impacted-on by a diagnosis of MS, thereby influencing a patient's HRQoL (Mitchell, et al., 2005). Hence, it is evident that a diagnosis of MS will affect people in differing ways.

Lysandropoulos and Havrdova (2015) describe how whilst some people with MS may be well-treated and free from current symptoms, they have a poor HRQoL due to patient-centred factors such as depression, inability to work and relationship issues. However, others with a high degree of physical disability may continue to participant fully in life and consequently view their HRQoL more positively. Thus, it is possible for someone with considerable disability to perceive themselves as having a good quality of life, and vice versa. These patients demonstrate adaptation to their condition.

From the patient's perspective, it appears that the psychosocial components may be of more concern than physical factors in terms of their HRQoL (Aronson, 1997; Rothwell, et al., 1997; Shawaryn, et al., 2002; Somerset, Sharp and Campbell, 2002). Employment, day-to-day functioning including ability to work and drive, maintain and enjoy social relationships and recreational activities can all be affected adversely by physical and cognitive deficits (Rao, et al., 1991b; Schultheis, Garay, DeLuca, 2001; Kobelt, et al., 2006), leading to a reduced HRQoL for patients, their family and carers (Patti, 2009). Rudick, et al. (1992), Benito-León, et al. (2003) and Aymerich, Guillamón and Jovell, (2009) also found that whilst not only the HRQoL of patients with MS, but also their caregivers was notably affected, both having lower HRQoL than the general population, the HRQoL for patients was significantly lower.

The poorer health-related quality of life of some people with MS may also be attributed to the unpredictable and unstable course of the disease, the variable and sometimes hidden symptoms and absence of a cure (Amato, et al., 2001a; Benito-León, et al., 2002; Miller, et al., 2003; Mitchell, et al., 2005). Bueno, et al. (2015) suggest that the impact of such a high degree of clinical heterogeneity on HRQoL is poorly understood.

In the following section the concepts of partnerships in care, patient choice and, patient involvement in decision making, including informed decision-making and shared decision-making are discussed. The influence of communication and the style of the consultation on these concepts is considered. Without an understanding of the different roles and expectations of both the patient and healthcare professional an effective consultation cannot occur and ultimately the opportunity to discuss various clinical interventions which could optimise HRQoL might be missed.

3.4 MANAGEMENT OF CARE IN MS

Within western health care there has been a paradigm shift from paternalistic medicine toward patient autonomy both legally and ethically (Rieckmann, et al., 2015; Spatz, Krumholz and Moulton, 2016). Recent health policies and guidance (e.g. NICE clinical guideline:138, 'Patient experience in adult NHS services' CG138, 2012) emphasise informed choice, patient-centred medicine, and patient participation in medical decision-making. The literature reviewed for chapter 2 also conclusively indicated the need for a multidisciplinary approach to the care of those with MS. This assertion is reiterated in NICE clinical guideline 186: 'Multiple sclerosis in adults: management', (CG186, 2014), which offers best practice advice on the care of adults with MS, describing how treatment and care should take into account individual needs and preferences and involve the multidisciplinary team. Also, patients should have the opportunity to make informed decisions about their care and treatment, in partnership with healthcare professionals (CG186, 2014). CG138 (2012) also includes recommendations on patient care, indicating that patients value HCPs acknowledging the unique way that each person experiences a condition and its impact on their life; I would propose that the impact can be more fully understood with a HRQoL assessment. Similarly to CG186 (2014), CG138 (2012) also acknowledges that healthcare services should be tailored to each patient, an individualised approach being adopted, and patients' views, and preferences respected. Patients should be empowered to actively participate in their own care if they so wish. The recommendations of these guidelines can all be addressed with good communication skills, patient-centred care and the practice of shared decision-making.

Guidance for care provision is also provided within the domains of the NHS Outcomes Framework. The overarching indicator of Domain 2 (NHS Outcomes Framework, 2016-2017), 'Enhancing quality of life for people with long-term conditions' is 'Health-related quality of life for people with long-term conditions'; one of the areas listed for improvement is '*Ensuring people feel supported to manage their condition'.* It is now widely recognised that the successful management of chronic illness depends on the active behavioural involvement of the patient. Domain 4 (NHS Outcomes Framework, 2016-2017), 'Ensuring that people have a positive experience of care' improvement area lists as an area for improvement *'Improving people's experience of outpatient care'.* These two areas link with this research, I would propose that a

HRQoL assessment could potentially contribute to the achievement of both these targets.

Caring for people with MS requires a comprehensive health care team with the MS nurse as an integral part. Halper (2009) describe the MS nurse as one who assists, enlightens, refers, helps establish reasonable expectations, offers encouragement, prepares the patient and provides explanation. The many roles of the MS nurse are also described by Smrtka, et al. (2010) and include symptom manager, patient and family advocate, collaborator, counsellor and educator. It is likely that these responsibilities will be more effectively fulfilled if trust has developed between the MS nurse and the patient and that open and honest communication is occurring (Caon, et al., 2013).

In the UK, clinical nurse specialists for MS play an important part in educating patients and their families about MS, symptoms, treatments and possible side effects (MS Society 2017; MS Trust 2017). They are responsible for answering patients' questions as well as providing emotional and practical support to patients and their carers. Managing patients' needs, goals, and expectations can be difficult. Treatment options must be discussed effectively so that appropriate informed decisions can be made by patients. The level of involvement a patient wishes for in their care should be considered and must be respected at all times. Some patients may be considered experts as they have gained a great deal of knowledge about MS and how to manage it.

An experienced nurse with a broad knowledge of MS, excellent communication skills and a working knowledge of consultation models who recognises the importance of patient-centred care and shared decision-making should be able to assess HRQoL using a questionnaire, evaluate the responses and suggest clinical interventions, potentially maintaining or improving HRQoL whilst offering holistic care. Prior to the start of this study, neither the clinical nurse specialists for MS nor the consultant neurologists, at the Acute NHS Trust of this research routinely used any HRQoL instrument in clinical practice. However, there is anecdotal evidence from my practice that clinical interventions can make a difference to patients. For example, patients may be referred to the continence service for assessment and management of bladder symptoms; whilst some patients describe the outcome as life-changing and would

potentially demonstrate an improved quality of life if assessed, others do not find they benefit.

The following sections address these considerations which all impact on treatment decisions and therefore will potentially affect HRQoL of patients.

3.4.1 The Communication Process and its Role in Consultations

Communication is an important aspect in human interaction; as a healthcare professional, it is essential to understand the key role of communication when providing care and supporting patients in their decision-making. Kurtz, (2002) describes communication as a basic clinical skill. As well as a series of learned skills communication is also a set of procedures for improving outcomes of care (Kurtz, 2002). Communication skills comprise content skills, process skills and perceptual skills, all of which should be used during a consultation and are key components of patient-centred care; content skills include the substance of the questions asked and the responses derived, the information gathered and given, and treatments discussed; process skills are those which relate to the way a healthcare professional communicates with a patient, how their history is learnt, how information is given, the verbal and non-verbal skills used, the manner in which the relationship is developed with the patient and the way the communication is structured. Perceptual skills relate to the internal decision-making of a healthcare professional and include their clinical reasoning and problem solving-skills, attitudes and intentions, values and beliefs, awareness of their thoughts and feelings about the patient, about the illness and other issues that may be concerning them and, their awareness of their own self-concept and confidence and internal biases. These three skills are intricately linked and should not be considered in isolation (Kurtz, Silverman and Draper, 2005).

Patients need to be able to understand the content of the consultation and recall information provided during the consultation. Good communication produces a more effective consultation for both the healthcare professional and the patient as effective communication significantly improves accuracy, efficiency, supportiveness and, health outcomes for patients in the form of improved adherence or concordance, symptom relief and physiological outcome, satisfaction for both the healthcare professional and the patient and, the therapeutic relationship (Kurtz, Silverman and Draper, 2005).

Effective doctor-patient communication is a central requirement in building a therapeutic doctor-patient relationship (Ha and Longnecker, 2010). I would propose that effective communication is also essential to the development of a therapeutic nurse-patient relationship. Indeed, McCabe (2004) suggests that patient-centred communication can contribute towards a positive nurse-patient relationship developing, this being essential for quality nursing care. Whilst appropriate effective communication reduces conflict by preventing misunderstandings from arising between healthcare professionals and patients, and thus may improve outcomes for patients, poor communication can result in the breakdown of the clinician-patient relationship and adversely affect patient outcomes.

It is acknowledged in the literature that clinician communication is not always good. Whilst the review of Ha and Longnecker (2010) suggests that doctors tend to overestimate their abilities in communication resulting at times in complaints from patients, McCabe (2004) found that patients attributed poor communication to the nurses being 'too busy'. The findings of McCabe's study (2004) also indicated that nurses 'can' communicate well when using a patient-centred approach.

The literature reveals various ways that communication can be improved. Detmar, et al. (2002) found that physician communication was improved using a HRQoL measure during a consultation and that patient issues and needs, which required supportive intervention were more readily identified. Newsome, et al. (2016) suggest that a multidisciplinary patient-centred team approach promotes communication and optimal care.

I would suggest that a dynamic approach within effective communication allows for flexibility, responsiveness and patient engagement; what may be considered appropriate for one situation may not be appropriate for another as patients' needs often change. Cultural differences in styles and patterns of communication may also have a significant impact on the communication process. Good communication skills also support a patient-centred approach resulting in a collaborative partnership whereby the healthcare professional enhances the patient's ability to become more involved in the consultation and to take part in a more balanced relationship, this being an interactive process. Thus, partnerships in care, patient involvement in decision making and communication may be considered to be inextricably linked.

The relevance of communication skills to the consultation process is discussed in the following section.

3.4.2 The Consultation

The consultation is the central act of medicine, and as such it deserves to be understood.

(Pendleton, et al., 1984, p.1)

Hastings, et al. (2003) define a consultation as a meeting between practitioner and patient. Within this literature review I consider a consultation to describe the interaction between a patient and healthcare professional in the outpatient department, when the patient's condition is reviewed, and their beliefs and expectations identified and managed.

A patient may attend a consultation for a regular review. Willcox and Munson (2007) propose that health-promoting forms of consultations are used for patients with an existing condition in an effort to prevent a deterioration in health. I would suggest that this type of model is relevant to those with MS for whom optimising HRQoL is essential. Patients also attend for urgent reviews when they are experiencing a deterioration of their symptoms or are in relapse. Lawal (2007) suggests that with chronic conditions, each consultation is part of a journey that may continue for many months or years. This is particularly true for patients with MS who may be diagnosed in their early 20's and will potentially access healthcare for the remainder of a normal lifespan. Generally, people with MS only cease to attend appointments at the Trust of this research when they are no longer able to access the hospital or move away. However, some patients who have moved away from the immediate locality of the Trust of this research continue attending appointments, attributing this to a relationship of trust which has built up over many years.

A successful consultation occurs when there is integration of technical knowledge and skills on the part of the doctor or healthcare professional, together with competent interpersonal communication, which enables an understanding and appropriate engagement of both the consulter and the consulted, to manage the problem. Communication is an important part of such a consultation (Illingworth, 2010). Whilst Kurtz, Silverman and Draper (2005) suggest that the medical interview is central to

clinical practice and is a few critical minutes for the doctor to help the patient with their problems, Main, et al. (2010) describe how patient beliefs and expectations lie at the heart of the consultation process as they potentially influence adherence and are pre-cursors of behaviour change and mediators of outcome. I would argue that these opinions relate to all healthcare professionals. One of the primary roles of the clinical nurse specialist is that of consultant; success in this role depends on both expert knowledge of the specialty area and an in-depth knowledge of the consultation process (Hodges, Poteet, and Edlund, 1985).

The Calgary-Cambridge model (Figure 7) is one of many models of consultation. It is widely recognised as providing a basis for consultations. It may be applied in most clinical settings and helps health professionals achieve good communication with patients. As a model, it is patient-centred and promotes shared decision-making, both of which are important in the care of those with MS. In addition to its five stages, there are two 'threads' that run throughout the consultation as shown in Figure 7. The content, process and perceptual skills described earlier in section 3.4.1 are potentially all utilised when conducting a consultation using the enhanced Calgary-Cambridge Guide (Kurtz, et al., 2003). The framework identifies the objectives to be achieved during a consultation.

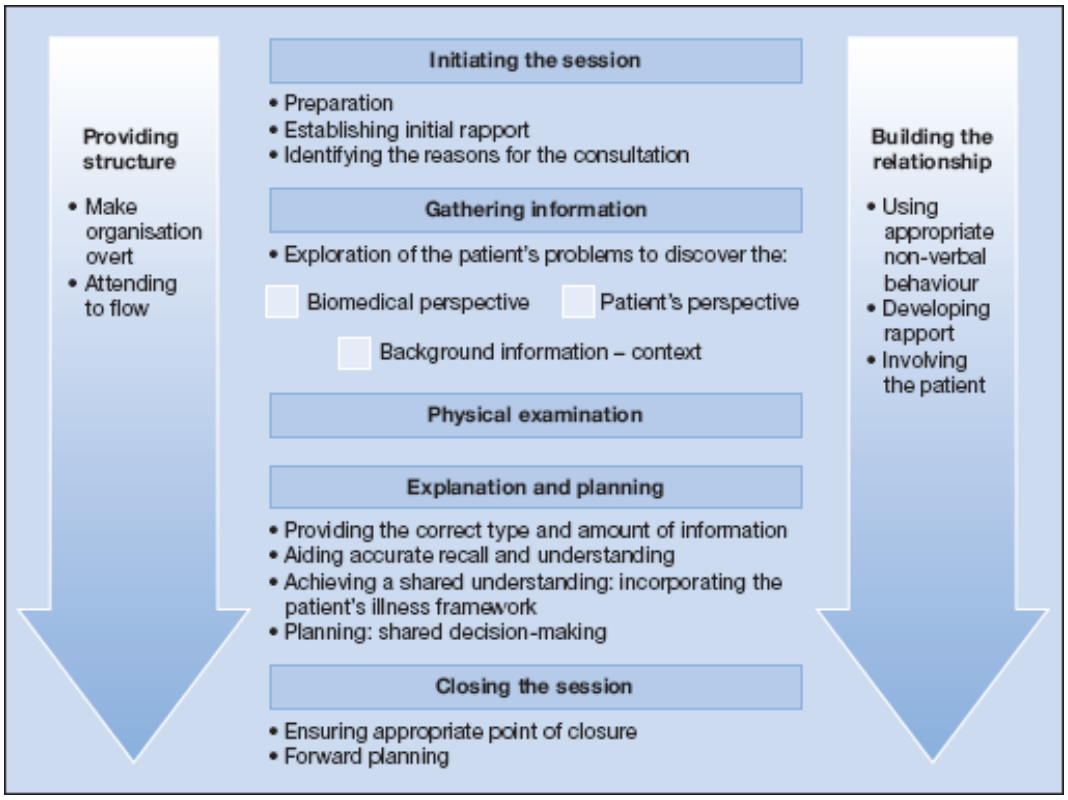

Figure 7 The Enhanced Calgary-Cambridge Framework

(Kurtz, et al., 2003)

Main, et al. (2010) describe the key principles behind the Calgary-Cambridge approach as blending the biomedical (disease) perspective with the patient (illness) perspective within the context of background medical, personal, and social history. I suggest that information relating to HRQoL may be determined if these three perspectives are fully explored. Information is elicited in an efficient manner within a patient-centred approach, designed to facilitate patient engagement, thereby enhancing satisfaction and improving clinical outcomes. I would propose that the way the information is gained is circular and reflective indicating the two-way nature of the elicitation process. However, whether these points are achieved is dependent upon the patient, the person using the model and the training they have received.

The Calgary-Cambridge model is described as useful a guide within a consultation by Munson and Willcox (2007) because it acknowledges the importance of individual patient concerns. I would suggest that it is important to discuss what the patient wishes to address during a consultation; the highly individual needs and perspectives of each patient need to be understood. Throughout a consultation I encourage patients to share their experiences, thus enabling me to tailor my clinical advice and approach to their individual needs. The model also promotes a healthcare professional/patient partnership (Denness, 2013) which is essential for the delivery of high quality care.

During an outpatient appointment, the particular model of consultation used, the way information is presented and the degree of involvement a patient wishes to have in their care can significantly influence understanding and decision-making among patients and clinicians. My consultations are based on the Calgary-Cambridge enhanced framework which I have found to be extremely effective.

Over time the consultation process has changed and evolved. The medical or paternalistic approach to a consultation is based on two fundamental concepts, disease and diagnosis. Within this approach, the doctor's authority is emphasised; the physician dominates the medical encounter, using their skills to diagnose and recommend tests and treatments for the patient (Charles, Gafni and Whelan, 1997). The clinician decides what care is in the patient's best interest and expects the patient to be compliant with the treatment recommended (Frosch and Kaplan, 1999). In this model I would suggest that the doctor is considered the expert.

Since the paternalistic approach arose, the requirement to discover the patient's beliefs, concerns and expectations about their problem has been recognised and the value of patient-centred care, shared decision-making and informed decision-making has been realised. Within the informed model, the patient's right to exercise their autonomy is emphasised. The shared decision-making model lies between the paternalistic and informed model and relies on a relationship developing between the patient and the healthcare professional. Within a shared decision-making model, the clinician elicits the patient's values and preferences about their care, has an evidence-based discussion of treatment options and then the patient and clinician arrive at a treatment decision together (Frosch and Kaplan, 1999; Barry and Edgman-Levitan, 2012; Armstrong, et al., 2016). Barry and Edgman-Levitan (2012) consider shared decision-making to be the pinnacle of patient-centred care. Indeed, shared decision-making has been shown to be particularly useful in preference-sensitive conditions (Armstrong, et al., 2016) in which there exist a number of available treatment options of similar efficacy, with differences in risks and benefits. MS is one such condition.

Informed decision-making and shared decision-making lie at opposite ends of a continuum when decision-making is considered. Both have relevance in the consultation, the type chosen being influenced by the patient.

3.4.3 Clinical Contexts for Partnership Relationships

The clinician–patient relationship may be considered central to the practice of healthcare and is essential for the delivery of high quality health care, the quality of the relationship being important to both parties. Respect and understanding from both sides are required to develop a trusting relationship. Such a partnership may be immensely rewarding for both the parties. Charles, Whelan and Gafni, (1999) suggest that the need for a healthcare professional/patient partnership is most compelling when a patient presents with a serious illness.

For those with MS, sickness is not a temporary status; rather the long-term chronic illness becomes a permanent part of their identity and status. For these people, the healthcare professional/patient relationship is potentially a long-term one. This relationship starts to develop when a patient and/or significant others is reviewed for the first time at an outpatient appointment. Subsequently, if a patient is admitted to hospital, in relation to their MS or otherwise, as a clinical nurse specialist I will visit,

appropriately offering expert advice to the clinicians caring for that patient, thereby further developing my relationship with that patient.

Whilst establishing a relationship, the type of involvement a patient would prefer in the process of making decisions about treatment should be explored, thereby ensuring that a patient feels that their preferences have been listened to and that they feel confident with their role in decision-making. If decisions are made by the patient with which they feel confident they are more likely to adhere to treatment plans; it is probable that their quality of life could improve or at least be maintained as a consequence.

3.4.4 Patient Involvement in Decision-making

Bowling (2014) suggests that the active participation of patients in shared decision-making about their health care is an important dimension of contemporary models of patient-centred care and of doctor-patient decision-making. By assessing how engaged a patient is in their own care, healthcare professionals can build an individualised approach that will ultimately lead to greater self-management. Patient activation embodies a developmental process of patients' willingness and ability to manage their health and healthcare; four progressive levels of competency have been described, ranging from patients being relatively passive and not seeing themselves as playing an active role in their health to patients having the knowledge and confidence to self-manage health behaviours and seek additional support when needed (Hibbard, et al., 2004). Patient activation helps patients to gain the knowledge, skills and confidence to manage their own condition. Some may then take a more active role in their care management, asking questions and making informed decisions. However, although patient activation can empower some patients to make decisions, others may prefer to rely on healthcare professional to make decisions for them.

Frosch and Kaplan (1999) reviewed a number of studies concerning whether patients wished to participate in medical decision-making; they found that younger patients have a greater desire to participate in treatment decision-making than older patients. When studying patient preference in MS, Heesen, et al. (2007) found that 91% of patients preferred to make an autonomous or shared-decision, as opposed to only 9% who wished the physician to make a decision for them. These patients are passive and avoid receiving information. Only by discovering the patient's perspective can the

type of involvement that the patient wishes be ascertained. Bowling (2014) describes how whilst most patients wish to be informed about their condition, only a proportion want to participate in clinical decisions about their treatment.

Of the patients reviewed by the clinical nurse specialists for MS during outpatient consultations, some consider the options in a perfunctory manner and immediately prefer one option, others weigh up the pros and cons before making a decision, some wish the consultant/nurses to decide- they may be anxious about making the 'right' decision and so surrender the decision to the us, others demand a treatment, some cannot decide and, others review the options, consider the doctor's recommendation and their personal preference, before choosing a certain treatment. How patients make their choice is a fluid concept which shifts according to patient preferences and their condition at the time. This may be due to psychological vulnerability which makes it difficult for some to participate in treatment decision-making regardless of how well informed they may feel.

The degree of involvement that patients want in their care decisions will vary over time, and thus one has to assess where the patient wants the healthcare professional to be at any one time on a continuum ranging from paternalistic to autonomy (Lawal, 2007). An autonomous patient could be considered to be an expert in their own condition. Through patient activation, the person with MS may become more involved in making decisions concerning their care and management over time. Michie, Miles and Weinman (2003), Hibbard, et al. (2004, 2007) and Mosen, et al. (2007) describe how higher levels of patient activation have been associated with better adherence to treatment, improved medical outcomes and greater satisfaction with care. This point is supported by Hadgkiss, et al. (2015) who suggest that patients who are proactive in their health may achieve better outcomes than those who are more passive. However, the work of Shay and Lafata (2015) demonstrated that the link between shared decision-making and patient adherence to medical therapy or improved outcomes had yet to be established.

Both self-efficacy and patient activation have positive associations with HRQoL (Mosen, et al., 2007). For people with MS increasing self-efficacy has been found to predict improvement in the physical and psychological impact of MS (Riazi, Thompson and Hobart, 2004) and better quality of life (Stepleman, et al., 2010).

3.4.5 Patient-Centred Care

Since the 1970s an extensive body of literature has been published advocating a patient-centred approach to medical care, this focusing on the patient as a whole, rather than just their disease and diagnosis. Patients are no longer regarded as passive recipients of services (Donaldson, 2007). They should be able to determine how much information they want and how much they want to participate in decision making and self-care.

As a concept, Illingworth (2010) suggests that the term patient–centred is difficult to define as it means different things to different people. The Department of Health (DOH, 2004) definition confers two dimensions to the concept: Patient-centred is a philosophy of care that encourages: (a) a focus in the consultation on the patient as a whole person who has individual preferences situated within social contexts, and; (b) shared control of the consultation, decisions about interventions or management of health problems with the patient.

In patient-centred care, a holistic approach is taken when discovering the patient's perspective; the patient is seen as a person whose disease is experienced individually as an illness, who has thoughts and feeling about the illness, and who needs to be regarded within their social setting (Stewart, et al., 2003). Michie, Miles and Weinman (2003), Donaldson (2007) and Illingworth (2010) suggest that patient-centredness has two components. Firstly, they describe how the healthcare professional discovers and takes account of the patient's perspective, their beliefs, views and feelings. The patient's perspective includes the effect of their illness and treatment on their functionality, the stages of the illness, type of illness, and their expectations of the doctor or healthcare professional. Consequently, these should be explored with the patients to discover their preferences. However, the behaviour of the professional, their knowledge of the condition and their relationship with the patient will also affect patient-centredness. This aspect of patient-centred care promotes patient satisfaction which in turn may increase adherence to advice given within the consultation.

Michie, Miles and Weinman (2003) and Illingworth (2010) suggest that the second component of patient-centredness is the ability to activate the patient to take shared control in the consultation and/or in the management of their illness; self-management is promoted and health-outcomes are better. These sentiments are echoed in the work of Stewart, et al. (2003) who also describe the need for a sharing, participative, and

equal approach with the patient, including shared power which underpins shared control and finding common ground to lead to a mutual decision. Through shared control of a consultation, shared decision-making can be achieved. However, as described earlier not all patients want to be involved in decision-making and their choice must be respected.

A patient-centred approach is increasingly regarded as crucial for the delivery of high-quality care by doctors (Mead and Bower, 2000). I would argue that this approach to care is crucial to the delivery of high-quality care by all healthcare professionals and is especially important for patients with MS and their care, as will be demonstrated throughout this work.

More recently the term 'person-centred care' has been advocated instead of patient-centred care as the later term has come to symbolise the dependency that personalisation aims to overcome (Scammell, 2017). The Health Foundation (2014) describes how the word 'person' is used to emphasise a holistic approach to care, that considers the whole person, not a narrow focus on their condition or symptoms but also their preferences, wellbeing and wider social and cultural background. This view appears identical to the descriptions of Stewart, et al. (2003), Michie, Miles and Weinman (2003), Donaldson (2007) and Illingworth (2010) presented earlier in this section.

Within the care of people with MS different types of decision-making contexts arise. Emergency treatment may be necessary, long-term adherence to medications is required, and the treatment of new symptoms as they develop are all integral to the effective management of the condition. Different types of decision-making will be more appropriate or feasible in specific contexts.

3.4.6 Informed Decision-Making

Whilst healthcare providers often possess better knowledge regarding the expected effectiveness of healthcare in improving health status, patients potentially know best how the improvements in health status will affect their well-being and quality of life. Thus, by combining both of these types of information, effective care that results in health status improvements valued by patients can be provided. In the informed decision-making model, this is achieved by increasing the patient's knowledge of the risks, benefits and clinical effectiveness of different treatment options, thereby

enabling them to make decisions that reflect both their preferences and the best scientific knowledge available. Whilst the patient is left outside the decision-making process in the paternalistic model, the healthcare professional is theoretically excluded in the informed decision-making model, their role being limited to one of information transfer. Charles, Gafni and Whelan (1997) suggest that an informed patient may prefer to make a decision themselves, to share the decision-making process, or to delegate the responsibility to the physician.

Throughout any decision-making process, as already described in section 3.4.2, the expertise of the patient should be considered. Many patients have lived with MS for a considerable period of time and are extremely well-informed about their condition and treatment options. They have learnt to manage this chronic illness themselves, calling on health professionals only in times of crisis or when new treatments become available for which they would like to be considered. These patients can be considered to be expert patients i.e. someone who feels confident and in control of their life, aims to manage their condition and its treatment in partnership with healthcare professionals, communicates effectively with professionals and is willing to share responsibility for treatment, is realistic about how their condition affects them and their family and, uses their skills and knowledge to lead a full life (DOH, 2001).

3.4.7 Shared Decision-Making

The shared decision-making approach is part of a wider initiative to promote patient-centred care and increase patient involvement in clinical decisions (Madsen and Fraser, 2015). As a model of joint decision making, shared decision-making has been linked with positive patient outcomes such as satisfaction and improvements in functional status (Charles, Gafni and Whelan, 1997).

Frosch and Kaplan (1999) describe shared decision-making as a process by which the healthcare professional and patient consider available information about the medical problem in question, including treatment options and consequences, and then consider how these fit with the patient's preferences for health states and outcomes. Health professionals provide expert knowledge on treatment choices and their benefits and drawbacks, whilst patients are experts on their own needs and priorities. It is important that the values and preferences of the patient are determined and respected, especially as the patient will bear the consequences of whatever treatment is implemented. It is

likely however that the patient may feel vulnerable and not give any indication of their values and preferences, particularly in early consultations. Thus, Charles, Whelan and Gafni (1999) suggests that it is the responsibility of the healthcare professional to initiate such a discussion. Only by getting to know a patient can appropriate care for that patient be initiated. Newsome, et al. (2016) suggest that shared decision-making among people with MS and healthcare providers should be encouraged, and that partners should also be included in the conversation, with patient permission, when treatment decisions are made. This is because partners and close family members experience the consequences of treatment decisions.

There are many decision points during the disease course of MS that are well suited for shared decision-making, including whether to take steroids for an acute relapse, whether to initiate disease-modifying therapy drugs, or whether to have a child after being diagnosed with MS. These are all preference-sensitive issues, where the patient's values and preferences can and should contribute to the ultimate decision (Colligan, Metzler and Tiryaki, 2016). Shared decision-making is particularly important in the shared consultant/nurse encounter when possible treatments are initially discussed, firstly because many treatment options exist with differing efficacy and side effect profiles, and secondly because there is no right or wrong treatment to choose. Thirdly treatments will vary in their impact on the patient's physical and psychological well-being. The patient will decide, with the help of the HCP, which of the treatment options is most consistent with their preferences. Achieving this goal requires the active participation of both the patient and the healthcare professional.

Within shared decision-making it is implicit that there is a relationship between the healthcare professional and the patient, a partnership relationship. Charles, Gafni and Whelan (1997) suggest that for shared decision-making to occur, it is important the relationship which develops between the patient and the healthcare providers enables a conducive environment in which the patient feels that they are being listened to and their views valued and respected. For shared decision-making to occur, there needs to be complementary role-expectations and behaviour between the healthcare professional and the patient. If the patient wants to participate but the healthcare professional is not willing to let them, then shared decision-making will not occur.

Information sharing is essential for shared decision-making. As a minimum, the healthcare professional should discuss treatment options and their potential

consequences for the patient in order to obtain informed consent (Charles, Gafni and Whelan, 1997). The patient may also bring information to the consultation derived from outside sources. Donaldson (2007) suggests that using patient-reported HRQoL information implies shared decision-making because it allows both patients and HCPs to be knowledgeable about the effects of the disease and treatment and to jointly decide which intervention may be useful. Patient preferences need to be elicited so that any treatment options discussed will be compatible with their lifestyle; one of the disease modifying therapies is not suitable for patients who are Jehovah's Witnesses, others are not appropriate for vegetarians. Also, the nurse should help the patient to evaluate the risks and benefits in light of their pre-existing knowledge, thereby ensuring that their treatment choices are based on fact and not misconception. Additionally, within the shared decision-making process, the healthcare professional should share their treatment recommendations with the patient and affirm the patient's treatment preference. Care needs to be taken to ensure that the healthcare professional does not impose their values about treatments onto the patient. As earlier discussed, although patients often have high preferences for information about their illness and its management, many do not engage in treatment decision-making. Thus, although information is given, its potential value as an aid to decision-making is not always realised. Rather it may be that the information provides psychological reassurance or reduced uncertainty at a time of stress or vulnerability.

Finally, within the shared decision-making process a treatment decision is made and both the healthcare professional and the patient agree to that decision. Occasionally, no decision is made, or an agreement cannot be reached. If a shared decision occurs, both the healthcare professional and the patient agree on the treatment option. This does not mean that both parties are convinced that this is the best possible treatment option for the patient; rather they agree to it as the treatment option to implement. The healthcare professional may believe that it would be more beneficial for the patient to receive another treatment but agrees to endorse the patient's choice as part of a negotiated agreement in which the patient's views count. Thus, through mutual acceptance, the responsibility for the final decision is shared. An example of this occurred when the consultant suggested one particular therapy for a patient, but due to religious beliefs the patient was not able to proceed with this treatment. Thus, an

alternative was discussed, considered and, following extensive discussion, agreed upon.

In summary, the shared decision-making approach lies between the paternalistic approach which is characterised by healthcare professional dominance of the decision-making process and the informed decision-making approach which limits the role of the healthcare professional to one of transferring information, thereby enhancing the patient's ability to make decisions autonomously with ultimate control but also with responsibility for the treatment choice. Whilst shared decision-making enables patients to have a say in their treatment without total responsibility, it provides healthcare professional the opportunity to participate in but not dominate the decision-making process.

Shared decision-making in relation to HRQoL assessment and treatment choices and decisions will be discussed in more detail later in this chapter, section 3.8.4.

3.5 CONCEPTUAL FRAMEWORK

Conceptual frameworks are the system of concepts, assumptions, expectations, beliefs and theories that support and inform research (Maxwell, 1996). This definition is expanded upon by Leshem and Trafford (2007) who describe a conceptual framework as a tool that helps researchers structure their theorising and ideas and brings a sense of 'coherence' to their research. Conceptual frameworks are pivotal in nursing and social research as they clarify and integrate the philosophical, methodological and pragmatic aspects of the doctoral thesis (Durham, et al., 2015). I started to consider the conceptual framework for this research once I had read around the extensive body of literature concerned with health-related quality of life in multiple sclerosis and its assessment. As suggested by Trafford and Leshem (2008) this framework was also influenced by my own experiences and observations.

The emergent framework (Figure 8) relates to the concept that assessment of HRQoL is a complex process consisting of a web of interlinking relationships. The framework portrays four related variables. Only when all these variables come together is it likely that a tangible benefit of assessment of HRQoL will be evident to patients and thus a role for assessment of HRQoL in routine practice be confirmed or refuted.

Whilst realising that there was a gap in the literature as the benefits of assessment of HRQoL has not been documented from the patient perspective, I was aware that the feasibility of such an assessment in everyday practice is poorly documented in the field of MS. The benefits of assessment of HRQoL in other fields is much written about and includes improved communication and detection of patient issues for which interventions may be considered (Detmar, et al., 2002; Janse, et al., 2004; Fayers and Machin, 2016). I was curious to know if the patients I work with were aware of the potential benefits and if so did they consider such an assessment to be a valuable part of their outpatient consultation. I also wished to investigate how assessment of HRQoL affected MS care management. Through subsequent re-assessment of HRQoL changes may be revealed, as shown in the conceptual framework of Figure 8, where the effect of assessing HRQoL on MS care management is demonstrated.

Once I started the quantitative data collection I realised that I would need to explore the thoughts, feelings and perceptions of both staff and patient-participants about the assessment of HRQoL. This qualitative stage became a way of exploring some of the relationships between the concept of HRQOL, communication and consultation styles, patient activation and the various types of decision-making that underpin the framework. I propose that the mutual understanding of a patient's HRQoL is essential if it is to be influenced and either maintained, optimised or improved through communication using an appropriate patient-based assessment measure during an outpatient consultation when shared decision-making is practiced.

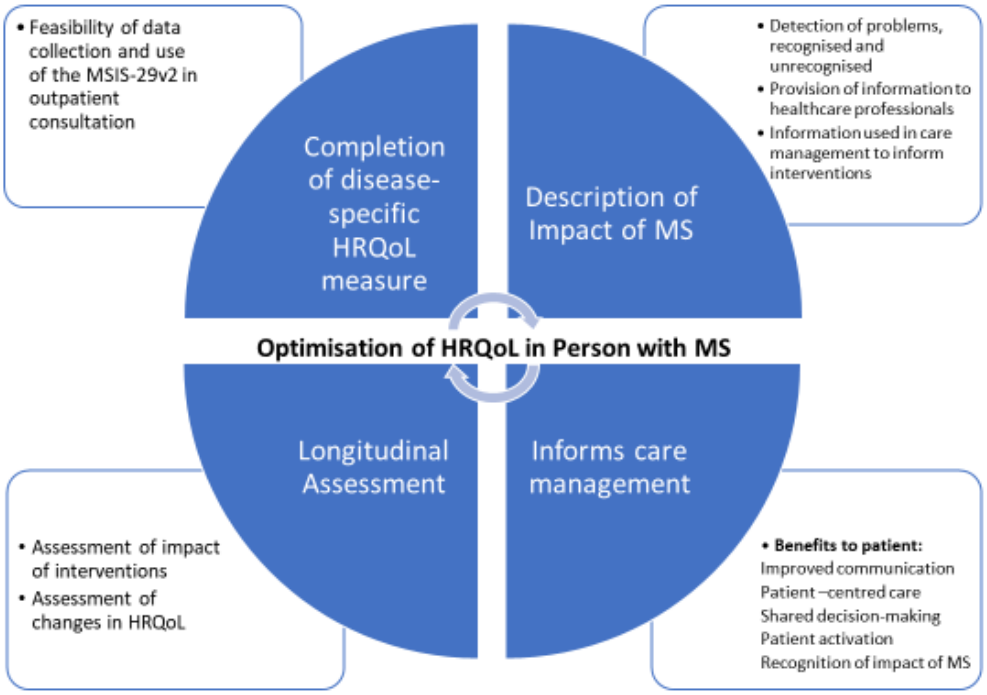

Figure 8 Conceptual framework: Effect of assessing HRQoL on MS care

The conceptual framework in Figure 8 acts as the foundation for my research. It highlights how the sharing of knowledge and information can result in optimisation of HRQoL. As previously discussed, within healthcare there has been a shift from a paternalistic approach to care towards a more patient-centred paradigm and greater awareness of chronic illness. The concept of HRQoL and its assessment is linked to this paradigm shift. The health-related quality of life of a person with MS lies at the heart of this conceptual framework. The outpatient consultation is central to the assessment of HRQoL, the clinician interpreting the responses of a HRQoL measure with the participant, and a questionnaire providing guidance for determining clinical interventions during the consultation. The influence of communication and its style and the nature of the consultation including the expertise of the patient and the relationship between the patient and the health professional all require due consideration. Patient-centered care and the type of decision-making will all influence the outcome of the consultation and ultimately the care choices made and their success. At all stages, the expertise of the patient should be considered.

3.6 WAYS OF ASSESSING HRQOL

Health-related quality of life may be assessed or measured in several ways in routine clinical practice. The typical question asked at the beginning of an outpatient appointment, 'How are you feeling?' may be viewed as a global inquiry into the patient's QoL (Detmar and Aaronson, 1998) as can the question 'How is your quality of life' (Kuspinar, Rodriguez and Mayo, 2012). More commonly, however, HRQoL is measured using a self-reported questionnaire made up of a series of items or questions (Kuspinar, Rodriguez and Mayo, 2012). Measures of HRQoL record patients' perceptions of their overall health and how their health affects their daily lives (Buchanan, et al., 2010). Patient reported outcome measures (PROMs) which are defined as 'any report of a patient's health condition that comes directly from the patient, without interpretation of the patient's response by a clinician or anyone else' (FDA, 2009) are frequently used to measure HRQoL. PROMs include validated questionnaires that assess the impact of the disease and the treatment from the patient perspective (Solari, 2005; Fayers and Machin, 2000). PROMs and HRQoL measures cover a range of health dimensions including physical, psychological and social functioning and aim to assess a variety of broader constructs such as impairment, disability, handicap and quality of life.

The patients' perceptions of their experience whilst receiving care can be measured using patient-reported experience measures (PREMs). As questionnaires these are indicators of the quality of patient care (Kingsley and Patel, 2017). For this study I chose to focus on MS-specific tools to measure HRQoL as I wished to explore how the use of such an instrument could aid the understanding of the impact of MS and the management of symptoms. HRQoL may also be assessed using interviews and/or conversational analysis. As this research was concerned with the assessment of HRQoL in clinical practice these two methods were rejected as too time consuming.

The history behind the assessment of HRQoL in MS is presented in the following section. Subsequently the rationale for measuring HRQoL is discussed.

3.7 HISTORICAL PERSPECTIVE

In 1998 Rothwell described how there had been an upsurge in interest in HRQoL in the medical literature. Since 1989 there has been increasing interest in the development

and application of patient-based measures of health in healthcare (Greenhalgh and Meadows, 1999). Addington-Hall and Kalra (2001) suggested that the growing recognition of the importance of understanding the impact of healthcare interventions on patients' lives rather than just their bodies was one of the main reasons behind the rapid development of quality of life measures in health care. Since the mid-1990s a number of MS-specific HRQoL instruments have been developed; these are critiqued in relation to this research in section 3.12. Subsequently many papers have been written as interest in measuring HRQoL in MS has grown (Gruenewald, et al., 2004). Interest has continued and was commented on by Mitchell, et al. (2005, p556) who stated that 'HRQoL has been more intensively studied in MS than any other neurological disorder'. I would suggest that this is because of the profound impact MS can have on the life of a person with MS. Indeed, HRQoL is now recognised as an essential measure to determine the impact of a disease as well as the potential effects of treatment interventions. For patients with chronic disabling conditions, such as MS, where there is little realistic hope of cure, I would consider that this is especially important.

The growing recognition that the global well-being of patients with chronic neurological disease is an important outcome in both research and clinical practice (Benito-León, et al., 2003) is reflected in NICE CG186 (2014). Certainly, the patients' perception of their own HRQoL is now increasingly being recognised as important to clinicians, researchers and health care policy makers (Miller, 2012).

3.8 RATIONALE FOR MEASURING HRQOL

Traditionally in MS care any change in a patient's condition or success of an intervention has been assessed using clinical history, neurological examination, and laboratory or clinical tests. These could be an MRI scan, psychometric testing, visual evoked responses or an Expanded Disability Status Scale (EDSS) assessment. These tests give important information about the condition, focusing on physical dysfunction, but lend no personal or social context. It is these additional aspects which may be captured using health-related quality of life measures. Fitzpatrick, et al. (1998) and Hobart et al. (2001) describe how HRQoL questionnaires gain information about health, illness and the effects of healthcare interventions from the perspective of the patient.

Higginson and Carr (2001) suggest that in the outpatient setting QoL measures may be used to prioritise problems, facilitate communication, screen for potential problems, identify preferences, and monitor changes or response to treatment. Rapkin and Schwartz (2004) expand further describing how HRQoL measurement is relevant for assessing symptoms, side effects of treatment, disease progression, satisfaction with care, quality of support services, unmet needs, and appraisal of health and healthcare options. These views are echoed by Solari (2005) who describes how assessing HRQoL using an appropriate instrument can: facilitate the detection of aspects of the disease that might otherwise go unrecognised; help clinicians appreciate patient priorities especially in terms of treatment goals; facilitate patient-physician communication, and; ultimately promote shared decision-making.

It is thus evident that assessment of the HRQoL of patients with MS provides both unique and beneficial information for patients and clinicians (Ghaem, et al., 2007), enabling an understanding of the impact of the disease and its treatment on the person's emotional, physical and social functioning and lifestyle. These views are reiterated by Amato, et al. (2001a) who acknowledges that quality of life instruments can help to provide a broader measure of the disease impact and to develop a care program tailored to the patient's needs. Also, identification of patient HRQoL may help predict future difficulties of patients, and prevent further deterioration in HRQoL (Devy, et al., 2013). Turpin, et al. (2007) suggest that as MS has enormous implications for the current and future quality of life of young adults diagnosed with this condition, determining how the illness impacts on the quality of life of people with MS in the early stages of the illness is critical for effective and efficient patient care. Identifying modifiable factors by measuring HRQoL and implementing clinical interventions can also have a massive impact on a patient's HRQoL, and potentially on the QoL of their family and carers.

Through focusing on how individuals appraise their health status and level of functioning within their own personal and social context, the patients' perceptions of how their health affects their daily lives is recorded. Thus, routine HRQoL assessment should help physicians understand and address the factors that negatively impact patients (Benedict, et al., 2005; Bandari, et al., 2010). Accordingly, Solari (2005) suggests that it may be considered that the ultimate aim of measuring HRQoL is to provide a comprehensive assessment of patients' health status from their perspective,

to serve as a baseline from which to tailor interventions, pharmacological or otherwise, and assess their effectiveness, both in the clinical trial setting and in routine care.

Following consideration of the rationale for measuring HRQoL and the role of HRQoL measures in the care of patients with MS, the dominant views in the literature regarding the various reasons for assessing health-related quality of life are presented in more detail in the following sections with the aim of justifying the use of an appropriate measure in daily clinical practice.

3.8.1 To Facilitate Communication

The process of communication during the outpatient consultation was discussed earlier in this chapter (section 3.4.1). Greenhalgh and Meadows (1999) suggest that the use of the use of a patient-based measure could facilitate doctor-patient communication. This was demonstrated in the study of Detmar, et al. (2002) who described various applications of HRQoL measures in clinical practice; they demonstrated how completion of a HRQoL measure by patients prior to their encounter with the clinician, and feedback of the results to clinicians, was effective in improving patient-clinical communication. Subsequently Bandari, et al. (2010) determined that communication between patients and healthcare providers is enhanced through HRQOL assessment allowing the main concerns of the patient to be focused on.

3.8.2 To Promote Detection of Patient Issues and Needs

It has been said that clinicians often underestimate the difficulties their patients experience as a consequence of a disabling condition (Anonymous, 1991). Lankhorst, et al. (1996) believe that the use of a comprehensive questionnaire can be an effective way to overcome this underestimate; they are of the opinion that QoL assessments are important for clinical assessments, where the needs of individual patients are identified and then translated into healthcare interventions. Whilst Rothwell, et al. (1997) found that the problems patients believe to be affecting their quality of life are very different from those perceived by clinicians, Detmar and Aaronson (1998) suggest that the use of a measure might form a useful basis for identifying issues of concern to patients and thereby provide physicians with potential topics to discuss during medical consultations. I would suggest this is applicable to all healthcare professionals. Benito-León, et.al. (2003) suggested that incorporating HRQoL assessment into routine

clinical practice should result in an increasing recognition of neuropsychiatric symptoms of MS. Social complications are also detected as well as traditional impairment and disability domains that form part of the total burden experienced by patients with MS. Benito-León, et al. (2003) describe how such an assessment helps clinicians plan and implement a care programme. Through integrating HRQoL assessment into clinical practice, HCPs can become aware of the patients' perception of their HRQoL, which can be helpful in optimising treatment (Janse, et al., 2004).

Donaldson (2007) suggests that HRQoL assessment is as least as efficient and perhaps more effective than asking open-ended questions such as 'How are you doing?' because it can identify priority areas for attention. HRQoL instruments can reveal aspects of illness that are not reflected by standard clinical instruments and can highlight areas of particular concern to the patient which can then be addressed (Aymerich, Guillamón and Jovell, 2009). In the clinical setting, Fallowfield (2009) suggests that very few clinicians make explicit, objective assessments about HRQoL when treating a patient; most clinicians depend on informal appraisal in the clinical setting as they believe that clinical judgement is superior to formal assessment. Potentially, symptoms may be overlooked, patient concerns left unaddressed and side effects of therapies unidentified (Ross, et al., 2012). Hence, a thorough assessment, identifying the actual needs of the patient as opposed to clinician perceived ones, would make it possible to suggest interventions potentially able to maintain or improve the HRQoL of patients.

In a busy clinic it is likely that some factors which influence HRQoL in MS patients may be overlooked (Lysandropoulos and Havrdova, 2015). I would suggest that the use of a HRQoL measure in routine practice is likely to promote detection of such factors. Whilst medicine tends to focus on symptom relief as an outcome measure, Fayers and Machin (2016) describe how studies have demonstrated that using QoL measures may reveal other issues that are equally or more important to patients. Detmar, et al. (2002) found that oncologists who administered HRQOL tests were more likely to identify moderate-to–severe health problems, and to provide suggestions for managing them. Bandari, et al. (2010) were unable to find a similar study involving MS patients but was of the opinion that the same benefits could apply and called for further research in this area.

3.8.3 To Aid Decision-Making

As a consequence of determining the elements that are impacting on the health-related quality of life of a person with MS, decision-making in the form of planning of interventions, treatments and services aimed at optimising or enhancing HRQoL may be facilitated (Rothwell, 1998). However, it is only when HRQoL measures are used as an integral part of care planning and evaluation that they are likely to influence clinical decision-making. Boyce, Browne and Greenhalgh (2014) conducted a systematic review of qualitative research concerning the experiences of professionals with using information from patient-reported outcome measures to improve the quality of healthcare. They concluded that professionals value PROMs when they are useful for clinical decision-making.

3.8.4 To Promote Patient-Centred Care and Shared Decision-Making

Within the field of MS care many treatment decisions involve a trade-off between therapeutic effects and side effects. Rothwell, et al. (1997) describe how patients and clinicians often have different priorities regarding the aims of treatment or the effects of illness on their lives with different patients attaching differing values to the potential outcomes. By involving patients in the decision-making process, they are empowered to make appropriate decisions for themselves and ultimately are more likely to be satisfied with their care and adhere to treatment plans. In addition, the patient's perspective on the effectiveness of the interventions can be monitored. Detmar and Aaronson (1998) conclude that the form, content and quality of the consultation using a HRQoL measure may influence decisions about treatment. Miller (2002) agrees suggesting that if clinicians were to routinely use a HRQoL measure, it would allow them to review patient functioning and concerns, quickly and systematically, and help patients to become active participants in their care. It was proposed that patient-based measures of health could promote shared decision-making by Greenhalgh and Meadows (1999). Subsequently Santana, et al. (2015) describe how several authors did indeed find that using PROMs supported shared decision-making.

Donaldson (2007) also discusses the effects of inclusion of HRQoL measures in routine care and its role in patient-centred care, suggesting that the use of HRQOL measures allowed the patient and the clinician to share information, helped both to be

more knowledgeable about the effects of the disease and its treatment and, promoted the involvement of patients in the decision-making process.

3.8.5 To Assess the Effectiveness of Clinical Interventions

The requirement to assess the effectiveness of clinical interventions or therapeutic response from the patient perspective is widely documented in the literature. Indeed, Florence Nightingale was one of the first clinicians to insist on measuring the outcome of routine care to evaluate treatment (Higginson and Carr, 2001).

Hobart, Lamping and Thompson (1996) suggest that, as MS is generally a progressive condition, measurement of HRQoL is important in the evaluation of therapeutic efficacy. This belief is reiterated by Solari, et al. (1999) who describe how HRQoL measures may be used to monitor the impact of disease and its treatment on individual patients in clinic when the needs of individual patients have been identified and translated into healthcare interventions. Skevington (1999, p.449) demonstrates agreement when stating, 'quality of life is an important outcome measure in the evaluation of treatments for a wide range of chronic physical and psychological disorders'. For a complete assessment of the benefits of an intervention Garratt, et al. (2002) suggest that it is essential to provide evidence of the impact on the patient in terms of health status and health-related quality of life. By assessing HRQoL the effectiveness of treatment may be assessed, the need for further interventions determined, and consideration given as to whether the interventions were as effective from the patient's perspective as clinicians believed they should be (Janse, et al., 2004; Mitchell, et al., 2005), a point concurred with by Fernández, et al. (2011) who describe how the measurement of HRQoL is an important part of treatment evaluation and care-management. Thus, it would seem that there is increasing recognition of the importance of assessing the effectiveness of clinical interventions.

As MS and its treatments have numerous effects on HRQoL any treatments offered should have at least a neutral effect and hopefully a positive impact on HRQoL in the long term. This is illustrated by di Fabio, et al. (1997) who demonstrated an improvement in physical and emotional health following a rehabilitation programme using the SF-36 and MSQoL-54, two HRQoL measures. However, unfortunately, some treatments used in MS are associated with a number of side effects which have been shown to negatively impact on HRQoL. Whether these treatments should be

offered then becomes debatable. Rothwell (1998) describes how HRQoL assessment allows HCPs to measure the overall balance between the benefit derived from the treatment and the harm caused by the side effects and constraints of the treatment. These issues are of concern to MS patients and healthcare professionals and may influence decisions in relation to receiving or prescribing treatments (Freeman, et al., 2001). Hence, the assessment gives the patient the opportunity to consider a wider range of issues relating to the impact of the treatment on their MS, than would perhaps be discussed by the clinical team. An assessment of HRQoL thus enables an effective evaluation of treatments and determination of the appropriateness of continuation of therapy.

3.8.6 To Monitor Progress over Time

Multiple sclerosis is known to be associated with marked impairments in HRQoL (section 3.3.3). One-off assessments of HRQoL can help to identify problems that have otherwise gone undetected but provide no information on the patient's outcomes over time. Longitudinal assessment, however, allows both healthcare professionals and patients to follow the progress of individual patients over time and evaluate the impact of MS on their lives (Gutteling, et al., 2008b; Ahmed, et al., 2011; Boucekine, et al., 2013). Systematically collected HRQoL information can provide feedback to patients about their progress and help in exploring their goals and expectations (Donaldson, 2007). Donaldson (2007) also suggests that simply listening to patients' concerns, even when no remedies are available may result in improved HRQoL, a point with which I concur. Physical disability does not generally improve over time in MS and is often not the primary concern of patients with MS; thus Noble, et al. (2012) suggest measuring factors such as involvement in everyday activities, and psychological and emotional well-being and their improvements after interventions is of equal or more importance. Bowling (2014) demonstrates agreement describing how any quality of life measure used in research on health or healthcare should be able to inform the investigator of the effects of the condition on the patient's daily as well as long-term life. However, it must be remembered that people with MS continually adapt to their condition and so evaluations of change in HRQoL should account for this adjustment.

3.8.7 To Maintain or Optimise Health-Related Quality of Life

Motl, et al. (2013) discuss how, as a consequence of realising the effect of MS symptoms on HRQoL, researchers and clinicians have become interested in improving the HRQoL of people with MS. By assessing HRQoL those factors which are impacting negatively may be determined, the patient's specific health needs explored, and interventions suggested to address the issues, thereby influencing the health of that patient through accurately targeted healthcare interventions. For example, a referral may be made to the wheelchair services for someone who is socially isolated because of severely reduced mobility. This should contribute to improving or at least maintaining their HRQoL. These actions could be considered an important part of the role of the clinical nurse specialist. Many treatments aim to improve HRQoL with a reduction in relapses, delayed disease progression and symptomatic relief. Therefore, it is highly desirable that we should be able to measure HRQoL in patients with MS simply and with confidence.

It is evident that there is an overwhelmingly large body of evidence emphasising the benefits of assessment of HRQoL for patients. Anecdotal evidence is also available for the use of measures in various neurology centres throughout the country. For example, a patient who is also under the care of a London hospital was given the MSIS-29v2 by his MS care team in London; he brought it completed to his outpatient appointment at the place of this research. The London hospital staff had asked him to complete it at home prior to a follow-up telephone appointment. He described how using the MSIS-29v2 had prompted discussion with his wife concerning symptoms and issues he had. He had found the assessment to be of benefit to him and was able to discuss the results on the telephone. Some of his concerns were further addressed at the outpatient appointment with me.

In summary, health-related quality of life measures have many roles in the care and support of patients with multiple sclerosis in the clinical setting. They may be used to: stimulate better communication, promote shared decision-making, describe the burden of disease, highlight previously unrecognised health problems, assess the effectiveness of different treatment plans and monitor disease progression.

Within the literature there is debate about whether using HRQoL measures actually improves care. This thesis aims to further address this debate.

3.9 DO HRQOL MEASURES IMPROVE CARE?

The evidence supporting the effectiveness of PROMs in contributing to improvements in the quality of healthcare is heterogeneous. Greenhalgh and Meadows (1999) conducted a literature review of the effectiveness of the use of patient-based measures of health in routine practice in improving the process and outcomes of patient care. At this time, they determined that although the information from patient-based measures of health was seen as valuable in the overall assessment of patients by clinicians, and that its feedback to clinicians increased the detection of psychological and functional problems, there was little evidence to suggest that their use substantially changed patient management or improved patient outcomes. Latterly, Boyce and Browne (2013) suggest that it has been difficult to draw definitive conclusions about their impact on patient care. The work of Boyce and Browne (2013) describes how professionals identified that the use of PROMs in practice had the potential to improve the process of care by enhancing communication, increasing patient education, promoting joint decision-making, screening for health issues, monitoring changes in disease severity and response to treatment, and stimulating better care planning. However, they found little evidence that PROMs feedback to healthcare professionals changed care management or improved patient outcomes.

The effectiveness of HRQoL measurement in clinical practice has been demonstrated in several cancer studies including that of Detmar, et al. (2002); using a HRQoL measure enabled more frequent discussion and identification of HRQoL related problems, improved emotional functioning, improved HRQoL, and resulted in a decrease in depression, a decrease in debilitating symptoms, and an expressed interest in continued use of the information by both physicians and patients. From this work, I would surmise that an improvement in outcomes would be likely in MS care, although this might not always be detectable due to the fluctuating nature of MS.

Whether measuring HRQoL can demonstrate an improvement in patient care, optimise HRQoL and make a meaningful difference to those with MS will potentially influence whether an appropriate measure is incorporated into the routine clinical practice of the neurology service at the Acute Trust of this research, and possibly other areas where patients with MS are cared for. From my perspective, the need to demonstrate evidence of effectiveness as a consequence of incorporating a HRQoL measure into routine clinical practice is key to this research.

3.10 BARRIERS TO THE USE OF HRQOL INSTRUMENTS

Despite the increasing evidence that HRQoL measures are more reliable indicators of the positive and negative impact of disease and treatment than clinical opinion, and also the increasing body of evidence that there are a number of potential benefits for both patients and clinicians, as described earlier in this chapter, clinicians still do not routinely assess HRQoL in clinical practice. The challenge remains to encourage clinicians to use them outside the research setting. Greenhalgh and Meadows (1999) suggested that there were several practical, methodological and attitudinal barriers to the use of patient-based measures in healthcare. These barriers were described again by Solari in 2005 and are related to feasibility, acceptability, lack of psychometrically tested measures, lack of resources, patient inability to assess HRQoL and clinicians' views of the relevance and value of HRQoL measures in the care of patients. A systematic review of literature by Boyce, Browne and Greenhalgh (2014) revealed similar practical considerations in relation to assessment of HRQoL. Unquestionably, the issue of the various barriers to the use of such measures in routine clinical practice required consideration prior to the selection of a measure for this research.

The clinical measurement of HRQoL has been opposed by what Higginson and Carr (2001) term 'pressure groups' who consider this to represent the 'overmedicalisation' of life and do not believe that clinical interference in all aspects of a patient's life should be the clinicians' concern (Higginson and Carr, 2001). In my practice, I did not consider that this would be an issue for most patients. Rather, I suspected that they would prefer to complete an assessment with the hope that appropriate interventions could meet their needs.

Whilst the ability of patients with regards assessment of HRQoL is discussed below, other barriers are debated in more detail in section 3.12 when the features required for this research are considered.

3.10.1 Patient Assessment of HRQoL

Unfortunately, not all patients are able to articulate their own HRQoL through using a HRQoL measure, a potential barrier to this method of HRQoL assessment. Self-reporting may be difficult for those with MS if they have difficulties with manual dexterity or cognitive problems which may impact the speed of information processing and memory (Matthews, 1998; Bruce, et al., 2010), influencing both the time to

complete a self-report outcome measure and the accuracy of the data. Cognitive impairment occurs at all stages of the disease trajectory; (Langdon, et al., 2012); it may occur early in MS in the absence of significant physical disability and is sometimes under-recognised (Rao, et al., 1991a; Amato, et al., 1995; Baumstarck, et al., 2012b). It is now realised 40-65% of patients with multiple sclerosis experience some form of cognitive changes with prominent involvement of memory, sustained attention and memory processing (Rao, et al., 1991a; Amato, Zipoli and Portaccio, 2006). This figure rises to 72% in more disabled patients (Maor, Olmer and Mozes, 2001).

The extent to which MS patients with cognitive dysfunction can validly self-report their HRQoL is debated within the literature. Whilst Benedict, et al. (2004) argue that cognitively impaired individuals are unable to produce valid HRQoL measures, others have reported empirical evidence suggesting that individuals with a moderate degree of cognitive impairment can perform reliable HRQoL assessments (Gold, et al., 2003; Marrie, et al., 2003; Baumstarck, et al., 2012a, 2012b). Although proxy assessments may be used in cognitively impaired populations Riemsma, et al. (2001) described how there is little evidence to support the validity of such assessments suggesting that health status measures need to be validated for use by proxies in certain populations. However, they do suggest that the use of proxies (for example, partners, relatives or close friends) to assess HRQoL for a patient should be considered. The work of Howland, et al. (2017) studying older people with varying degrees of cognitive function demonstrated that patients and proxies generally agree in reporting on activities of daily living but that they differ in their respective evaluation of cognitive functioning and everyday executive function. Howland, et al. (2017) proposed that, due to the subjective nature of QoL assessment, proxies rated QoL lower than the patients. For any condition it is important that healthcare providers are aware of the differences between the patient and proxy perspective to create an accurate clinical picture and guide care.

Communication deficits such as poor eye-sight will also affect the ability of a patient to complete a HRQoL instrument. Severe symptom distress (Sneeuw, Sprangers and Aaronson, 2002) and emotional factors such as severe mood disturbance (van der Linden, et al., 2005) may also interfere with self-assessment, potentially resulting in unreliable information. Additionally, a patient's performance may fluctuate

throughout the day and from day to day, irrespective of any new disease activity. Others may find the HRQoL instrument too burdensome physically or emotionally (Addington-Hall and Kalra, 2001). It is likely that these are the patients where a HRQoL assessment is most needed to inform clinical decision-making. In this situation, it may be necessary for a 'significant other' to complete the assessment in the role of a proxy.

Although there are potential barriers to using HRQoL assessments, some of which can be overcome, as a healthcare professional I would argue that there is a place for HRQoL assessment by clinicians in routine clinical practice and particularly by nurses who are often highly involved in the care of patients with MS. Detmar and Aaronson (1998) determined that introduction of individual QoL assessments in routine outpatient oncology practice was feasible and appears to stimulate physicians to inquire into specific aspects of the health and well-being of their patients. I would expect that this is also true for those healthcare professionals who care for patients with multiple sclerosis.

3.11 SELECTION OF THE HRQOL MEASURE FOR PHASE 1

The following two sections provide the background to the measure chosen for phase 1 of this research. By reviewing the literature, acknowledging HRQoL measures used to assess health-related quality of life in MS and considering their psychometric properties and feasibility of use, an appropriate measure was selected.

I required an evaluative measure as I wished to assess changes within individual patients over time, rather than between groups of patients. It had to be appropriate for use in the outpatient setting, short enough to be completed by patients or their carers whilst waiting for an appointment and demonstrate good psychometric properties.

The first decision involved a choice of whether to use a generic, disease-specific, or hybrid measure.

3.11.1 Generic, Disease-Specific and Hybrid Measures

There are a number of measures which may be used to assess HRQoL or some of its dimensions. They may be broadly classified into generic, disease-specific or hybrid; the later includes elements of both generic and disease-specific scales. As I would be

assessing HRQoL in patients with MS I decided to explore the use of disease-specific measures as I felt they were likely to be most appropriate.

Disease-specific instruments measure the patient's subjective experiences of illness and health and the associated impact on quality of life. Such measures are primarily designed to ensure that any symptom impact item reflects all the symptoms relevant to the disease of interest and that any additional psychological or social items particularly relevant to the given disease are included (Rose and Weinman, 2007). Beiske, et al. (2012) concur, describing how using disease-specific measures enables accurate assessment of the issues that are important for a particular disease and that might be missed by using a generic measure (Rudick and Miller, 2008). Disease-specific instruments are appropriate for assessing treatment effects and are more sensitive than generic measures to small, but clinically important changes in a patient's health status (Ford, et al., 1997; Freeman, et al., 2001; Hobart, et al., 2001; Bowling, 2014), a point of relevance to this study. Nortvedt and Riise (2003) also consider that an MS-specific questionnaire which addresses problems particularly relevant to MS patients might demonstrate greater sensitivity and better responsiveness, these being important features when measuring the effect of any interventions, which again is of particular relevance to this study. This point was demonstrated by Motl and Gosney (2008) who conducted a meta-analysis on the effect of exercise training on quality of life in MS, demonstrating that the effects of exercise on HRQoL were statistically significant when MS-specific HRQoL measures were used but there was a non-significant effect when generic measures were used. They recommend that, where available, MS-specific outcome measures should be used.

Although MS-specific measures offer advantages in assessing HRQoL in MS patients, they are perceived to have their limitations. For example, disease-specific measures may not capture health-problems not related to MS.

Ultimately, I opted to use a disease-specific measure for phase 1 of my research as it enabled information to be captured which was specific to the group of patients being studied.

3.12 EVALUATION OF MS-SPECIFIC HRQOL MEASURES

When evaluating the appropriateness of HRQoL measures for this research, the works of Ruta, et al. (1994), Fitzpatrick, et al. (1998) and Higginson and Carr (2001) were considered. These have been tabulated and are presented in Appendix A. Whilst Ruta, et al. (1994, p.1110) list the criteria of a truly valid measure of outcome that reflects the patients' perceptions of their health, Fitzpatrick, et al. (1998) suggest that a measure should be chosen by evaluating evidence about the instrument in relation to the eight criteria listed in Appendix A. Similarly, Higginson and Carr (2001, p.1299) produced a set of questions for consideration when assessing a quality of life measure for use in clinical practice as listed in Appendix A.

These three works, although presented from differing angles, demonstrate a degree of overlap; whilst the Ruta, et al. (1994) describe the need to assess areas important to patients, Higginson and Carr (2001) ask if relevant domains are covered. All state the need for a tool that has been psychometrically tested and measures change over time. Fitzpatrick, et al. (1998) and Higginson and Carr (2001) also describe various issues related to feasibility which require consideration. Many of the points in Appendix A are discussed and related to relevant literature in the following sections.

Since the mid-1990s a number of MS-specific HRQoL instruments have been produced all of which are designed to capture clinically relevant issues with regards to MS. Only five measures involved patients, their involvement making them relevant to the population under study: Functional Assessment of Multiple Sclerosis (FAMS), Leeds MS Quality of Life scale (LMSQoL), Multiple Sclerosis Impact Scale (MSIS-29), Multiple Sclerosis Quality of Life Inventory (MSQLI), and Multiple Sclerosis International Quality of Life Questionnaire (MusiQoL). The domains covered and psychometric properties of these five measures are tabulated below in Table 1.

Name of outcome measure	Domains covered	No. of items	Validity	Reliability	Responsiveness and appropriateness	Format
Functional Assessment of MS (FAMS)	Mobility, symptoms, emotional well-being, thinking/fatigue, and family/social well-being	59	Content derived in part from patient input Evidence provided for construct, content and concurrent validity In non-ambulatory subjects, correlations with MSIS-29 and SF-36 physical functioning lower than expected	Alphas 0.82-/0.96, except mobility scale (alpha=/0.78 overall, except 0.39 in non-ambulatory subjects) Test-retest reliability: r-/0.85-/0.91	Small floor and ceiling effects, good responsiveness in both ambulatory and non-ambulatory subjects Weighted toward assessment of psychosocial consequences of MS, assesses QoL impact of most domains	Self-completion Completion time 20 min (Benito-León, et al., 2003) Looks back over past 7 days
Multiple Sclerosis International Quality of Life (MusiQoL)	Activity of living, psychological well-being, relationships with friends, symptoms, relationships with family, relationship with the healthcare system, sentimental and sexual life, coping, and rejection.	31	Content derived in part from patient input	Alphas 0.60-/0.92 Test-retest reliability: r-0.63-0.89	No data given	Self-completion Completion time 10.6-22.9 min (Simeoni et al., 2008)

Name of outcome measure	Domains covered	No. of items	Validity	Reliability	Responsiveness and appropriateness	Format
Multiple Sclerosis Quality of Life Inventory (MSQLI)	Physical functioning; social functioning; role limitations due to physical problems; role limitations due to emotional problems; mental health; energy & vitality; pain; general health perceptions; fatigue, pain effects, sexual satisfaction, bladder and bowel control, impact of visual impairment, perceived deficits, social support.	138 items, 10 sub-scales, shorter version of 81 items	Content derived in part from patient and caregiver input Evidence provided for construct validity of generic and symptom-specific scales included in MSQLI Construct validity demonstrated in older adults with MS	Alphas 0.67-/0.97 Test-retest reliability r- 0.75-0.94 except 0.60 for SF-36 social functioning	Responsiveness of full MSQLI unknown to our knowledge Based on generic SF-36 that has marked floor effects in physical subscales Developed as a comprehensive outcomes assessment battery Tested for reliability and validity in subjects across a full range of neurological disability Comprised of established scales that can be administered independently	Self-completion, with assistance from interviewer if necessary Completion time 45 min (30 min for abbreviated version)
Leeds Multiple Sclerosis Quality of Life (LMSQoL)	QoL treated as a single dimension. Items selected based on impact on wellbeing, other domains of health excluded	8	Content derived through focus groups with MS patients Closer correlation with GWBI than with SF-36 physical function Discriminates between patients with different types of MS	Alpha 0.79 Test-retest reliability: r- 0.85 at 2 weeks	Minimal floor or ceiling effects Responsiveness unknown to our knowledge Assesses QoL impact of domains	Self-completion Completion time 5 min (Benito-León, et al., 2003) Considers past month

Name of outcome measure	Domains covered	No. of items	Validity	Reliability	Responsiveness and appropriateness	Format
Multiple Sclerosis Impact Scale (MSIS-29)	Physical health (symptoms, function), psychological health (mood, role limitations, autonomy) Other dimensions of health excluded based on psychometric analyses	29	Content derived from interviews with people with MS Correlations with EQ-5D, SF-36, FAMS, Barthel Index, GHQ-12 consistent with predictions	Alphas 0.89-/0.91 In non-ambulatory subgroup, alpha 0.85-/0.90 Hospitalised pts: alpha>/0.80 Test-retest reliability: r- 0.65-0.90	Small floor and ceiling effects Good responsiveness Psychometric properties similar in community-based and hospitalised patients In non-ambulatory subjects, psychological scale less responsive than FAMS, physical scale more responsive Assesses QoL impact of domains	Self-completion Completion time 15 min (Benito-León, et al., 2003) Completion time 5-10 mins (McGuigan and Hutchinson, 2004) Looks back over past 2 weeks

Table 1 Psychometric properties of measures for evaluating health-related quality of life

(Based on the work of Gruenewald, et al., 2004 and Simeoni, et al., 2008 for MusiQoL)

3.12.1 Appropriateness

As discussed in section 3.3.2 health-related quality of life cannot be equated with just one dimension of well-being. Rather, it is the subjective sum of multiple physical, emotional, social and objective dimensions of one's life (Bowling, 2005). Whilst psychological well-being may be measured with indicators of anxiety and depression, coping, positive well-being and adjustment, sense of control and self-esteem, physical well-being is assessed with measures of physical health status such as mobility, dexterity, physical activity and also assessment of activities of daily living. Social well-being is assessed with indicators of social network structure and support, community integration and functioning in social roles.

In 1997 there was little information about which aspects of health were considered important by patients with MS (Rothwell, et al., 1997). This issue has been addressed subsequently as the LMSQoL scale, the MSIS-29v2, MusiQoL, FAMS and MSQLI have been devised with patient input. When assessing health-related quality of life in patients with MS it is important that their experiences of the illness and their views on quality of life are assessed. What is important for maintaining a good quality of life, what impact the illness has had on both their life and their quality of life, and how they dealt with the changes brought about by their illness should be considered. Hence, I decided to use a measure designed with patient input.

When assessing HRQoL a major challenge relates to how to decide which of these many factors should be measured (Aymerich, Guillamón and Jovell, 2009). Many disease-specific HRQoL assessment tools cover one or more of these domains, and group items into separate scales corresponding to different dimensions (Fayers and Machin, 2016). Consideration was given to which aspects of physical, functional, psychological and social health should be included in the chosen HRQoL measure for this research. As the measure was to be completed before and discussed during an outpatient appointment, the number of domains which could be assessed was limited. Also, I determined there was a requirement to assess domains which could potentially be influenced by clinical interventions offered during an outpatient appointment. The MSIS-29v2 assesses two dimensions of HRQoL: physical and psychological. The LMSQoL scale is a disease-specific quality of life self-report unidimensional scale that is targeted at the concept of well-being. It was developed by Ford, et al. (2001a)

with a community-based population of people with MS. It is concerned with adjustment to MS and thus it has considerable importance for long-term management. The LMSQoL is an eight-item scale which was addresses tiredness, loneliness, energy, worries about health, family relationships, appearance, attitudes of other people, and the future, in relation to the past month. However, it does not assess the physical impact of MS which, as a healthcare professional, I would argue is needed to inform an outpatient consultation. As the LMSQoL scale does not cover the physical impact of MS I decided it was not an appropriate measure for this study.

3.12.2 Responsiveness

The property of responsiveness, i.e., whether the instrument detects clinically important changes over time that matter to patients, was particularly important for this study as one of the purposes of the selected measure was to evaluate the effect of treatment on HRQoL.

3.12.3 Acceptability

It was essential that any measure chosen for this research was acceptable to both the patients and clinicians of this study. The lack of an instrument which has gained wide acceptability amongst clinicians may be a contributory factor to the lack of use of HRQoL measures in MS practice. Many busy clinicians do not see the clinical relevance of HRQoL measures when making clinical decisions (Mitchell, et al., 2005), are sceptical about the validity of HRQoL measures and are concerned about their inability to intervene should the questionnaire reveal any problems (Morris, Perez and McNoe, 1998). Also, some clinicians may be reluctant to use patient-based measures of health in routine clinical practice while there is a lack of evidence that their use actually improves patient care and outcomes (Greenhalgh and Meadows, 1999). However, the literature reviewed indicated that short and easy-to-use HRQoL instruments may encourage clinicians to measure HRQoL during a routine outpatient appointment. Baumstarck, et al. (2013) describe how it is commonly accepted that the average time of completion of a questionnaire should not exceed ten minutes to be fully compatible with clinical practice. Hence, I deemed FAMS, MSQLI and MusiQoL inappropriate as they take between twenty and forty-five minutes to complete. These measures also do not meet the recommendations of Skevington, Lofty and O'Connell (2004) and Solari (2005) who suggest that a measure should not be

burdensome for patients or clinicians. As previously discussed, many patients with MS fatigue quickly. Additionally, PwMS can experience reduced attention and concentration which could impair their ability to complete a longer form (Gold, et al., 2001) accurately. Hence, the time taken to complete the measure and ease of scoring were of particular importance. The outcome measure selected needed to be convenient for the clinician as well as acceptable to the client. A short form was also required as the responses were to be discussed during a 20-minute outpatient appointment.

3.12.4 Feasibility

When deciding on an outcome measure for clinical purposes the practicalities of how it will be used is an important consideration. Many established HRQoL instruments have been designed for use in clinical trials and are not particularly user friendly with regards the constraints of a clinic appointment in a general outpatient setting; they may be too time-consuming to use or are difficult to score and interpret.

A lack of resources for the administration, collection and storage of the data may be a barrier to the use of HRQoL instruments. Some clinicians may feel unable to score, interpret, and use HRQoL instruments to guide clinical care. The meaningful interpretation of changes in score from HRQoL measures can also be problematic (Greenhalgh and Meadows, 1999).

3.13 A MEASURE FOR THIS RESEARCH

Having examined the literature and considered the features required for a measure for this research, as well as the barriers to the use of HRQoL measures in daily clinical practice, I found only one disease-specific HRQoL measure which I considered suitable for this research, namely the Multiple Sclerosis Impact Scale (MSIS-29v2) which is presented in the following section.

3.13.1 The Multiple Sclerosis Impact Scale- (MSIS-29)

The Multiple Sclerosis Impact Scale is described by Hobart, et al. (2001) as a measure of the physical and psychological impact of MS from the patients' perspective. As a self-administered questionnaire, it relies on the self-reporting of feelings, attitudes and behaviour. The items were developed through semi-structured interviews of people with MS, expert opinion and a literature review with the final items being developed

using the standard psychometric approach of reducing an item pool generated *de novo* from people with MS. There are two parts to the scale: part one (questions 1-20) measures 20 physical effects/impacts of MS, part two (questions 21-29) measures nine psychological effects/impacts of MS. These are: feeling unwell, sleep problems, fatigue, MS-related worries, anxiety, irritability, concentration problems, lowered self-confidence, and depression.

The MSIS-29 was generated to be suitable for use as an MS outcome measure in appropriate clinical trials to assess therapeutic efficacy from the patient perspective, cross-sectional studies to assess the impact of MS, audit and routine clinical practice for continuing evaluation of individual patients (Hobart, et al., 2001; Hobart and Cano, 2009). I would suggest that it may also be used to measure therapeutic effectiveness from the patient's perspective in routine clinical practice.

The MSIS-29 has been validated in a number of patient groups and in various clinical settings; studies demonstrate the validity, reliability, and psychometric properties of the MSIS-29 and its relationship to other measures (Hobart, et al., 2001; Riazi, et al., 2002; Riazi, et al., 2003; Hobart, et al., 2004; Hoogervorst, et al., 2004; McGuigan and Hutchinson, 2004; Hobart, et al., 2005; Gray, McDonnell, and Hawkins, 2009; Hobart and Cano, 2009). The MSIS-29 was deemed a valuable outcome measure in intervention studies of patients with MS in a community and hospital setting by Riazi, et al. (2002) and McGuigan and Hutchinson (2004). They concurred with Hobart, et al. (2001) that the MSIS-29 is not only of use in cross-sectional studies to describe the impact of MS but may also be used longitudinally to monitor disease progression. They found the MSIS-29 responsive for change perceived by participants in their community sample and in the outpatient sample. Longitudinal stability and responsiveness have also been demonstrated in the studies of Hoogervorst, et al., (2004), Hobart, et al. (2005), Costelloe, et al. (2007) and Giordano, et al. (2009).

Many authors including Gruenewald, et al. (2004) describe the MSIS-29 as a scale which can be used in the assessment of HRQoL of people with MS. Its author however, clearly states that the MSIS-29 is a measure of the physical and psychological impact of multiple sclerosis from the patients' perspective (Hobart, et al., 2001, p.969) because the terms health-related quality of life and disablement, both of which could have been used to categorise the MSIS-29, have several definitions (Fitzpatrick, et al., 1998). Motl, et al. (2013) describe the MSIS-29 as being consistent with accepted

definitions of HRQoL in the medical and rehabilitation literature as it consists of the physical and psychological domains of health status.

Following Rasch analysis, the MSIS-29 was amended giving it better psychometric properties; it was renamed the MSIS-29v2. Since 2005 the use of this version has been recommended; consequently, it was this version which was considered and ultimately selected for this research. Hobart, et al. (2005) describes the MSIS-29v2 as having strong psychometric properties. It has been proven to be valid, reliable and responsive in PwMS (Hobart, et al., 2005; Hobart and Cano, 2009). Also, it enables legitimate analysis of study data at the individual person level.

When the MSIS-29v2 is used, for each item (effect), participants rate their symptoms on a four-point Likert scale. 1='Not at all', 2='A little', 3='Moderately', and 4=Extremely'. Physical and psychological impact scores are generated. Questions 1-20 are summed to generate the total score for the physical impact subscale; questions 21-29 are summed to generate the total score for the psychological impact subscale. An overall impact score can be reported as the total scale satisfies criteria as a summed rating scale. Higher scores demonstrate a greater impact and greater compromise of either or both physical and psychological factors on patients with MS. Lower scores indicate greater independence. The physical scale score can range from 20 (best functioning) to 80 (worst functioning), and the psychological scale score can vary from 9 (best) to 36 (worst). Hobart and Cano (2009) have provided instructions for administration and scoring the MSIS-29. I considered these to be readily transferable to the MSIS-29v2.

The MSIS-29v2 looks back over the last two weeks and takes five to ten minutes to complete. McGuigan and Hutchinson (2004) found it to be acceptable to patients and no particular concerns were raised regarding the content or the phrasing of individual items.

The MSIS-29 and MSIS-29v2 do not ask patients about sexual function despite the recognition that this is an area where people with MS do experience issues. As a potentially sensitive question, it is possible that the authors decided to not include this area to avoid compromising patient compliance over questionnaire completion; however, this decision is not described in the literature.

I concluded that the MSIS-29v2 met the requirements of my research as it addresses aspects of quality of life which are measurable and for which clinical interventions may be offered. I felt that the MSIS-29v2 would provide clinically useful information in the routine care of patients with MS. It is short enough for everyday use, both from a patient and healthcare professional perspective and, having been devised utilising patient input, represents those aspects of MS which are most important to them. An assessment using the MSIS-29v2 should enable quick screening to assess the physical and psychological aspects of HRQoL. Therapeutic effectiveness can also be assessed at subsequent appointments as the measure is appropriate for individual patient analysis.

3.14 SUMMARY

This literature review demonstrates that there are many benefits of HRQoL assessment for patients. Such assessments provide an opportunity to determine previously unrecognised needs potentially resulting in improvements in both physical and psychological wellbeing. Through consideration of the types of communication skills used during the outpatient appointment, and the types of models of consultation, a form of decision-making appropriate for each patient should be enabled. Patients' priorities for treatment are identified potentially leading to more appropriate care being offered. Realistic treatment goals can be facilitated resulting in enhanced concordance with therapy, theoretically resulting in improved or optimised health-related quality of life, this being demonstrated through further assessments. This patient-centred approach requires a relationship, mutual understanding and respect to be developed between the healthcare provider and the patient. By practicing patient-centred care, shared decision-making is promoted, which will potentially result in patients becoming more involved in the management of their condition. Any improvement in quality of life is likely to be due to management of patient expectations, the implementation of meaningful interventions, and patients adhering to treatment plans when they feel they have been treated individually and with respect.

From a clinical perspective, I would suggest that the overall premise of care is that clinicians are able to help patients by managing or changing the impact of their condition following an outpatient consultation. Although I currently assess symptoms and issues associated with daily living, such as bathing during outpatient

consultations, there is insufficient time within an appointment to consider every aspect of life. I believe that a HRQoL assessment would enable the impact of the MS to be considered by the patient prior to the consultation, potentially highlighting areas they had not considered, and enable patient-perceived issues or concerns to be discussed and addressed as appropriate.

Based on the review of the current literature I was keen to explore whether HRQoL could be regularly assessed and whether this would enable a comprehensive assessment of the impact of MS on a patient in all aspects of their life to be obtained. I would also suggest that as a nurse I should be striving to determine and address patient-perceived issues during an outpatient appointment as opposed to problems which I may see, and which are potentially easier to address. Thus, I perceived there to be a need for using an MS-specific HRQoL instrument with MS patients in the clinical setting and I wished to demonstrate this through research. A measure which enables systematic evaluation of some of the dimensions of HRQoL could minimise the likelihood of overlooking important information with regards to quality of life. As described by Fernández, et al. (2011), I would suggest that measurement of HRQoL is an important part of treatment evaluation and care-management and could be considered to be of particular value in the routine care of people with multiple sclerosis where treatments should have a positive impact on HRQoL.

This review also demonstrates that, despite there being numerous generic and disease-specific measures suitable for assessing HRQoL in various settings, there do not appear to be any published studies describing the routine assessment of HRQoL in patients with MS and its influence on their MS care management in the outpatient setting in everyday clinical practice. It is evident from the literature review that much research is concerned with testing the various psychometric properties of measures, thereby proving them to be of value. However, there appears to have been very little research published about participants' thoughts and beliefs regarding HRQoL assessment in the routine clinical setting, which may provide an insight into whether they perceive assessment to be of benefit to them. There also appears to be very little published research concerning longitudinal assessment of HRQoL assessment in routine clinical practice.

This research aims to explore these gaps in the literature, by investigating the role routine assessment of HRQoL has in daily clinical practice and how it is experienced by patients and staff, through a mixed methods study.

In this chapter I have explored the literature and looked at key issues in relation to HRQoL and its assessment during a consultation in an outpatient setting. The following chapter describes the research methodology and shows how the research design and methods have been influenced by this.

Chapter 4

Research Design and Methodology

4.1 INTRODUCTION

The methodology used for this doctoral research is presented in this chapter. When planning this research, one of the first decisions I had to make concerned choosing the methodological approach which would enable the exploration of the research questions. All researchers are influenced by their beliefs and ways of viewing and interacting with their surroundings, these beliefs being guided by principles or paradigms. This chapter, therefore, commences with a discussion about which paradigm best fits the focus of this study, demonstrating why this research was undertaken using a mixed methods approach underpinned by pragmatism, thereby enabling me to include elements of positivism and interpretivism.

Following a discussion of the research paradigm the different research methodological approaches that may be used are considered before determining the most appropriate methods to answer the main research question: '*Is there a role for the assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice?* The research design and methods utilised in this study are presented and discussed within this chapter. Phases 1 and 2 are described separately in sections 4.5 and 4.6, respectively. The ethical considerations addressed when carrying out the current research are discussed.

4.2 RESEARCH IN HEALTH AND SOCIAL CARE

This research is being undertaken as part of a Professional Doctorate (PrD) programme. The aim of such programmes is to find novel approaches for integrating professional and academic knowledge. According to the UK Economic & Social Research Council (ESRC, 2015) students undertaking a professional doctorate are expected to '…. make a contribution to both theory and practice in their field, and to develop professional practice by making a contribution to (professional) knowledge.' I aim to demonstrate this through the work described in this thesis, which has resulted from a personal and professional interest in optimising the health-related quality of life of those with MS.

Research may be either applied or theoretical in nature. In the latter, the main concern is with developing and extending an academic discipline. As a PrD research project this work is considered to follow an applied or 'real-world' stance; real-world research

focuses on problems and issues of direct relevance to people's lives, to help find ways of dealing with the problem or of better understanding the issue (Robson, 2011). The question of whether there is a role for the assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice is evaluated through the examination of the secondary research aims, previously described in chapter 1. As a real-world research project, suggestions for addressing any issues raised by the research questions are provided and recommendations for change proposed, with changes in practice considered. Real-world research tends to take place in the field and often within the student's own organisation- in this case two hospital outpatient departments of the Acute Hospital Trust where I work and am an insider-researcher. The tensions this brings to research are considered throughout this thesis.

All research is underpinned by paradigms; an outline of the paradigm chosen for this research is presented in the following section.

4.2.1 Paradigms and their Philosophical Assumptions

A paradigm is a way of looking at the world, defined as a set of beliefs and philosophical assumptions that guide actions (Guba and Lincoln, 2005). This is supported by Morgan's (2007) definition of a paradigm which reveals how research can be affected and guided by a certain paradigm; he describes a paradigm as a system of beliefs and practices that influence how researchers select both the questions they study and the methods that they use to study them. Paradigms provide a general philosophical orientation to research and can be used either individually or combined within a study. Whilst Guba and Lincoln (2005) identify four basic belief systems or philosophical questions that help define a paradigm, Monti and Tingen (1999, p.66) suggest that two of these, the ontological and epistemological assumptions of a paradigm, drive its methodologies. To clarify the structure of inquiry and methodological choices for this research an exploration of the paradigm adopted for this study is presented prior to any discussion about the specific methodologies utilised in this work.

There are multiple paradigms or world views that may be considered when conducting research in health and social care; these broadly fall into three categories, positivism (often associated with quantitative research), interpretivism (usually associated with qualitative research) and pragmatism (typically associated with mixed methods

research). Tashakkori and Teddlie (2003), Burke Johnson, Onwuegbuzie, and Turner (2007), Creswell and Plano Clark (2011) and Denscombe (2014) all formally identify pragmatism as one of the paradigms that provides an underlying philosophical framework for mixed methods research.

The pragmatic approach arose because of the need to use methods from more than one research approach to address the research questions being considered. Denscombe (2014, p.158) suggests that the core principles of pragmatism are that: 'knowledge is based in practical outcomes and 'what works'; research should test what works through empirical enquiry; there is no single, best scientific method that can lead the way to indisputable knowledge; knowledge is provisional and is a product of our times and; traditional dualisms in the field of science and philosophy are not helpful, there being scepticism about the distinction between quantitative and qualitative research'. Creswell and Plano Clark (2011) concur, describing how a pragmatic approach draws on many ideas, including employing 'what works', using diverse approaches, and valuing both objective and subjective knowledge.

This approach resonates closely to my own perspective as a practitioner/researcher; I know from experience in practice that the health-related quality of life of those with MS is often compromised but may be optimised through the care offered. Thus, I made the decision to approach this study from a pragmatic viewpoint, thereby embracing the real-world stance described earlier in this chapter. Contemporary researchers working within the pragmatic paradigm view that the ethical goal of research is to gain knowledge in the pursuit of desired ends (Morgan, 2007). Burke Johnson and Onwuegbuzie (2004) and Robson (2011) reiterate this position suggesting that a pragmatist would advocate using the philosophical or methodological approach which works best for the particular research problem being explored.

From a philosophical perspective, ontologically, a positivist approach recognises that there is a single 'real-world' and that all individuals have their own unique interpretations of that world (Morgan, 2007). The interpretivist approach conversely suggests that there are multiple realities; researchers may demonstrate these using quotes to illustrate different perspectives as in chapter 6. Pragmatists, however, accept philosophically that there are singular and multiple realities that are open to empirical inquiry and orientate research toward solving practical problems in the 'real-world'.

Pragmatic epistemology is characterised by a broad emphasis on the importance of practical consequences, i.e. how theoretical ideas actually affect human life in general and the life of inquiry in particular. Epistemologically, pragmatists study in the different ways that they deem appropriate and utilise the results in ways that can bring about positive consequences within their value system (Tashakkori and Teddlie 1998). My aim as a nurse is to improve or at least maintain the HRQoL of those attending the clinics at my place of work. Within this research, theory generated from the literature review is combined with practical considerations in the workplace and information gained from two distinct phases combined into one study. As a researcher, it was necessary to move between the quantitative and qualitative approaches; the pragmatic emphasis on an intersubjective approach captures this duality (Morgan, 2007).

Epistemologically, the interpretivist paradigm assumes that knowledge is maximised when the distance between the inquirer and the participants in the study is minimised. As the researcher I interviewed the participants; the findings were the result of this subjective interactive process. The opinions and interpretations of the participants were crucial to understanding the research questions; the semi-structured interviews of phase 2 were the primary way to access them. Distance and impartiality occur in a positivist paradigm. The use of a questionnaire in the first (quantitative) phase is commensurate with this philosophy, objectivity being demonstrated. Epistemologically, I was independent from the research participants and did not influence the findings as the participants completed the questionnaire without help or guidance from me or the other staff involved in the research.

Within a pragmatic approach, the methods selected originate from different philosophical traditions, with paradigms which are conventionally regarded as incompatible (Robson, 2011). Ardent supporters or ‘purists’ of either the positivist or interpretivist paradigm, have engaged in disputes over the superiority of one over the other (Burke Johnson and Onwuegbuzie 2004). This continuing divide has been called the ‘paradigm war’ (Feilzer, 2010). Bryman (2008) describes how there is now a recognition that although the epistemological and ontological assumptions related to quantitative and qualitative research are distinctive they are not viewed as fixed or ineluctable within the pragmatic approach. Although some researchers question the appropriateness of mixing qualitative and quantitative methods in the same study, others acknowledge that combining methods permits a fuller perspective on a

phenomenon of interest and addresses the limitations of either approach exclusively (Brewer and Hunter, 1989, Creswell, 2013).

One of the main differences between a positivist and interpretivist approach to research is the researcher's starting point. Methodologically, positivist researchers start with a specific hypothesis which is tested through data collection, resulting in the theory being supported, or shown to need revision. In this research a positivist approach enabled the HRQoL of patients to be assessed and the effects of clinical interventions to be determined. The role of the interpretivist researcher is to understand the multiple constructions of meaning and knowledge. Such an approach aims to provide a greater understanding of people's experiences from their own perspective. An interpretivist approach facilitated an exploration of the participants' feelings about the collection of the data, their experience of using the MSIS-29v2 during an outpatient appointment, and what it meant to them. The interpretivist research method of interviewing allowed for the acquisition of multiple perspectives which would not have been possible using the positivist approach of a questionnaires alone. Values of the researcher are assumed to exist within interpretivism and subjectivity is an integral part of the research. Hence, it is not always possible to ask a very specific question prior to commencing research. Whilst the use of deductive reasoning at the beginning of this research indicates a positivist orientation to this mixed methods study, the discovery of emerging constructs through the qualitative interviews points towards an interpretivist perspective. However, the integration of the findings once merged in the discussion demonstrates a pragmatic stance. The combined features of both interpretivist and positivist approaches enabled research which would allow for the understanding of the role that assessment of HRQoL plays in the care of a patient with MS. The pragmatist paradigm permitted a satisfactory approach combining all the required methodological aspects.

Within this section I have provided justification for combining a pragmatic worldview with my choice of diverging methodologies. A research method should enable the overall problem and research questions to be answered. The next section describes mixed methods research, relating the principles of this approach to the research undertaken, thereby validating the approach.

4.3 MIXED METHODS RESEARCH

Mixed methods research is defined as a methodology where:

> *'a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration'.*
>
> (Burke Johnson, Onwuegbuzie and Turner, 2007; p.123)

Mixed methods research has been dubbed the third major research paradigm (Burke Johnson and Onwuegbuzie, 2004). This approach incorporates a distinct set of ideas and practices that separate it from other main paradigms (Denscombe, 2008). Creswell and Plano Clark, (2011, p.5) describe mixed methods research as 'a research design with philosophical assumptions as well as methods of inquiry.' The philosophical assumptions were discussed in section 4.2.1.

As an approach mixed methods research involves the collection, analysis and integration of quantitative and qualitative data (Creswell and Plano Clark, 2011). Guetterman, et al. (2017) elaborate further suggesting that the distinguishing feature of mixed methods is the integration (i.e. mixing) of quantitative and qualitative data to generate meta-inferences beyond what either approach could alone. Thus, a more complete understanding is achieved through incorporating the depth of participants' lived experiences with broader, generalised quantitative results. Denscombe (2014) suggests that a mixed methods approach is 'problem-driven' rather than theory-driven as the research question and its answers are the main concern. For these reasons, I considered this method appropriate for this practice-based research.

When using a mixed methods design, several principles should be followed during the design development. Table 2 illustrates the steps required to implement the design for this research. The decisions regarding level of integration, priority, timing and mixing of the quantitative and qualitative strands for this research should result in a strong mixed methods design. Within this explanatory mixed methods design both the quantitative and qualitative methods have equal priority, the qualitative (phase1) study following the quantitative (phase 2) study.

Step 1	**Design and Implement the Quantitative Strand:** State quantitative research questions and determine the quantitative approach. Obtain ethical approval. Identify the quantitative sample. Collect the data using structured questionnaires. Analyse the quantitative data using descriptive statistics, inferential statistics, and effect sizes to analyse the quantitative questions and facilitate the selection of participants for the second phase.
Step 2	**Use Strategies to Follow from the Quantitative Results:** Determine which results will be explained such as: significant results, non-significant results, individual differences, and group differences. Use these quantitative results to: • refine the qualitative and mixed methods questions, • design qualitative data collection protocols.
Step 3	**Design and Implement the Qualitative Strand:** State qualitative research questions that follow from the quantitative results and determine the qualitative approach. Obtain ethical approval. Theoretically select the qualitative sample that can help to explain the quantitative results and answer the secondary questions. Collect data using semi-structured interviews, the schedule being informed by the quantitative results. Analyse the qualitative data using thematic analysis to answer the qualitative and mixed methods questions.
Step 4	**Interpret the Connected Results:** Summarise and interpret the quantitative results. Summarise and interpret the qualitative results. Discuss to what extent and in what ways the qualitative results help to explain the quantitative results, and mixed methods questions.

Table 2 Pathway of the research explanatory sequential mixed methods design

(adapted from Creswell and Plano Clark, 2011, p.84)

A key principle of mixed methods design is to identify and provide justification for the reasons for mixing quantitative and qualitative methods within a study. Sieber (1973) describes several reasons for combining qualitative and quantitative research, suggesting that at the data collection stage, the quantitative data can play a role in providing base-line information and that, during the data analysis stage, qualitative

data can play an important role by interpreting, clarifying, describing, and validating quantitative results. Monti and Tingen (1999) also suggest that in mixed methods research different perspectives of qualitative and quantitative research can emphasise different dimensions of the same phenomenon and are often complementary. This view is supported by Greene, Caracelli and Graham (1989, p.259) who describe complementarity as 'seeking elaboration, enhancement, illustration and clarification of the results from one method with the results from the other method'. In this study the quantitative results guided the interview questions which in turn provided information clarifying how the patients felt about HRQoL assessment.

A sense of completeness may also be achieved by using a mixed methods approach; a more comprehensive answer can be achieved to a set of research questions by utilising both qualitative and quantitative methods (Bryman, 2008). This principle is echoed by Burke Johnson, Onwuegbuzie, and Turner (2007) and Creswell and Plano Clark (2011) who describe how mixed methods research enables a greater breadth and depth of understanding and corroboration and provide a better understanding of research problems than either approach alone. These reasons for using a mixed methods approach are demonstrated when the results of the two phases are combined.

Creswell and Plano Clark (2011) suggest that some research problems are more suited to a mixed method inquiry. These include those where one data source may be insufficient, results need to be explained, exploratory findings need to be generalised, a second method is needed to enhance a primary source, a theoretical stance needs to be employed, or an overall research question can be best addressed with multiple phases or projects. Robson (2011) concurs suggesting that this choice of method allows different but complementary questions to be addressed within a study. For this study neither a quantitative nor a qualitative approach alone would have been adequate to develop multiple perspectives and provide a complete understanding of the different research questions. For the first phase, a quantitative approach was utilised to collect data to assess the physical and psychological impact of MS on patients with MS. This enabled three of the research questions to be addressed: (1) *'Is assessment of HRQoL in patients with MS feasible in daily clinical practice?'*, (2) *'Can the results of HRQoL assessment be used to inform therapeutic interventions?'* and (3) *'Can a HRQoL measure detect change in HRQoL after the implementation of interventions?'*

To further understand the quantitative data, a qualitative approach was used. Denscombe (2014) describes how qualitative research is used to see things 'in context' and for stressing how things are related and interdependent. Semi-structured interviews were conducted to address the use of the questionnaire. For example, it was not evident from the quantitative phase whether the patient-participants found using the questionnaire to be beneficial and if so why. The results from an initial analysis of the data from the quantitative strand were used to aid the selection of patient-participants for the qualitative strand during which information was gathered about the merits and issues of using the questionnaire. Thus, the benefits of using the MSIS-29v2 were investigated from a patient perspective; the quantitative data being enhanced by qualitative data. The qualitative approach was also used to determine an in-depth view of healthcare professionals' perceptions of the feasibility and benefits of using the MSIS-29v2 in daily practice. Utilising a qualitative methodology enabled the views of the study participants to be gathered in a way which quantitative methods are unable to achieve. This strand of the research allowed the research question, *'Does assessment of HRQoL with an appropriate measure make a meaningful difference to patients?'* to be addressed.

Through utilising a mixed method approach I was able to draw on the strengths of both the quantitative and qualitative approaches and minimise the weaknesses as suggested by Burke Johnson and Onwuegbuzie (2004) and Bryman (2008). For example, a quantitative-only methodology may focus on numerical data and lack the ability to gather data related to understanding the context of participants' behaviour, whilst a qualitative-only methodology may be seen as being subjective and lacking reliability and validity (Creswell and Plano Clark, 2011). Using only quantitative methods would also risk missing a wealth of rich data available if the participants' viewpoints were not examined qualitatively. The credibility of this research was also enhanced as employing both qualitative and quantitative methods improves the integrity of the findings as suggested by Bryman (2006).

When conducting mixed methods research challenges may be encountered. The process is time consuming; for this research conducting and writing up two studies within the time frame of the PrD was extremely challenging. Also, the work must be clearly presented and the rationale for all steps fully explained; this proved to be a

steep learning curve for myself. I have endeavoured to provide a full account of the methodology and methods for the readers of this work.

In summary, a mixed methods approach was deemed appropriate for this project as it enabled all the research questions to be addressed. This study follows an emergent mixed methods design as described by Creswell and Plano Clark (2011). An explanatory sequential design allowed for different research questions to be addressed; the secondary research questions required data to be collected in different ways to enable the primary research question to be answered.

4.4 STUDY DESIGN AND METHODS

The aims of phase 1 and the associated study design and methods are described in section 4.5, expanding on the information presented earlier in this chapter. The aims of phase 2 and a description of how the pragmatic and grounded theory-informed approaches affected sample selection, data collection and analysis for phase 2 is given in section 4.6.

The ethical issues relating to this study in general are discussed in the following sections.

4.4.1 Ethical Considerations

A variety of ethical issues must be considered before commencing social research (Kimmel, 1988) as ethical concerns permeate every aspect of the design and execution of a study. Polit and Beck (2004) suggest that the type of ethical issues encountered in quantitative and qualitative research differ slightly due to the more intimate nature of the relationship that typically develops between researchers and study participants within a qualitative study. Ethical issues relevant to protecting research participants throughout this study included informed consent, voluntary participation, risks and benefits, anonymity and confidentiality, and data storage. These topics are briefly discussed in the following sections and related to the two designs throughout sections 4.5 and 4.6.

4.4.1.1 Informed Consent

Informed consent means that participants have adequate information regarding the research, are capable of comprehending the information, and have the power of free

choice enabling them to consent to, or decline, participation voluntarily (Polit and Beck, 2004). Thus, to provide potential participants with information about the studies, two information sheets were developed, one for phase 1 and one for phase 2 (Appendix D, Appendix O). All written information, including the consent forms, followed the guidelines of Anglia Ruskin University and the NHS Health Research Authority.

4.4.1.2 Voluntary Participation

Parahoo (1997) discusses how as a researcher, a nurse must not use their position to recruit participants unfairly. The potential participants could be considered to be a captive audience (Denscombe, 2014). As there is a power differential between myself and the patients, care was taken when writing the patient information leaflet to stress that participation was voluntary.

4.4.1.3 Risks and Benefits

The RCN (2011, p9) states that 'participants should be informed of the possible risks or burdens of taking part in a research project'. A risk is considered to be something that may pose as a potential harm to participants and can include injury, emotional distress, loss of self-esteem or embarrassment. This principle is reiterated by Parahoo (2014) who describes one of the most important aspects of research as protecting participants from harm and ensuring that the rights of these humans are protected.

I considered there to be a potential risk to participants of emotional distress as a consequence of completing the HRQoL questionnaire or taking part in a semi-structured interview. Issues surrounding the illness and its symptoms, which the participant might not normally choose to discuss or had learnt to live with and so not considered an issue, had the potential to be highlighted by the questionnaire and thus cause distress or upset. Additionally, completing the MSIS-29v2 could give participants an unwelcome insight into their own level of health and functioning, possibly causing them to reflect on their condition. Cartwright (1987) suggests that it is reasonable to ask people about things that they might find painful or embarrassing, providing they are discussed in an appropriate context. A referral would be made for counselling if required.

The RCN (2011) also suggests several perceived benefits of taking part in a research study. As a chronic disease MS affects many aspects of a patient's life. Assessments

of healthcare needs and treatment decisions can be informed by a HRQoL assessment (Higginson and Carr, 2001). Thus, interventions could be offered which may not have been considered if the MSIS-29v2 had not been used. Additionally, interventions could potentially be offered at an earlier stage than without the use of the questionnaire, possibly resulting in an improved quality of life. The principles of beneficence, 'the requirement to benefit the patient and an underlying principle in all medicine, health care and research' (Faden and Beauchamp, 1986) were thus adhered to.

4.4.1.4 Data Storage

To protect participants data must be stored in compliance with the current requirements of the Data Protection Act (1998) (Gooch and Williams, 2015). All documentation pertaining to the research, including consent forms, sociodemographic forms, completed questionnaires and interview transcripts were stored in my office. The digital interview recordings were stored electronically on the main hospital server and will be destroyed three years after completion of the study thereby allowing time for publication.

4.4.1.5 Insider-Researcher

Ethical issues may arise with regards relations between researchers and participants during the course of research. For this research my position as an MS nurse with prior professional contact to both patient and staff participants would indicate that I was an insider-researcher. As such there was already a relationship with the participants, a level of trust and rapport having previously been developed. As suggested by Polit and Beck (2004) I was acutely aware that special care was required to avoid exploiting this bond. As previously stated care was taken to ensure voluntary participation.

My relationship with the staff at my place of work meant that throughout the research period I drew on the shared understandings and trust of my colleagues with whom I have developed the normal social interactions of a working community and in particular the two members of staff who were most involved in this work. Again, I was acutely aware of the need to not exploit this bond. Respecting their views and ways of working and demonstrating care for others was key to the success of this research.

4.4.2 Ethical Approval

Prior to commencement of phase 1 ethical approval was sought from the National Research Ethics Service Committee, London - City & East in May 2014. Following an initial review of the application by the panel, my supervisor and I were asked to present and defend the research at meeting in London. Subsequently, further questions were submitted in writing by the panel. Once satisfactorily answered ethical approval was granted in August 2014. The REC reference for this research is 14/LO/1178 (Appendix B). The research proposal was approved by Anglia Ruskin University Faculty of Health, Social Care and Education Research Degrees Sub Committee in July 2014. Research and development approval was obtained from Mid Essex Hospitals NHS Trust in August 2014 (Appendix B).

During the meeting for phase 1 concern was raised about whether the data from phase 1 would enable the research questions to be fully addressed. In response to some of the queries, and in consultation with my supervisor, I decided that the study would be much stronger if I included a second phase. Thus, a substantial amendment was submitted for ethical approval. Following clarification of several points, as detailed in Appendix M, ethical approval for this phase was granted by the National Research Ethics Service Committee, London - City & East in August 2015 (Appendix M). Research and development approval for this second study was obtained from Mid Essex Hospitals NHS Trust in September 2015 (Appendix M).

4.5 PHASE 1: A QUANTITATIVE STUDY

4.5.1 Introduction

This section details the rationale for phase 1. Baumstarck, et al. (2013, p.4) state that, ‘to our knowledge there are no studies that have explored the effect of assessing QoL in MS care management’. This phase of the research explores the effect of an assessment of HRQoL in the outpatient setting of a district hospital.

4.5.2 Aims

The purpose of this phase of the study was to address the research questions:

- Is assessment of HRQoL in patients with MS feasible in daily clinical practice?
- Can the results of HRQoL assessment be used to inform therapeutic interventions?
- Can a HRQoL measure detect change in HRQoL after the implementation of therapeutic interventions?

4.5.3 Study Design

Phase 1 was the first part of the explanatory sequential design of this research project. A quantitative deductive approach was used for this phase, a longitudinal prospective panel design being followed (de Vaus, 2001). Whilst a longitudinal design allowed the measurement of change over time, a panel design involved repeated surveys of the same participants. The panel design enabled change at the individual level to be examined. As data was collected on several occasions the study was prospective in nature. A key strength of a longitudinal study is the ability to measure change in outcomes at the individual and group level.

A prospective longitudinal panel study design lacks a randomised control group, a consideration raised by the National Ethics Research Service. This meant that potentially it would not be possible to know whether any change was due to an intervention initiated at the outpatient appointment, the lapse of time since last appointment, stability of the MS, shift response or some other influence (de Vaus, 2001). The analysis of longitudinal data will however typically create statistical control groups (de Vaus, 2001). In the case of this research the sample sizes were too small to allow propensity matching and thus a control group could not be formed.

In the design and execution stages of a longitudinal study de Vaus (2001) suggests that there are a number of methodological, practical and ethical issues to resolve. Whilst some of these are concerned with maximising internal and external validity, others are concerned with completing the study. de Vaus (2001, p.145) states that ‘voluntary participation must remain the basis on which people continue to participate’, participants being aware that they can withdraw from the study at any time (Bowling, 2014). It was therefore imperative to check for voluntary participation

immediately prior to the time a questionnaire was offered for completion, as described in section 4.5.2.

During phase 1 the physical and psychological impact of MS from the participants' perspective was assessed using the MSIS-29v2 at each outpatient appointment attended over a twelve-month period. The results of the assessment were used to identify problems and guide interventions. The influence of these interventions on the physical and psychological impact of MS was assessed through further assessments. During data analysis the pre-intervention impact scores were compared with the post-intervention impact scores, changes in the scores potentially reflecting the influence of those interventions taken up on the physical and/or psychological impact of MS for the participant. A health transition question was used to determine patient-perceived changes in health-related quality of life since previous review. Qualitative data was also collected via a comments box located at the end of the questionnaire.

4.5.4 Methods

Within a longitudinal study de Vaus (2001) suggests that a number of decisions must be made about the structure of the study. These include the setting, the number of times the participants are followed up, the overall duration of the study, the use of interventions, and the way attrition is dealt with. These issues are considered in the following sections.

4.5.4.1 Site Selection

This research was undertaken in the outpatient departments of an acute hospital and a community hospital, both of which form part of an NHS Trust in the Eastern Region of the UK. Myself and the other two healthcare professionals involved in the research are employees of this NHS Trust.

4.5.4.2 Sample Size

Before the onset of the study advice was sought from a statistician at Anglia Ruskin University concerning the number of participants required to achieve the necessary statistical power. The primary outcome measure in this study was the change in the overall physical and psychological subscale scores of the Multiple Sclerosis Impact Scale version 2 (MSIS-29v2). Following Hobart and Cano (2009), when scaled to standardised units, the overall physical impact subscale has a standard deviation of 1.312 and the overall psychological impact subscale has a standard deviation of 1.211

units. A quarter of the larger standard deviation (0.328) is regarded as the minimum clinically important difference that it is required to detect. For a t-test at the 5% significance test to have a power of 80% to detect this change the minimum number of evaluable volunteers is 253. However, it was expected that the combined non-response rate and discontinuation rate could be about 50% and so a precautionary 600 patients needed to be approached to take part in the study.

4.5.4.3 Participants

To be eligible to take part in the research patients had to have a diagnosis of clinically definite MS as determined by a neurologist. They also had to be fluent English speakers as they needed to be capable of understanding the questions of the two data collection tools. Patients with cognitive impairment were not immediately excluded as this is a common symptom in MS (see section 3.10.1). If a patient was physically unable to complete the questionnaire but were deemed by the healthcare professionals involved in the research to have the cognitive ability to do so they were included in the study providing a partner or friend was available to record their responses.

The sample of patients was drawn from the population of MS patients who had been reviewed at the two hospital sites between 1st August 2013 and 31st July 2014. Patients were identified using the patient administration system of the NHS Trust. Deceased patient names were removed using the tracer system, thereby preventing information being sent out inappropriately. A local database was also checked to ensure information was not sent to patients who had moved away from the area and thus were no longer under the care of the NHS Trust where this research was carried out.

Five hundred and ninety-eight unique patients were identified from the hospital administration system as having been reviewed at least once within the above stated twelve-month period. All were diagnosed with clinically definite MS and were fluent English speakers and therefore eligible for inclusion in phase 1. Of these, six had moved away from the area prior to the commencement of the research. Thus, 592 patients were invited to participate in phase 1 (Chapter 5, Figure 9). It is acknowledged that this method of sampling can threaten the external validity of the study as certain types of people are more likely than others to decline to take part, e.g. older people (de Vaus, 2001). By using a large number of participants, I hoped to achieve a representative sample, thereby enabling external validity to be demonstrated.

4.5.4.4 Recruitment

Potential participants were approached by post and invited to take part in this research. An introductory covering letter (Appendix C), patient information sheet (Appendix D) describing the nature of the research, its rationale, and introducing the assessment tool, consent form (Appendix E), an example of the data collection tool (MSIS-29v2) (Appendix G) and freepost envelope were sent out to potential participants. Denscombe (2014) suggests that presenting an example prior to commencing the research can set the potential participant's mind at rest and indicate exactly what is expected of them. Patients thus had the option to review the research, decide if they wished to participate and then sign their consent form in their own home. The aim of this process was to try and ensure voluntary participation. Many potential participants have known me for a long time and a strong relationship exists. I anticipated that by consenting at home they were less likely to feel obliged to take part in the study than if consent was sought in clinic. I suspected that some might have believed that they would cause upset by not agreeing to take part if they had to inform the nurses directly in clinic. Also, I did not consider taking consent during a clinic appointment to be feasible. Appointments are of twenty minutes duration and so the consultation time would have been reduced and almost undoubtedly the quality compromised. Potentially, the clinic appointment would overrun causing delays for patients, both those taking part in the research and those not involved. No coercion or persuasion was used to recruit the participants for this study, a potential issue highlighted by Denscombe (2014). If a patient stated that they did not wish to take part in the research, they were reassured that their decision was respected and would not affect their care. No pressure was placed on that patient to change their mind and take part.

Potential participants were given two weeks to consider whether to take part during which time queries and concerns could be addressed. Details of how to contact the myself and academic supervisor were provided; several queries were received and addressed accordingly. A closing date of 31st October 2014 was given for receipt of consent forms but, forms received up to and including 14th November 2014 were accepted. A pre-paid envelope was included enabling those patients who wished to take part to return their signed consent form without incurring a cost. Participants were given a copy of their signed consent form during their first outpatient appointment following commencement of the research.

It was important to maximise the response rate as a large number of participants were required for statistical significance to be achieved (see 4.5.4.2). It is recognised that the willingness of people to take part in research is affected by certain factors including the nature of the respondents and the subject of the research (Denscombe, 2014). Time pressures, sight problems, cognitive issues, and severe fatigue can also potentially affect the response rate. Fatigue is reported in 53-90% of patients with MS (Fisk, et al., 1994; Bakshi, et al., 2000). The enquiring nature of the research and the relationship to the researchers might also have influenced the response rate. Research participants may be motivated to complete a questionnaire through interest, altruism, because they feel pressurised to do so, or for an unconscious ulterior motive such as pleasing the researcher (Boynton, 2004), all of which introduce potential bias into the recruitment and data collection process.

The participants' GPs were also informed of their participation in the research (Appendix F).

4.5.4.5 Identification Numbers

In this phase, two main types of data were collected: sociodemographic and clinical data and, responses from the MSIS-29v2. To maintain confidentiality each participant was assigned an identification number. The participants were numbered sequentially in the order they had attended clinic in the previous twelve-month period. The identification numbers enabled me to link an individual to a questionnaire, this being essential for the longitudinal aspect of the study. Participant numbers rather than names were recorded on all forms.

4.5.4.6 Integration into Practice

As this research is clinically based, integration into the routine of the two clinical nurse specialists for MS and the consultant neurologist was essential for the duration of the study. Implementing HRQoL assessment in routine clinical practice to aid individual patient management involves a number of methodological and practical decisions (Snyder, et al., 2012). From a theoretical perspective, the implementation of the MSIS-29v2 into the consultation process of an outpatient appointment represented a significant change and challenge to the clinical practice of the individual clinicians involved in the research.

To facilitate the integration process, prior to the initiation of data collection, a copy of the paperwork sent to the potential participants was given to the other two health professionals involved in the study with a covering letter. All questions were addressed. An information sheet about the research was also given to the outpatient sisters of the two departments where the research was occurring. I provided the other CNS involved in data collection with training in the use of the MSIS-29v2 and sociodemographic data collection tool prior to commencement of the study; all questions were answered, and reassurance given concerning her practice and role in the research process.

The feasibility of assessment of HRQoL was considered throughout phase 1. The practical issue of giving participants questionnaires was studied, and the patients' ability to complete the questionnaire observed. Staff were encouraged to discuss difficulties as they arose. Feasibility was further examined through the phase 2 interviews.

4.5.4.7 Data Collection

Self-completion questionnaires were chosen for this phase as I wanted to test a method of data collection which could potentially be used in everyday clinical practice. Also, information was required from a large number of patients to demonstrate external validity. As a research tool, questionnaires do not set out to change people's attitudes, rather their purpose is to discover things (Denscombe, 2014); in this research, the impact of MS on two domains of HRQoL. The MSIS-29v2 can be considered to be a survey and as such it provides a snapshot of how things are at the time at which the data is collected (Denscombe, 2014); in the specific case of this survey participants were asked to reflect back over the previous two weeks.

There are advantages and disadvantages of using questionnaires such as the MSIS-29v2. Data is easily collected using a questionnaire and may be readily analysed. The main reasons for selecting the MSIS-29v2 were that it is quick for participants to complete, relatively simple to score and can be analysed quickly in the presence of a patient.

Denscombe (2014) suggests that questionnaires are relatively easy for respondents to answer as they do not need to think how to express their idea, rather they only need to select one of the answers listed. However, using a structured questionnaire can be

frustrating and restricting if the supplied answers do not represent the respondents view (Bowling, 2014) or describe their condition (Fayers and Machin, 2016). Boynton and Greenhalgh (2004) also describe how closed ended questions can cause frustration, particularly if a participant does not feel that the questionnaire covers all responses. Ringing an answer may make respondents want to explain their answer. Thus, a free text comments box was added at the end of the questionnaire allowing respondents to explain their answers and provide additional information as they wished. Boynton and Greenhalgh (2004) suggest that free text annotations may add richly to the quantitative data.

Several potential problems of self-administration required consideration when designing the research. There is often missing data (Hays, et al., 2009). This was addressed during the appointment if detected by the nurse. Self-administration is potentially a problem for patients with MS who often have poor cognitive function and potentially cannot recall how their MS has affected them the last two weeks. Bowling (2014) suggests that recall will depend on the saliency of the topic to the patients. Also, completion is only possible for those who have sufficient reading and comprehension skills (Hays, et al., 2009). Poor manual dexterity may also cause problems when completing questionnaires. Friends or relatives were often observed helping complete the questionnaire in this situation. A question was added to the MSIS-29v2 asking whether help was required to complete the questionnaire. Unfortunately, there was no way of determining if the participant had actually been involved in completion of the questionnaire.

Font size may also require consideration. One participant has extremely poor vison and struggled to complete the questionnaire. The questionnaire was therefore reproduced in larger font for subsequent appointments; unfortunately, the participant did not attend his next appointment within research period.

It is generally considered that the data obtained through self-administration is less reliable than face-to-face interviews because there is no interviewer present to clarify questions as at the time of completion (Bowling, 2014). For this research this was not considered to be an issue as the healthcare professionals in clinic were able to explain questions as required.

4.5.4.8 Data Collection Tools

Both measures were piloted for one week prior to the start of the data collection period. No issues were detected during this time.

a. Sociodemographic Data

Sociodemographic data was collected using a structured questionnaire (Appendix H) designed specifically for this study to help describe the sample and demonstrate its representativeness. Gender, date of diagnosis, age, type of MS, marital status, number of children, and employment status were recorded.

Bowling (2014) suggests that there is generally a high level of reported concordance between medical record data and patient's report of their conditions. In relation to medical conditions, recall will depend on the amount of information given by health professionals and whether it is understood and remembered at the time. Recall was found to be an issue, particularly with regards patients knowing when they were diagnosed and their type of MS. Thus, clinical characteristics, including age at diagnosis and type of MS, were validated using the medical notes.

b. MSIS-29v2

For the reasons presented in section 3.13.1, the MSIS-29v2 was selected for this phase. Three additions were made; participants were asked if they required help to complete the MSIS-29v2, a free text box enabling comments to be collected was added and a health transition question included.

Central to the importance of measuring patient-reported outcomes are methods that evaluate changes in health-related status over time. Health transition questions (HTQ) do this by directly asking respondents to assess whether they consider their health or functioning to have stayed the same, improved, or worsened compared with a previous time point, often a pre-intervention time point. Cella, Hahn and Dineen (2002) describe a health transition question as a measure of subjectively meaningful change from the patient's perspective which is useful in clinical decision-making. The following HTQ was added at the end of the MSIS-29v2:

> *'Since you last completed a questionnaire do you think that your quality of life has significantly improved, slightly improved, no change, slightly deteriorated, significantly deteriorated?*

This brief retrospective question added value as it provided another perspective from the patient concerning changes in their quality of life. However, reliability and validity could not be achieved as inter-item consistency, the usual test of reliability for multi-item scales is not possible for single items (Norman, Stratford and Regehr, 1997). They also describe the issue of 'present state bias', where subjects are inclined to judge their change in health status in relation to their present health status; respondents with good health at follow-up are more likely to assume their health has recently improved, and respondents with poor health at follow-up are more likely to assume it has worsened.

4.5.4.9 Distribution of Data Collection Tools

At the Acute Trust of this research, a nurse from the outpatient department is allocated to each multi-professional clinic. Once in the waiting room the outpatient nurse verified whether participants were still willing to participate in the research. Affirming participants were then given the MSIS-29v2 to complete prior to their appointment. The CNS running nurse-led clinics followed the same procedure.

At the outlying Community Hospital, the outpatient receptionists gave out the data collection forms. The patients' medical notes are kept at the check-in desk. The clipboard with the questionnaire was slotted into the patients' notes. The receptionist agreed to ask the participants if they were willing to continue participating and if an affirmative was given, then the clipboard was given to the participant. Participants were allowed time to complete the questionnaires prior to entering the consulting room.

All participants also gave written consent via the 'yes/no' option on the MSIS-29v2. If a participant withdrew from the research their wishes were respected and no coercion was applied to encourage them to continue. Socio-demographic forms were also given out at the first appointment during the research period.

Participants could have potentially completed the MSIS-29v2 at home before their outpatient appointment. However, there are additional resource implications for this option; time would have had be made available to send out the questionnaire and the cost of postage would need to be considered. Also, this approach relies both on patients completing the measure at home and bringing it with them to their clinic appointment. For these reasons this method was not considered feasible for this research study.

4.5.4.10 Duration of Phase 1

Data was collected using the MSIS-29v2 over a twelve-month time-period, from 24th November 2014 to 22nd November 2015.

4.5.4.11 Use of the MSIS-29v2 during the Consultation

Snyder, et al. (2012) describe how processes are required to manage data, to ensure timely review of the data, and to respond to patients' identified needs. Each completed MSIS-29v2 was reviewed and interpreted with the participant during their clinic appointment. Questions were elucidated by the nurse running the clinic when participants asked for clarification. The responses given to the 29 questions of the questionnaire were used to guide the consultation. The answer for each question was considered and discussed as appropriate, enabling potential interventions to be discussed with the participant. This discussion informed any changes in care in a shared decision-making process. All treatments and interventions, both pharmacological and non-pharmacological, commenced, altered, stopped or declined were recorded on the intervention recording sheet (Appendix I). After each appointment, the MSIS-29v2 was scored for both the physical and psychological dimensions.

When the MSIS-29v2 was used at a subsequent appointment previous questionnaire/s and intervention recording sheets were available for comparison. Impact scores were available for earlier questionnaires. The responses were reviewed with the participant, and changes in both individual question and impact scores examined and discussed, enabling a comparison between the response at appointment T2 and the response at T1, or T3 and T2 etc. The effect of the intervention/treatment on the physical and/or psychological impact score was assessed and discussed with the participant during the consultation. A change in scores could indicate that an intervention had made a difference to one or both of the dimensions of HRQoL being assessed.

The response to the health transition question was also discussed. The participant's perception of any change in their condition was compared with the impact scores and the results discussed. The participant was asked how they felt about any changes in their scores and what it actually meant to them. This aspect is further explored in phase 2 (section 6.3.4.2e). Table 3 (section 4.5.4.12) illustrates the use of the MSIS-29.

Panel conditioning may occur in longitudinal studies when participants respond to questions in ways that are influenced by their previous exposure to the same questions (de Vaus, 2001). When a second or third questionnaire was given to participants to complete they also had access to previous ones. Hence, they could compare and contrast before, during or after completing the current survey. I would suggest that this could potentially have influenced their responses which threatens the external validity of this research. I am therefore aware of the need to be cautious about any claims made from this work. This issue could be avoided in future studies by only giving participants the questionnaire they were required to complete that day. Participants may also have attributed changes in their HRQoL to an intervention when really the effect was due to them taking part in the study, thus threatening internal validity. If the use of the MSIS-29v2 becomes embedded in routine clinical practice access to previous questionnaires would not be an issue as they would be filed in the case notes after each appointment.

de Vaus (2001) also details how, if participation in a longitudinal study produces change because it alerts participants to matters that they would not otherwise think about, it is difficult to say that any changes observed in the study will take place in the wider world. Several participants described how using the MSIS-29v2 highlighted symptoms to them that they were not aware of, whilst others described how as a consequence of completing the questionnaire they had made changes in their life such as initiating adaptations at home.

4.5.4.12 Frequency of Assessment

Within a longitudinal study frequency of assessment must be considered. In this research, assessments were linked to outpatient appointments (Table 3, below). de Vaus (2001) suggests that the gap between introducing an intervention and the post-test, i.e. re-administering the questionnaire, is influenced by previous experience of how long it would take for an effect to be detectable. One of the aims of this research was to detect changes in HRQoL after the implementation of various therapeutic interventions. Thus, a review was booked at an interval deemed appropriate for an intervention to have taken effect; this was usually after three, four or six months. For example, if a patient was offered a course of intravenous steroids they were reviewed after three months as this is when the optimum benefit derived from the medication

will be evident. This interval should demonstrate the effect of any intervention initiated through a change in the MSIS-29v2 scores.

Appointment	Assessment	Discussion	Plan
First outpatient appointment in research period (T1)	Initial HRQoL assessment during outpatient appointment	Treatments and interventions suggested and discussed as appropriate	Next outpatient appointment agreed with patient, considering any changes in care
Second appointment during research period (T2)	Further HRQoL assessment during outpatient appointment	Effect of treatments and interventions on HRQoL discussed with participant Changes in HRQoL discussed with patient HTQ response discussed Further treatments and interventions suggested and discussed as appropriate	Next outpatient appointment agreed with patient, considering any changes in care
Third and subsequent appointments during research period (T3, T4, T5)	As above		

Table 3 Summary of the assessment process using the MSIS-29v2

If no intervention was necessary then the participant was reviewed at an interval agreed mutually between the clinic nurse and the participant, taking into consideration the stability of the patient's MS and/or any disease modifying therapy they were receiving. More frequent assessment can provide a more complete picture for patients who are very symptomatic and/or in active treatment (Snyder, et al., 2012). Less frequent assessment is less burdensome and may be appropriate for generally healthy patients (Greenhalgh, Long and Flynn, 2005). These timings of assessment fit well with the recommendations of CG186 (2014) which suggests that frequency of review is based on the needs of a patient and those of their family and carers, and the frequency of review required for disease-modifying therapies. CG186 (2014) also

recommends that all people with MS have a comprehensive review of all aspects of their care at least once a year.

Those participants who were reviewed more than once within the time frame of the study completed the MSIS-29v2 at their first and all subsequent appointments within the research period.

4.5.4.13 Statistical Analysis

Computer software packages are often used to facilitate data analysis. After outpatient appointments, the data from the MSIS-29v2 and socio-demographic forms was entered into Microsoft Excel. The data was then checked for accuracy of inputting. Subsequently, the data was transferred to Statistical Package for Social Scientists (SPSS) (Version 24), (SPSSv24) where it was cleansed; frequencies were then checked to ensure data had been accurately entered. Once clean, personal identifiable information was removed.

When examining the questionnaires, it was evident that not all questions had been answered. Hobart and Cano (2009) describe how when some questions have not been endorsed by an individual, a total score can still be computed providing that at least 50% of the questions have been answered (i.e. ten or more physical impact questions; five or more psychological impact questions). Under these circumstances each missing question score can be replaced with the person-specific question mean score, i.e. the mean score of the items completed by that individual. This process is known as imputing and is considered psychometrically sound (Ware, et al., 1993). Hobart and Cano (2009) suggest that replacing missing data with the person-specific mean score raises concern as an assumption is made about how a person would have responded to an item. Another approach is to use only the answered questions to generate a score. In either case, Hobart and Cano (2009) suggest that it is questionable whether an accurate score can be determined if not all the questions have been answered. For this research I chose the option of imputing.

The MSIS-29v2 comprises 29 questions, each of which was scored from 1-4 as described in section 3.13.1. The physical and psychological impact scores were calculated as follows:

$$\text{Physical impact score (\%)} = \left(\frac{\sum_{i=1}^{20} x_i - 20}{60}\right) \times 100,$$

where x_i is the score in Question i

$$\text{Psychological impact score (\%)} = \left(\frac{\sum_{i=21}^{29} x_i - 9}{27}\right) \times 100.$$

a. Sociodemographic data

Descriptive statistics were used to describe the sociodemographic data and clinical characteristics of the population. Frequencies, proportions, means and standard deviations, medians and inter-quartile ranges were calculated using the computer package SPSSv24.

b. MSIS-29v2

Data analysis aimed to demonstrate whether the MSIS-29v2 showed responsiveness thereby enabling the question: *'Can a HRQoL measure detect change in HRQoL after the implementation of therapeutic interventions?'* to be addressed. In this study change occurred at two levels, group and individual. Statistical analysis was performed using SSPSv24.

Responsiveness to change is an important aspect of scale performance. The most common method of determining responsiveness is to examine the change scores following an intervention of known efficacy. Responsiveness can be assessed using a paired-samples t-test; here group mean scores over time were compared. Analysis of the data compared the individual post-intervention physical and psychological impact scores from the MSIS-29v2 with the pre-intervention physical and psychological impact scores. Results are reported as an effect size, a standardised change score. These are calculated by taking the mean change score and dividing by the standard deviation of the score. In general, an effect size of 0.2 has been interpreted as small, one of 0.5 moderate and one of 0.8 or greater as large (Cohen, 1988).

I was also interested to know if a minimally important change could have been determined. The concept of minimally important change in the MSIS-29v2 is important in both clinical and research studies as it is necessary to know whether a

change in the MSIS-29v2 score reported by the patient is clinically relevant and identifies a meaningful change to that patient. There is little discussion concerning this aspect for the MSIS-29v2 in the published literature. Phillips, et al. (2014) describe how understanding which patients achieve a change in score that represents an important and non-trivial improvement or decline from their perspective is essential. The term minimally important difference (MID) describes the threshold that identifies an important level of individual change over time. The minimum clinically important difference can be calculated by dividing the mean change score for minimally improved/deteriorated patients by the mean change score for unchanged patients. Regrettably, due to the small sample sizes of this research it was not possible to consider this aspect.

Another way to statistically interpret the meaning of the scores on an instrument is to use the smallest detectable change (SDC). The SDC is the smallest change that can be estimated as a real difference whereby smaller SDC values may be better for detecting an intervention effect. A score above the SDC value may be estimated as a meaningful change in HRQoL (Beckerman, et al., 2001). Again, due to small sample sizes this could not be considered.

At the individual level, changes in the physical and psychological domains of HRQoL were assessed once two or more questionnaires had been completed. The impact scores of the second questionnaire were compared with the first, the third with the second and so on. Possible reasons for the changes were analysed with the relevant participant. Differences may reflect the influence of an intervention on HRQoL.

Another method of estimating the ability of instruments to detect change is by comparing change scores on a health status instrument with an external criterion of change such as a health transition question. An important consideration for this research concerned the relationship between change in the two impact scores and patient reported change, as indicated by the HTQ. In this study participants assessed the amount of change in their HRQoL retrospectively using the HTQ located at the bottom of the MSIS-29v2. Responsiveness could then be determined by correlating change scores with the transition question. The responses to the HTQ were analysed as a categorical variable and are rated from 2 (significantly improved) to -2 (significantly deteriorated). These scores were statistically and manually compared with the MSIS-29v2 physical and psychological impact scores. The comments from

participants in the free text box were analysed, predominantly providing context for certain quantitative responses or changes in HRQoL.

4.6 PHASE 2: A QUALITATIVE STUDY

4.6.1 Introduction

This section describes the rationale for phase 2. The literature reviewed in chapter 3 revealed a dearth of knowledge about assessment of HRQoL in patients with MS during a routine outpatient appointment from either the patient or healthcare professional perspective. This study was designed to gather the views and opinions of study participants concerning HRQoL assessment using qualitative methods. Establishing the views and opinions of those taking part in this research was important to help ensure the relevance and quality of the research.

4.6.2 Aims

The purpose of this study was: to explore the views and perceptions of patients with MS about whether they felt that using a questionnaire, namely the MSIS-29v2, to assess two dimensions of HRQoL had made a difference to them, to their consultation and to the care they received. Also, to explore the views of healthcare professionals concerning the use of the MSIS-29v2 during outpatient appointments.

By investigating from the insider's perspective, I hoped that the findings, in combination with those from phase 1, would provide a rich and insightful understanding of the impact of assessing two dimensions of HRQoL.

Phase 2 aimed to answer the following questions:

- Is assessment of HRQoL feasible in daily clinical practice?
- Can the results of HRQoL assessment be used to inform therapeutic interventions?
- Does assessment of HRQoL with an appropriate measure make a meaningful difference to patients?

thereby contributing to answering the main research question:

- Is there a role for the assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice?

4.6.3 Study Design

There are a number of approaches to qualitative research; two of the best known are phenomenology and grounded theory. In this study, I have conducted an in-depth analysis of qualitative data drawing on the broad principles of grounded theory (GT) but acknowledge that I have not taken a purist approach. This phase is informed by, but does not adhere strictly to, all of the principles of GT. Grounded theory seeks to describe and understand key social, psychological and structural processes that occur in a social setting, i.e. the lived experience. In this phase of the research, the participants experience of completing the MSIS-29v2 was examined and the impact this had on them explored.

As an approach, grounded theory is dedicated to generating theories and emphasises the importance of empirical field work and the need to link any explanations very closely to what has happened in practical situations in 'the real-world' (Denscombe, 2014). It is regarded as a rigorous qualitative approach that incorporates a set of procedures or fundamental operations to inductively develop a theory or explanation of a social or social-psychological process or phenomenon.

Grounded theory can be used in nursing to explore complex social phenomena or that for which there is little or no theory (Glaser and Strauss, 1967; Field and Morse, 1994). Elliott and Lazenbatt (2005) suggest that grounded theory is being used increasingly in nursing research, providing a means of generating theory grounded in the realities of everyday clinical practice. Hence, Engward (2013) suggests that grounded theory aims to provide an understanding of human behaviour to deliver optimum care by exploring patients' perspectives or experiences of living with a particular condition.

As described in chapters 1 and 3, there is little written in the literature about the phenomenon of the impact of measuring HRQoL and whether it makes a meaningful difference to people with MS although benefits have been observed in other groups with long-term conditions. I considered a grounded theory-based approach appropriate for the qualitative phase of this study. This would enable me to investigate the participants' points of view with regards the use of the MSIS-29v2 and subsequently develop a theory concerning the impact of assessment of HRQoL on patients with MS during a routine clinic appointment. The overall aim would be to provide a unique contribution to the literature. The resulting analysis would potentially guide the future

use of health-related quality of life measures in daily clinical practice at my place of work and, through the sharing of best practice, within other services.

The grounded theory approach to qualitative research originated with the work of Glaser and Strauss (1967). Both Glaser's and Strauss' versions of GT use coding, constant comparison of data, simultaneous data collection and analysis, theoretical sampling, and memo writing in the process of generating theory. However, when reviewing the literature, it became evident that there is no clear-cut way to proceed with a grounded theory study, as each researcher brings their own personal stance, disciplinary perspective and own way of conducting it (Charmaz, 2006; Bowers and Schatzman, 2009; Wasserman, Clair and Wilson, 2009). This, in itself, could be construed as indicative of a pragmatic approach to its methodology. Indeed, Denscombe (2014, p108) states that 'the grounded theory approach has its roots in pragmatism'.

The grounded theory-based approach I used was influenced by the stance of Charmaz (1990; 2000). She offers a social constructivist approach to grounded theory. Ontologically she advocates that 'social reality does not exist independently of human action' (Charmaz, 2000, p.521) whilst epistemologically she recognises that 'the categories, concepts and theoretical level of an analysis emerge from the researcher's interaction with the field and questions about the data' (Charmaz, 2000, p.522). Charmaz (1990, p.1161) states that the term social constructionist means: '(1) Ill people's creation of taken-for-granted interactions, emotions, definitions, ideas, and knowledge about illness and self and (2) Researchers' sociological constructions which they develop, in turn, by studying chronically ill people's constructions'. Charmaz (1990) describes how 'ill people's' constructions reflect their understandings of their experiences. Also, that grounded theory analysis can provide physicians with alternative understandings of patients' beliefs and actions than those readily available in the clinical setting. These two points fit very well with data arising from the interviews and also my knowledge, both prior and subsequent to the interviews.

Grounded theory methods specify data analytical strategies but not data collection methods (Denzin and Lincoln, 2000). As a methodology, the grounded theory approach is adaptable and as such data may be collected in a way that best addresses the research problem. Semi-structured interviews using open-ended questions were used for data collection as they allow for the collection of information which is not

unduly shaped by prior concepts or theories. The participants were selected using theoretical sampling as described in section 4.6.4.1.

In the grounded theory approach the raw data is analysed, coded and categorised; subsequently theories are generated from the data (Denscombe, 2014). Data analysis and data collection occur at the same time with data collection and analysis constantly influencing each other. An iterative approach is used. The emerging codes and categories are constantly compared with the data and concepts and theories generated that help to explain the phenomenon: the constant comparative method. Ryan and Bernard (2000) locate thematic coding as a process performed within major analytic traditions such a grounded theory. The emerging concepts are grounded in the data and have relevance to the practical world from which they were derived. Indeed Bryman (2006) describes how the search for themes is an activity that can be discerned in most approaches to qualitative data analysis including grounded theory and, suggests that GT probably represents the most influential general strategy for conducting qualitative data analysis.

Purists advocate constant comparative analysis in the grounded theory approach. Although I did not follow the strict process of data analysis followed by participant selection, my method was broadly iterative and reflective. Through listening to the interview tapes collected during phase 2, themes appeared which informed those selected. Thematic analysis is a method of for exploring the participant's experience of the world and consequently provides a detailed account from an insider's perspective (Braun and Clarke, 2006). This approach identifies, analyses and reports themes within the data. Following discussions with my supervisors, thematic analysis was deemed the most appropriate form of analysis for this study.

In accordance with the explanatory sequential design of this research, data collection commenced after the quantitative phase finished. Fifteen patients from phase 1 participated in semi-structured interviews led by myself. The interviews explored the participant views of the assessment of the physical and psychological impact of MS during outpatient appointments. Two staff-participants were also interviewed to examine their views regarding using the MSIS-29v2 in daily practice. The recorded interviews were transcribed and then analysed using a thematic approach. Emergent themes were refined to establish key themes. The specifics of the design are discussed in the following methods section.

4.6.4 Methods

4.6.4.1 Sampling in Grounded Theory

Theoretical sampling is a central tenet of the grounded theory method (Cutliffe, 2000). Glaser and Strauss (1967, p.45) indicate that theoretical sampling, occurs 'when the analyst jointly collects, codes and analyses his data and decides what data to collect and where to find them, in order to develop his theory as it emerges. The process of data collection is controlled by the emerging theory'. This definition conveys a crucial characteristic of theoretical sampling: namely that it is an ongoing process rather than a distinct and single stage. Charmaz (2000, p519) also describes how theoretical sampling is a 'defining property of grounded theory', her paper suggesting that it is concerned with the refinement of ideas, rather than boosting sample size. An iterative sampling approach is followed whereby the researcher moves back and forth between sampling and analysing data such that preliminary analytical findings shapes subsequent sampling choices.

In grounded theory data is collected until theoretical saturation is achieved. Strauss and Corbin (1998, p.212) suggest that this occurs 'when no new or relevant data is emerging regarding a category, the category is well developed in terms of its properties and dimensions demonstrating variation, and the relationships between the categories are well established and validated'. Cutliffe (2000) similarly suggests that in order for concepts and categories to emerge during the data analysis, the need for sampling of specific data sources continues until each category is saturated. Therefore, at the beginning of the study, no limits are set on the number of participants, interviews, or data sources. The researcher continues selecting participants until they are saying nothing new about the concept being explored. Further interviewees are sought to add to the fullness of the understanding of the concept.

a. Patient-participants

For this phase of the research, potential participants were selected using theoretical sampling. de Vaus (2001) suggests that this approach to sampling may be justified if one considers that the research process is one of discovery rather than the testing of hypotheses. Before I began to collect and analyse data, I considered my research questions and the preliminary results from phase 1. I then determined the issues that I wanted to investigate. Thus, the selection of participants was an iterative process based

on reflection. The sample size was a function of theoretical completeness as described by Baker, Wuest and Stern, (1992) and Cutliffe (2000).

In the initial phases of a study Glaser (1978) acknowledges that researchers will approach those individuals who will maximise the possibilities of obtaining data and leads for more data on their question. Also, that they will talk to the most knowledgeable people, thereby determining leads for more data. Thus, theoretical sampling involves the purposeful selection of a sample in the initial stages (Glaser, 1978). The sample of participants for this study emerged from a sequence of decisions based on the outcomes of phase 1. Firstly, potential participants had to have completed at least two questionnaires to be eligible for inclusion in phase 2 (n=248), to enable the responses to the question concerning a change in quality of life to be considered. Participants were selected to represent as much diversity of illness as possible in terms of disability, duration of illness and age of onset. The responses given to the MSIS-29v2 and HTQ were also considered. Five participants, male and female, who represented the differing types of MS and had been diagnosed for different lengths of time were initially selected for interview thereby following the suggestions of Schatzman and Strauss (1973) and Baker, Wuest and Stern (1992) who describe how the researcher using grounded theory initiates the sampling process by interviewing significant individuals. Morse (1991) describes a good interviewee as someone who is articulate, reflective and willing to share with the interviewer. I hoped that the individuals selected would represent these points and describe a variety of views. Those known to suffer with severe fatigue, communication problems or cognitive impairment were excluded as these symptoms are likely to have made interviewing problematic. Although I was aware that excluding these patients may have limited the interview sample, representativeness was not a key aim of my sample; rather I wished to develop an understanding of how patients' experiences of using the measure shaped their consultations.

One of the aims of the sampling strategy for this research was to achieve maximum variation in narratives around assessment of HRQoL. Lincoln and Guba (1985) argue that maximum variation within theoretical sampling is best achieved by selecting each unit of the sample only after the previous unit has been taped and analysed. This first set of data and subsequent analysis acts as a 'gatekeeper' and sets the 'tone' or highlights the direction of further theoretical sampling. As I was unaware of how many

patients would agree to be interviewed five participants were initially sent invitations. Subsequently, as per the process of theoretical sampling, following a provisional analysis of the interview data and the developing themes, further patients were chosen to enable me to elaborate on and develop the emerging themes and their relationships regarding the experience of using the MSIS-29v2. For example, one of the first patients interviewed had concerns about the MSIS-29v2 being used with newly diagnosed patients; consequently, a newly diagnosed patient was invited for interview. Thus, the process of data collection was controlled by the emerging themes.

The work of Coyne (1997) argues that researchers should be adaptable and creative in designing sampling strategies that are responsive in real-world conditions and meet the information requirements of the study, the ultimate aim being to address the problem of the discipline thereby informing the knowledge of healthcare professionals in order to provide high quality nursing care based on research. I have striven to follow the principles of theoretical sampling in this work but acknowledge that inviting more than one patient at a time for interview, and not fully analysing one interview before commencing the next, i.e. concurrent data collection/analysis, demonstrates a compromise.

For this phase, as potential participants were selected from phase 1, representativeness of the population of MS patients cannot be assumed (Bowling, 2014), and thus internal validity was compromised.

b. Staff-participants

Only two other healthcare professionals were involved in this research both of whom were invited for interview.

Both patient-participants and staff-participants are referred to jointly as participants in the following sections.

4.6.4.2 Recruitment

a. Patient-participants

Invitations to take part were sent out in four phases, each phase being informed by the characteristics and interview data of participants who had previously been interviewed, thereby ensuring that new categories could be explored. Recruitment took place between mid-November 2015 and late February 2016. A patient-participant

introduction letter (Appendix N), information sheet outlining the aims of the study and proposed interview (Appendix O), and consent form (Appendix P) were posted to potential participants. These patients were asked to consider the research, and then complete the consent form if they wished to take part, returning it by post in the supplied pre-paid envelope.

Qualitative research tends to be based on relatively small sample sizes (Robson, 2011). It was anticipated that 10-15 participants would potentially provide sufficient data on the participants' view of assessment of HRQoL. After 15 interviews, I consulted my supervisors and it was agreed that theoretical saturation had been achieved. The characteristics of the sample of patients are given in Table 10 and Table 11, section 6.2.1.

The response rate of potential patient-participants for this phase could have been affected by several factors. A time commitment of 45-60 minutes for the interview plus travelling time and the ability to get to the chosen place of interview was required. Thus, those in full-time employment could have perceived the time commitment too great. A face-to-face interview may be daunting for some. Also, the relationship to the principal researcher could influence the decision as to whether to take part, Denscombe (2014) suggesting that participants need to feel comfortable with the researcher.

b. Staff-participants

The two healthcare professionals involved in phase 1 were both invited for interview. A staff introduction letter (Appendix R), information sheet detailing the rationale for this part of the research (Appendix S), and consent form, (Appendix T) were written. I personally delivered these to the two staff members. The staff were asked to return the consent form to me if they agreed to be interviewed. Both members of staff agreed to participate and were provided with a copy of their consent form. For staff, the issue of honesty about the research could have caused a problem with agreeing to take part.

4.6.4.3 Time and Place for the Interviews

The interviews were arranged by telephone or email. Patient-participants were given the option of when and at which hospital site their interview took place. Most patients chose to be interviewed during the morning at the hospital closest to where they lived.

The staff were interviewed in a quiet room at their permanent place of work at a time convenient for them.

Only one hospital site had an interview room which was appropriate for patient use. At the other site a room was set up as an interview room; a central table was used for a small digital audio-recorder. Consideration was given to the positioning and type of chairs, ensuring equal power between the researcher and the participant. Arranging the chairs of the same height at a 90-degree angle enabled eye contact without the confrontational feeling which can arise from sitting opposite each other. One participant attended in a wheelchair; in this case I found a chair of more equal height for myself.

The face-to-face interviews were conducted by the author between December 2015 and May 2016.

4.6.4.4 Data Collection

When considering data collection methods for this phase of the research, one-to-one semi-structured interviews were chosen as they encourage open, reflective and informative responses from participants, thereby allowing the researcher to investigate peoples' views in greater depth (Kvale, 1996), a key requirement for this part of the research. A questionnaire or structured interview would have limited the depth of explanation in the participants' answer and within focus groups some participants may not have felt able to contribute extensively. Interview responses may be treated as giving direct access to an 'experience' and associated feelings (Silverman, 2013) such as using the MSIS-29v2 during a consultation.

Qualitative research can play a key role in highlighting the existence and extent of problems which can stimulate interventions and actions that lead to change (de Vaus, 2001). Through interviewing, data based on the participants' priorities, opinions and ideas would be realised, as described by Denscombe (2014), since the participants have the opportunity to expand their ideas and explain their views. If the interviews demonstrated that the use of the MSIS-29v2 made a difference to participants during the research period, its use in daily clinical practice would require consideration.

The element of trust already established through my work with the participants, and particularly the patients, over the time before commencing the research could have

contributed to a rapid development of rapport and trust during the interview. Bryman (2008) suggests that this is positive as it encourages interviewees to persist with the interview. However, he does indicate the importance of not becoming overfriendly as this may result in the respondent answering questions in a way designed to please the interviewer. The interviewee may say what they think the interviewer wishes them to say, rather than what they feel. As a health professional, I envisaged a potential issue of honesty from both the patients and the members of staff; hence all participants were asked to be honest with their answers prior to the start of the interview, the relationship between the researcher and the participant being acknowledged.

Denscombe (2014) suggests that there are several disadvantages of interviews: they are time consuming as the analysis of data takes a considerable amount of time, validity is difficult to achieve and, the interviewer effect must be considered. It was likely that my role, as an insider-researcher could have had an effect on the participants and possibly have impacted adversely on the interviews and resulting data (Denscombe 2014). There was also the potential for interviewer bias; I endeavoured to reduce this by using good interview technique. Interviews can be tiring which is of particular relevance to people with MS for whom fatigue may be an issue. Data was not collected concerning which of the participants in this research suffer with fatigue. However, myself and the other MS nurse are aware of those who experience severe fatigue; they were not invited for interview.

4.6.4.5 Process of Interviewing

a. Interview Guides

Prior to the interviews, patient-participant and staff-participant interview guides were devised to inform the interviews. The questions were designed to explore the worldview of those being interviewed in relation to assessment of HRQoL. They were deliberately broad to be consistent with the grounded theory informed approach being followed. A list of issues to be addressed, themes to be explored and open-ended questions to be asked was compiled into two interview guides (Appendix Q, Appendix U). Space was included for recording date and place of interview, and information gathered during the interview. Following Rubin and Rubin (2011) the interviews started with a main question to begin and guide the conversation; probes were used to clarify answers and request further information. Finally, follow-up questions explored the implications of the replies to the main questions. There was,

however, flexibility to vary the sequence of questions, and latitude to ask further questions in response to what were considered significant replies as suggested by Bryman (2008).

b. Patient-participant Guide

The open-ended questions developed for the patient interview schedule (Appendix Q) reflected the experiences of the researcher during the first phase of the study, and the literature review; they were externally reviewed by my supervisors. Five key areas were covered. The patients were asked to discuss their experience of living with multiple sclerosis, their experience of attending outpatient appointments with and without the MSIS-29v2, their experience of completing the questionnaire, whether the questionnaire made a difference to their consultation, and finally whether completing questionnaire had any impact on them or the care that they received. Participants were encouraged to discuss issues they considered to be personally important. Open-ended questions ensured that the participants could elaborate on their answers as options for responding were not restricted (Creswell and Plano Clark, 2011).

Data collection and analysis was iterative, the interview data and technique being considered after each interview. The interview guide was amended following the data analysis of several interviews as interviewees were relating their story of diagnosis rather than their experience of living with MS when asked the question: *'Can you tell me about your experience of living with MS'?* The amended questions included: *What is it like living with MS? Has having MS changed the way you think about yourself as a person?* and, *Do you think that MS has changed the way people see you?* (Appendix Q, questions in italics). These changes reflect the work of Strauss and Corbin (1990) who describe how some interview questions will seem less salient or require supplementation. Following two further interviews the schedule was further amended to ask about the style of consultation (Appendix Q, questions in bold font).

As previously discussed, the MSIS-29v2 only assesses the impact of two domains, but for the purposes of clarity the term HRQoL was used throughout the interviews.

c. Staff-participant Guide

The views of the HCPs were also explored through a face-to-face interview (Appendix U) with myself to determine whether they believe there is a role for the assessment of HRQoL in patients with MS in the daily clinical practice of the MS team

at the NHS Trust of this research. The staff interview schedule focused on the style of outpatient appointments prior to the use of the MSIS-29v2, the experience of conducting outpatient appointments using the questionnaire, whether using the questionnaire made a difference to the style of consultation and finally, the impact of the MSIS-29v2 on appointments and the care offered. Staff were encouraged to describe their experience of and views regarding the use of the MSIS-29v2. Attitudinal barriers in relation to the use of the MSIS-29v2 by the HCPs were also explored.

d. Conducting the Interview

All interviews were recorded as this allowed me to be as attentive as possible and communicate that the respondent was being listened to (Bowling, 2014). The recorder was switched on immediately prior to the start of the interview and switched off as soon as the interviewee had been thanked for attending. A separate audio recording was made of each participant interview. Each interview was initially allocated the participant number from phase 1, thus affording confidentiality but not anonymity. Anonymity could not be guaranteed as the data from phases 1 and 2 required linking. When presenting the results, the interviews were allocated numbers reflecting the order of the interviews, the first interview conducted being number 1, the second number 2 and so on.

At the beginning of each interview participants were welcomed and the aims of the research and my interest in the topic reiterated. Confirmation was given that the research had ethical approval. Reassurance was provided that confidentiality of the interview data would be maintained and that although the conversation would be audio-recorded to facilitate verbatim analysis, no identifiable reference to individuals would be made in the transcripts, in the final thesis or in any published works. Participants were informed that they could stop the interview at any time.

I endeavoured to put the participants at ease during their interview thereby enabling them to feel confident at expressing their opinions honestly, as suggested by Polit and Beck (2004). To allow the patient-interviewees a chance to relax and feel at ease, I initially asked them to describe their experience of living with MS, something with which they are all familiar. Throughout the interview I encouraged all participants to talk freely and spontaneously about their feelings and experiences of using the questionnaire. Prompts and probes were utilised when required. An inductive

approach was adopted, the interview guide acting as an aide memoir rather than a rigid schedule. Additional unplanned questions were asked to follow up what the interviewee described, and the order of the questions modified based on the flow of the interview. During the interviews, I adopted a process of reflecting and probing; I often asked for additional details to elicit a more insightful account of how the participant felt about the assessment of HRQoL. Information was checked and clarified as necessary; thus, validity was confirmed.

Once all areas for discussion had been covered, I gave the participant the opportunity to raise any additional points that they wished to discuss. At the end of an interview participants were thanked for taking part and reassurance was again given regarding confidentiality of the data. The interview was then brought to a close.

e. Reflection on the Interview Process

During the early interviews, I struggled not to ask leading questions as I was mindful of the importance of not leading an interview and thereby shutting down the possibility of a participant providing valuable information. Aware that I also had a tendency to rush the participants in the early interviews, struggled to get some participants to talk, and did not tolerate silence well, I sought advice from my supervisors. As the interviews progressed, I became aware of my thoughts and if I felt I was about to lead the participant I paused and rephrased the question prior to asking it. I sought to ask additional questions of a non-leading nature, using phrases such as ‘tell me more’, ‘could you elaborate on that?’, ‘what do you mean?’, ‘could you clarify?’, thereby leading to a greater richness of data. Thus, I became more adept at probing, thereby enabling participants to talk about their experiences, in relation to the questions of the interview schedule. Throughout the interview process it I recognised that as the interviewer my perspective is only one way of looking at the world.

4.6.4.6 Qualitative Data Analysis

For this study the qualitative data was analysed using thematic analysis as described in section 4.6.3. The codes arose from interaction with the data, allowing the experiences of the participants which were captured during interview to be reported. The data were, therefore, coded without trying to fit them into pre-determined categories or a priori assumptions. Consequently, the form of analysis adopted was data driven.

The analysis of the data was guided by four principles following Denscombe (2014). The analysis of the data and conclusions drawn from the research were rooted in the data. Linking into this, my interpretation and explanation of the data developed through careful reading of the data. I had no preconceptions about the data as no literature was found describing the benefits of using HRQoL measures from a patient perspective. However, as a clinician-researcher, it is likely that my social background, values, identity and beliefs had a significant influence on the nature of the data collected and the interpretation of that data. Finally, an iterative process was required, the data being analysed and subsequently interpreted (Polit and Beck, 2004).

Data analysis involved moving between collection of data, coding and analysis, with each part of the process informing the others. Data collection and data analysis occurred together in this explanatory sequential design. Informal data analysis and interpretation began at completion of the first interview, as I considered the content of the interview and reflected upon potential themes. Formal analysis began after four interviews had taken place. When analysing the data, patterns were sought, and consistency of responses considered.

There are generally considered to be five stages associated with qualitative data analysis:

a. Preparation of the Data for Analysis

The interviews were recorded using a digital dictation machine and backed up electronically prior to transcription. They were subsequently transcribed verbatim by an outside source. I listened to the interviews and checked the transcripts for accuracy prior to data analysis. During and following transcription, it was necessary to ensure that the transcript remained loyal to the process and reflected the discussion that had taken place and that anonymity was maintained, a process described by Charmaz (2002). Accuracy of transcription was essential for confirmability of the research. The layout of the transcripts allowed space for notes and a margin at the side of the page for coding and classifying the data.

b. Familiarity with the Data

Familiarity of the data was obtained by reading and re-reading the interview transcripts whilst listening to the recordings on several occasions, thereby developing an

understanding of the data and thus providing a platform from which to develop codes and categories in the next stage of the analysis.

c. Interpreting the Data

The coding framework was developed in conjunction with my supervisors who have extensive experience of qualitative analysis; key themes and sub-themes were discussed, and agreement reached. Firstly, I scrutinised the transcripts for 'key' themes using thematic analysis; these were reviewed and examined for thematic elements and topics, the codes determined from the reading of the transcripts. Initial descriptive codes were generated by identifying key words and phrases across the entire data set. These were clustered into groups to identify the emerging themes. The data was then grouped into thematic categories in order to identify key themes. The list of categories continued to change and expand as issues emerged as important or their relevance was questioned. Very similar categories were merged, and redundant categories removed. Themes and sub-themes were identified with representative quotes. The transcripts were then re-scrutinised and phrases recoded as necessary. Patterns within and between themes were identified. The qualitative computer package NVivo 10 (QSR Int. Ltd.) was used to aid analysis. Nodes were created without consideration of structure. The nodes were then sorted into groups using the modeller function of NVivo 10 and arranged into a tree-structured system.

d. Verifying the Data

Qualitative researchers should strive to achieve reliable and valid results (Cavanagh, 1997), demonstrating that their findings are the result of a rigorously conducted process (Morse, 1999). However, in qualitative research it is often difficult to demonstrate validity and reliability of the findings. Therefore, four criteria (credibility, transferability, dependability and confirmability) for assessing the quality of qualitative research were used as suggested by Lincoln and Guba (1985).

The establishment of credibility of findings entails ensuring that research is carried out according to the canons of good practice. Credibility may be achieved by submitting research findings to those who were studied for confirmation that the researcher has correctly understood the arising data-respondent validation (Bryman, 2008) i.e. by giving participants a copy of their interview transcript. However, as most of the participants had known me for a long time, my supervisors and I decided that

there could be a reluctance on their part to be honest and critical, as suggested by Bloor (1997). Instead, information was clarified and checked during the interview process. Lincoln and Guba (1985) also recommend triangulation which involves using more than one method or source of data. In the case of this research, observations from the quantitative phase were checked with the interview data to clarify and further understand these observations; e.g. when there was a discrepancy between the findings of the MSIS-29v2 impact scores and a change in HRQoL as perceived by the participant, this was explored during the interview.

By providing information about the sample of participants and also a 'thick description' (Geertz, 1973), i.e. a rich account of the interview data, transferability was addressed. Lincoln and Guba (1985) argue that a thick description provides others with a 'database' for making judgements about the possible transferability of findings to their workplace.

Dependability may be addressed by demonstrating that complete records are kept of all phases of the research process (Lincoln and Guba, 1985). Detailed records were made of research participants, interview transcripts, and data analysis decisions.

Objectivity or confirmability concerns the extent to which qualitative research produces findings that are free from the influence of the researcher who conducted the enquiry. As the data produced from this research was interpreted by myself there was inevitably consequences for objectivity. I was very aware of the need to keep an open mind and be willing to consider alternative and competing explanations for the data. Robson (2011) suggests that both the personal commitment and reflexivity of the researcher is valued in qualitative research. This research has been influenced by my personal experience of looking after people with MS. The accuracy of the recording the interviews and transcription are also important considerations when considering confirmability, a process to which I strictly adhered.

e. Representing the Data

The final stage of data analysis involves producing an explanatory account encompassing the data obtained. This is presented in chapter 6.

4.7 SUMMARY

The aim of this chapter was to present and discuss the methodology used in the current doctorate research. The chapter began with a description of the research paradigm which guided the methodological approach selected for this study. Following the discussion about the reasons for choosing a pragmatic paradigm and mixed methods approach, the ethical issues taken into consideration when designing the research are presented.

A detailed description of the study designs and methods used for both phases was subsequently presented demonstrating the rationale behind the choices made concerning sampling, data collection and analysis. The results of phase 1 are presented in chapter 5. The findings of phase 2 which are grounded in the data and gleaned from both patient and healthcare professionals' perspectives are described within chapter 6.

Chapter 5

Results and Discussion of Phase 1

5.1 INTRODUCTION

The aim of phase 1 was to address the research questions:

- Is assessment of HRQoL in patients with MS feasible in daily clinical practice?
- Can the results of HRQoL assessment be used to inform therapeutic interventions?
- Can a HRQoL measure detect change in HRQoL after the implementation of therapeutic interventions?

Within this chapter the results of phase 1 are presented. The characteristics of the sample are examined, and the representativeness of the population considered. Uptake of interventions and data quality is examined. Subsequently the results of the MSIS-29v2 data analysis is presented. Patient reported issues when completing the MSIS-29v2 are also considered. The qualitative comments of both patient and staff participants are related to the results throughout this chapter. The results are discussed briefly within each section when the findings are related to the literature. Some of the results are explored further in Chapter 6 when the results of the interviews are given; they discussed more fully in Chapter 7 when the findings of phases 1 and 2 are drawn together. Methodological limitations relating to this phase are discussed.

5.2 RESPONSE TO THE INVITATION TO PARTICIPATE

A total of 592 patients were invited to take part in the research. Of these 162 were male and 430 were female (1:2.65 m:f). Three hundred and forty-one completed consent forms were returned by 14/11/14, with an overall response rate of 57%, indicating a favourable attitude to the research. The study of Cartwright (1987) reported a response rate of 50% after the initial mailing. The high response rate could be considered an indicator of the amount of interest shown in the subject under study.

I did not investigate why patients chose not to take part. As this research took part within the constraints of a normal outpatient appointment it is unlikely that time constraints would have been cited by potential participants. It is possible that those with sight problems, cognitive issues, or severe fatigue might have felt less inclined to participate. The staff involved in the research are known to all the participants which may have influenced people's choice as to whether they wished to participate.

5.3 SAMPLE SIZE

As the research was conducted over time it was inevitable that there would be a loss of participants. Although 341 of the 592 invited to take part returned valid consent forms the actual number potentially participating in the research reduced further to 323 for the following reasons:

- One participant moved away during the research period and was not reviewed before she moved.
- Eleven participants were not reviewed during the study period; they either did not attend appointments without reason, were ill and so were not able to attend their appointments within the research period or, had deteriorated such that they were no longer able to attend hospital-based outpatient appointments.
- Two participants died never having been reviewed as part of the study.
- One participant withdrew their consent during the first appointment as they found MSIS-29v2 too onerous.
- One participant declined to take part as they were reviewed close to the end of the research period and could not see the point of participating.
- One participant was excluded from the study by the consultant at an outpatient appointment due to severe cognitive impairment; he considered that the patient did not have the ability to understand or provide true answers to the questions despite having given consent. The mother had initialed the boxes on the consent form as the patient not capable of this, although the patient had made a mark which was interpreted as giving consent.
- Another participant was excluded by a nurse because of poor cognition; they demonstrated a lack of understanding of the questions precluding reliable completion of the questionnaire, could not complete the form themselves and attended the appointment alone.
- One participant was reviewed once but died before her next scheduled review within the research period.
- Another decided not to continue with the research at her second appointment as she couldn't see the benefit of it to her.

Figure 9 provides a flowchart of the participants included in phase 1.

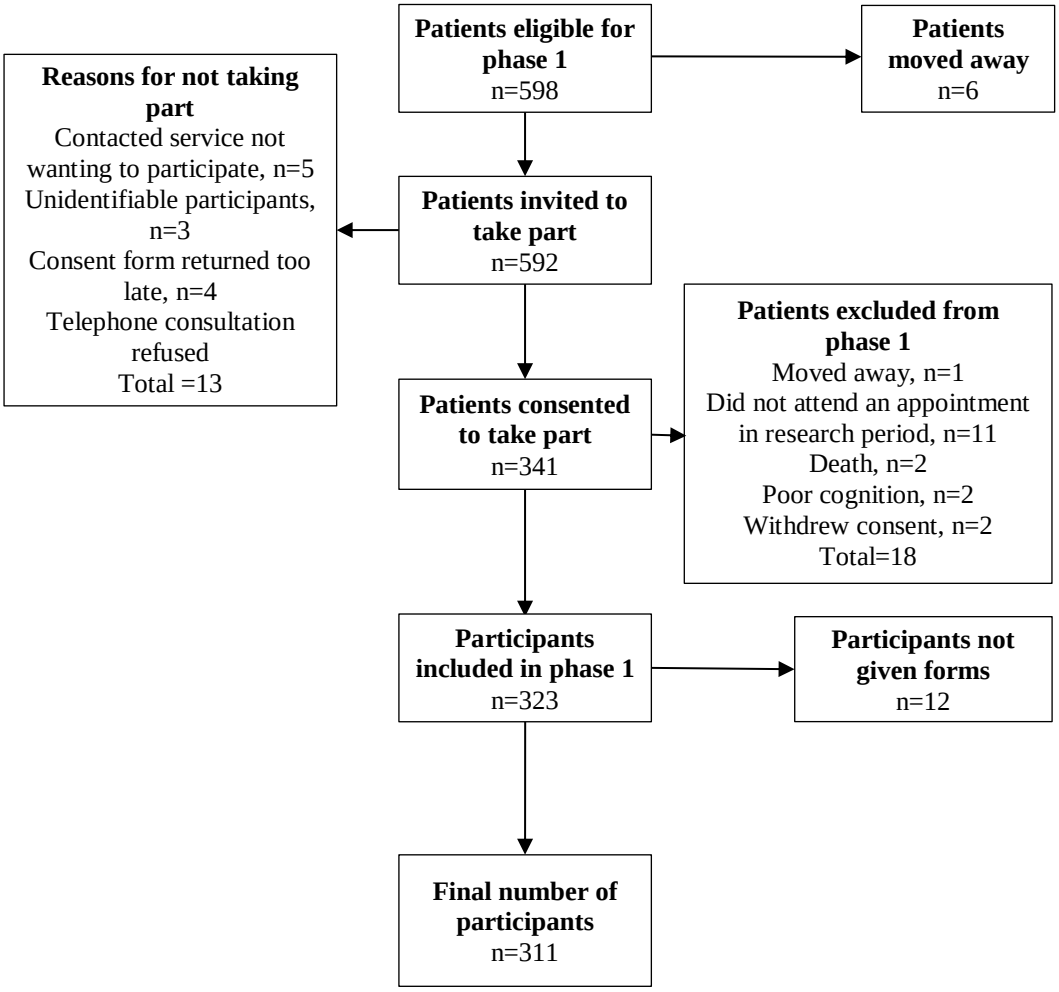

Figure 9 Patient recruitment and participation flowchart

Three hundred and twenty-three participants attended between one and five appointments between 24th November 2014 and 22 November 2015. Nine potential participants who only had one scheduled appointment within the study period were excluded as they were not given forms at their consultation. An additional two potential participants were excluded as although they attended two appointments forms were not given at either of their reviews. A further potential participant was excluded as despite attending four appointments no forms were given, due to an administrative error. Thus 12 patients were excluded from the research because of human error; the nurse running the clinic omitted to give the MIS-29v2 to the participants, time pressures due to the clinic running behind time or being overbooked contributing to the omission.

The final sample size comprised 311 participants at appointment one (T1). Many of these participants attended two, three, four or even five appointments within the research period.

5.4 PARTICIPANT CHARACTERISTICS

Data is presented for the sample of 311 participants. Participant characteristics are presented in Table 4. The sample comprised 90 (29%) males and 221 (71%) females, ratio 1:2.46, with a mean (±SD, range) age of 55.91 (±10.816, 28-82 years). The mean age at diagnosis of MS was 42.12 (±11.42, 17-69 years). The median time since diagnosis was 12 years (IQR 6-20.25). Clinically, participants typically had a diagnosis of RRMS (n=163, 52.3%) or SPMS (n=120, 38.7%). Of the remaining participants, 16 (5.2%) had PPMS, and 12 (3.9%) progressive MS.

One hundred and ninety-eight (63.7%) participants were married, 30 (9.7) separated or divorced, 40 (12.9%) had a partner, 33 (10.6%) were single, and 9 (2.9%) were widowed.

Of the 311 participants, 63 (20.3 %) were in full-time employment and 46 (14.8%) in part-time employment. An additional six (1.6%) stated that they were self-employed. Seventy-four participants (23.8 %) had retired due to ill-health. Another 81 participants (26 %) were retired (reasons not known); of these 18 were aged 64 or less at the beginning of the research and of these seven were aged 59 or less. Twenty-eight participants (9%) stated that they were a housewife/househusband. Eight (2.6%) unemployed due to MS or ill health. Six participants also stated that as well as being retired they were a housewife. One indicated that she was part-time employed and a housewife.

	Patients n=311
Sex (female)	211 (71%)
Age at time of research (years): mean ± SD (range)	55.91 ± 10.82 (28-82)
Age at diagnosis (years): mean ± SD (range)	42.12 ± 11.42 (17-69)
Time since diagnosis (years): median (interquartile range, IQR)	12 (IQR 6-20.25)
Marital status	
Married	198 (63.7%)
Not stated	1 (0.3%)
Partner	40 (12.9%)
Separated or Divorced	30 (9.6%)
Single	33 (10.6%)
Widowed	9 (2.9%)
Employment status	
Full-time employment	63 (20.3%)
Full-time mother	1 (0.3%)
Housewife/Househusband	28 (9.0%)
Not stated	3 (1.0%)
Part-time employment	46 (14.8%)
Retired due to ill health	74 (23.8%)
Retired	81 (26.0%)
Self-employed	6 (1.9%)
Student	1 (0.3%)
Unemployed due to MS/ill health	8 (2.6%)
Type of MS	
Primary progressive	16 (5.2%)
Progressive MS	12 (3.9%)
Relapsing-remitting MS	163 (52.3%)
Secondary progressive MS	120 (38.7%)

Table 4 Sociodemographic and clinical characteristics of the study population

The percentage of married patients is comparable to the study of Hobart, et al. (2005), as shown in Table 5 below. However, the figure of 26.4% participants unemployed or

retired due to MS is rather lower than the figure of 65.8% quoted by Morales-Gonzáles, et al. (2004). Other statistics are considered in the following sections.

5.4.1 Gender

The population of 592 patients invited to take part showed a division of male to female 1:2.65. The study sample of 311 demonstrated a ratio of male to female 1:2.46. These two ratios closely echo the study of Mackenzie, et al. (2014) which estimated how many people in the UK have MS and found the male to female ratio to be 1:2.4. My figures also reflect those of the MS Trust's 'Generating Evidence in MS Services' (GEMSS) programme (Mynors, Suppiah and Bowen, 2015) where the ratio of male:female was 1:2.57. The GEMSS programme supported fifteen MS specialist teams which represented UK services and had a combined caseload of over 15,000 people with MS to evaluate their services over 2014-15. The sample characteristics for this research are also similar to those of the study sample used by Hobart and Cano (2009) (Table 5) when the psychometric properties of the MSIS-29 were re-evaluated following the lessons of Rasch analysis. Thus, it may be concluded that the sample of patients for this research was representative of the general UK population of people with MS when considering gender. The figures are also comparable with the wider world population echoing figures of Compston and Coles (2002), Confavreux and Compston (2005), Orton, et al. (2006), and Wallin, et al. (2012) who present figures of 1:2.3-3.5 male:female.

	This research	**Hobart and Cano. (2009)**
Sex (% female)	71%	68.2%
Age [mean (SD); range]	55.91 (10.82); 28-82	50.5 (12.2); 18-87
Duration of MS [mean (SD)] since diagnosis	14.2 (11.06)	11.3 (7.5)
Married	63.7%	65.8%

Table 5 Comparison of research study figures

5.4.2 Age of Participants at the Start of the Research

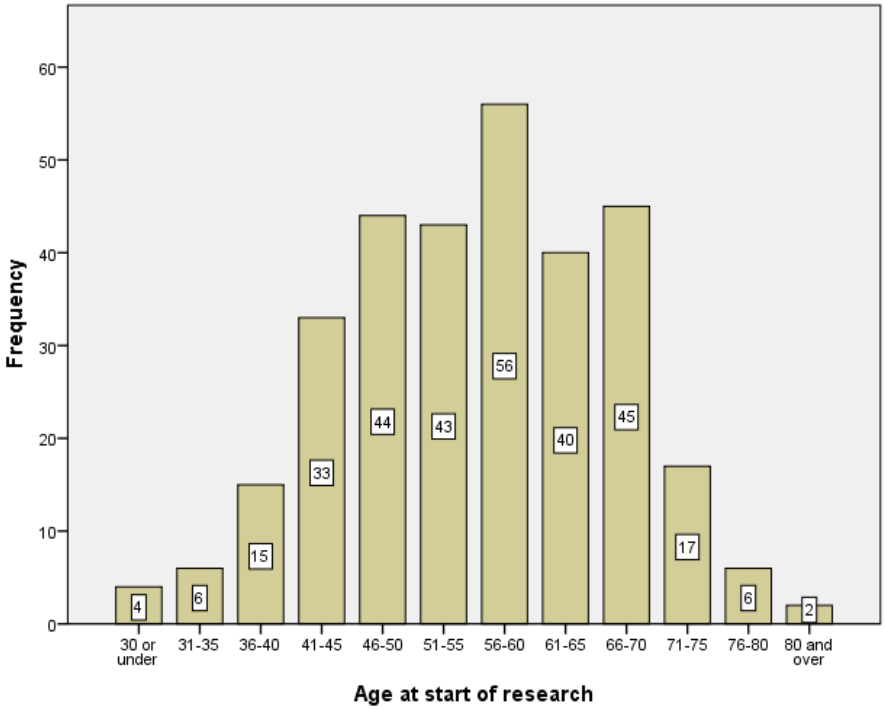

Figure 10 Age of participants at the start of the research

The distribution of ages in 5-year groups at the beginning of the research period is shown in Figure 10. The mean (± SD, range) age of the participants at the beginning of the research (December 2014) was 55.91 (± 10.816, 28-82 years). These figures are comparable to the mean age of 54 years for patients in the MS Trust GEMSS project (Mynors, Suppiah and Bowen, 2015). Whilst MS is a disease generally diagnosed in young adults, a growing proportion of any caseload is older people (Mackenzie, at al., 2014). The percentage of patients aged over 65 in this project was 22.5%. The GEMSS project (Mynors, Suppiah and Bowen, 2015) which also included patients who were unable to access hospital due to their level of disability showed a proportion of 20%. As home visits are not offered at the place of this research it is possible that more patients with a higher level of disability and who are generally older accessed services at the hospitals of this research. Although the figures are not directly comparable, both demonstrate a high proportion of older patients with MS. This suggests that I can have confidence on the representativeness of my data.

Figure 11 demonstrates the most common age for women at the start of the research to be 56-60. A peak prevalence rate for women at 57 and for men at 66 was demonstrated in this research. Mackenzie, et al. (2014) demonstrated peak prevalence

rates occurring at the ages of 56 years for women and 59 years for men, this being demonstrated graphically when age in 2010 was plotted against prevalence per 100,000 patients. The population of patients for this research closely mimics these and can thus be considered representative of a larger population.

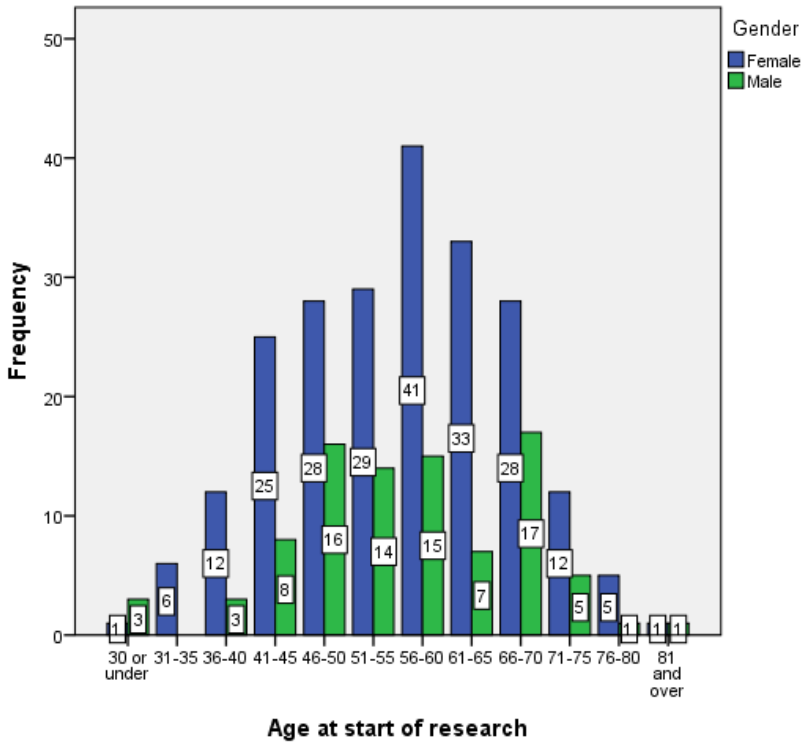

Figure 11 Age at the start of the research by gender

5.4.3 Age at Diagnosis

The age at diagnosis with MS for each participant was determined from the medical notes as not all participants could remember their date of diagnosis. The age distribution of the research participants at diagnosis is shown in Figure 12. The mean (± SD, range) age at diagnosis of MS as per the case notes was 42.12 (± 11.42, range, 17-69 years).

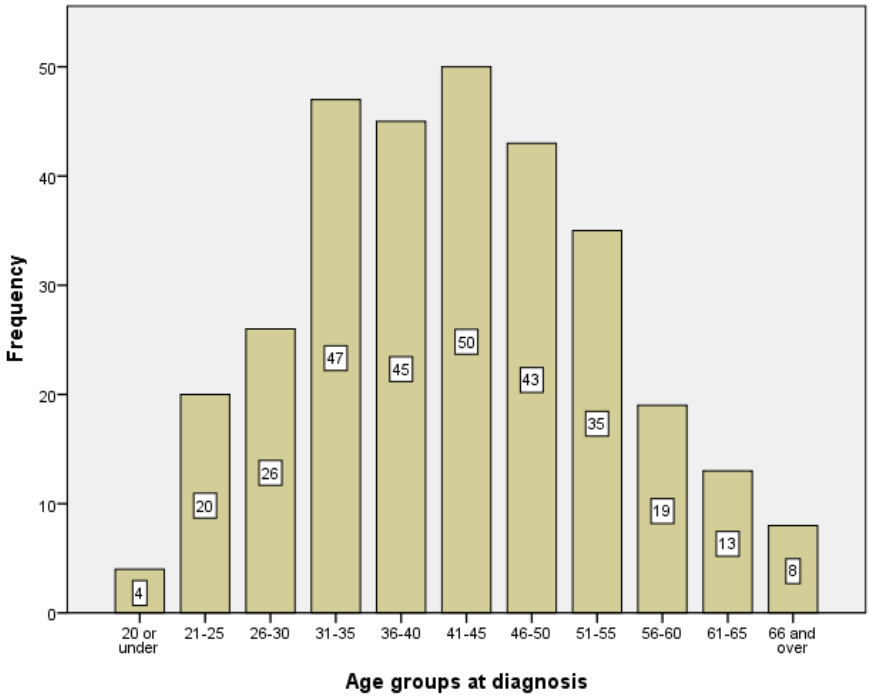

Figure 12 Age at diagnosis

Figure 13 demonstrates that the peak age of diagnosis for women occurred between age 40-45 and for men between 41-45 reflecting the work of Mackenzie, et al. (2014) who showed the peak incidence of MS occurred at the age of 40 in women and 45 in men.

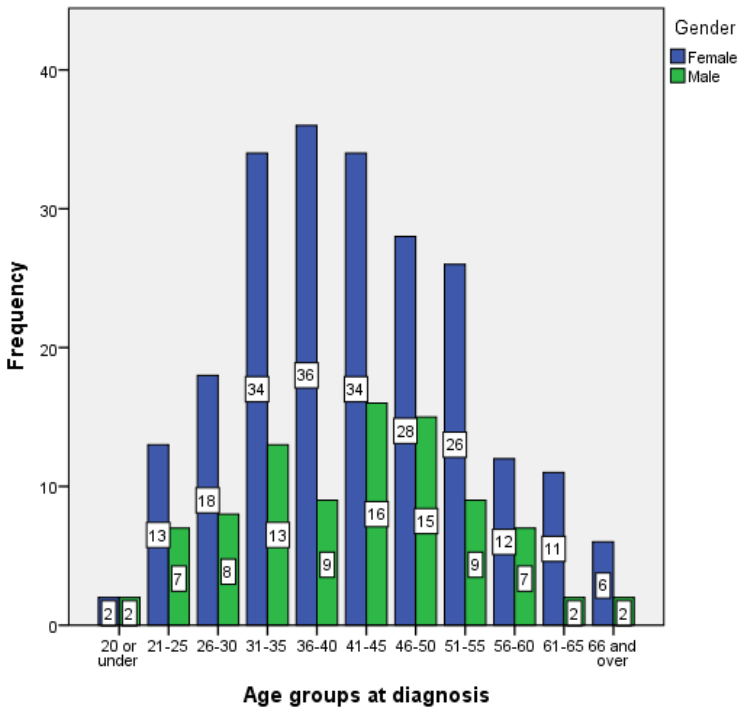

Figure 13 Age at diagnosis by gender

5.4.4 Time since Diagnosis

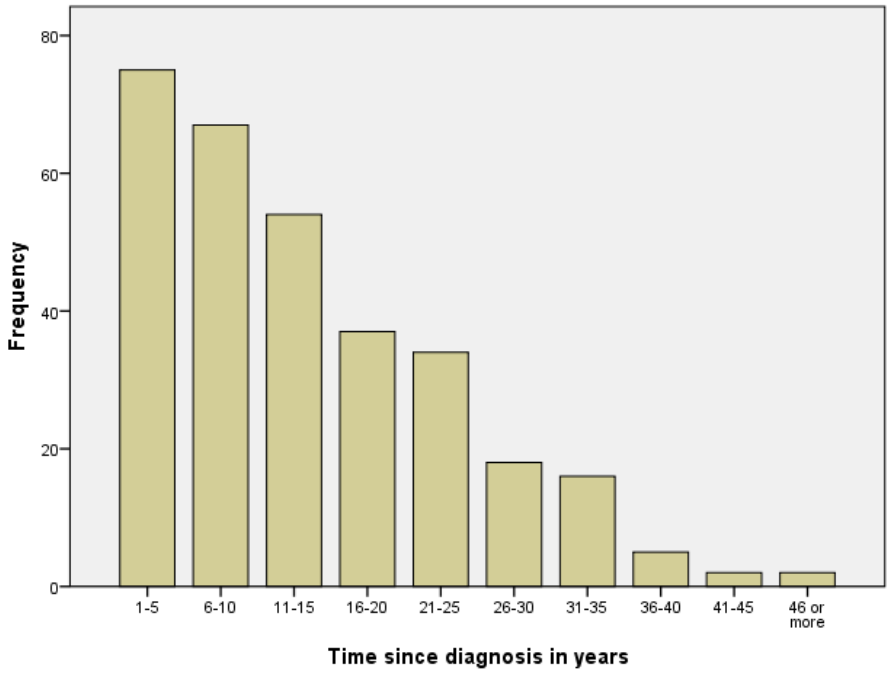

Figure 14 Time since diagnosis

The median time since diagnosis of MS as per the case notes was 12 (IQR 6-20.25), (range, 1-50 years). The duration of MS disease was 1 year or less in 13 participants (4%), 2-5 years in 62 participants (20%), 6-10 years in 67 participants (22%), 11-15 years in 55 participants (18%) and 16 years or longer in 114 participants (37%).

5.4.5 Type of Multiple Sclerosis

When analysing the data it became evident that not all participants were aware of their type of MS. The definitive diagnosis for each participant at the time of the research was determined from the medical notes.

Figure 15 shows the composition of the 311 patients in the sample by type of MS. At the start of the research 163 participants (52.4%) had RRMS and 120 participants (38.6%) secondary progressive MS, this resonating closely with the GEMSS combined caseload of 51% for RRMS and 35% for secondary progressive MS. Also, the work of Gray, McDonnell and Hawkins (2009) whose study of 248 patients included 58% RRMS, 34.7% SPMS and 7.3% PPMS. My figure of 16 participants (5.14%) with PPMS is somewhat lower than the GEMSS figure of 11%. A diagnosis of progressive MS was recorded in the case notes for 12 participants (3.86%) in this

research, rather than specifically PPMS or SPMS groups. These twelve cases, however, amount to less than 0.5% of the total and thus would have little impact on the overall figures. This figure may reflect the current caseload at my place of work.

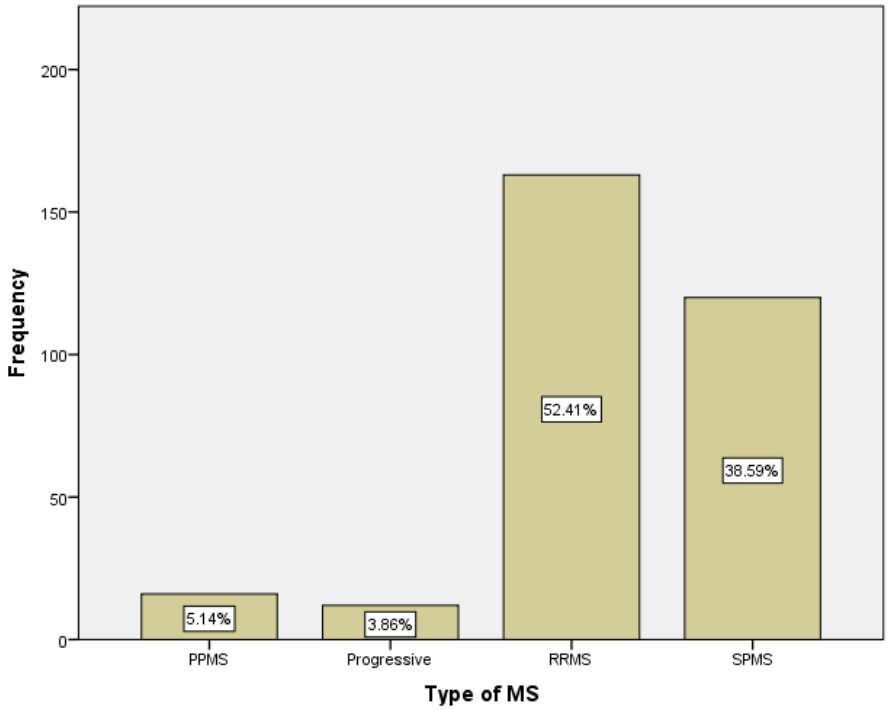

Figure 15 MS types in the research sample

The number of females and males with each type of MS is shown in Figure 16. Noseworthy, et al. (2000) reported that PPMS has a similar incidence amongst men and women however my sample did not reflect this as demonstrated in Figure 16. This may be due to the nature of current caseload at my place of work or the makeup of the research sample. For example, only certain patients might have felt inclined to take part in this research project, reflecting the work of de Vaus (2001).

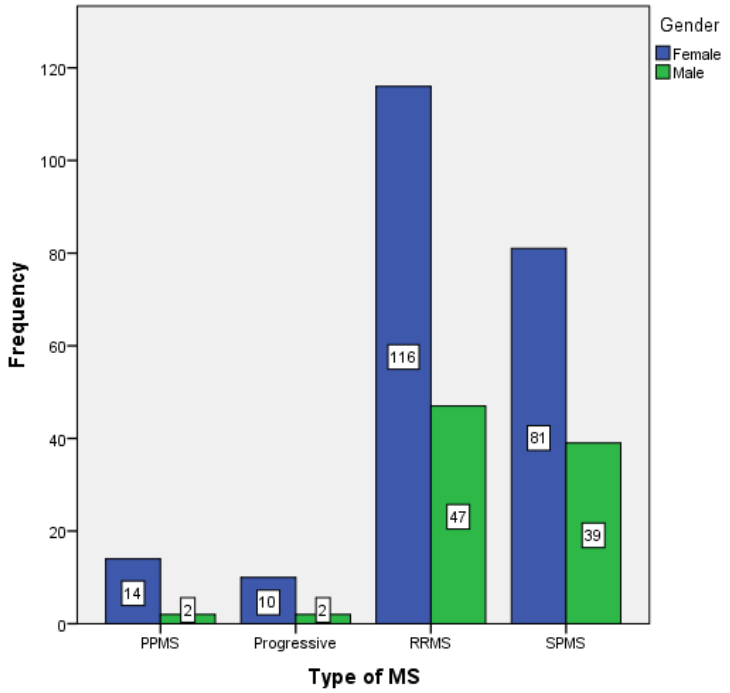

Figure 16 Type of MS by gender

When analysing the figures for type of MS and age at time of research my figures (Figure 17) show that the proportion of people with RRMS declines with age and the number with progressive forms increases. This is unsurprising as after a period of time patients with RRMS develop SPMS as discussed in section 2.7.2.

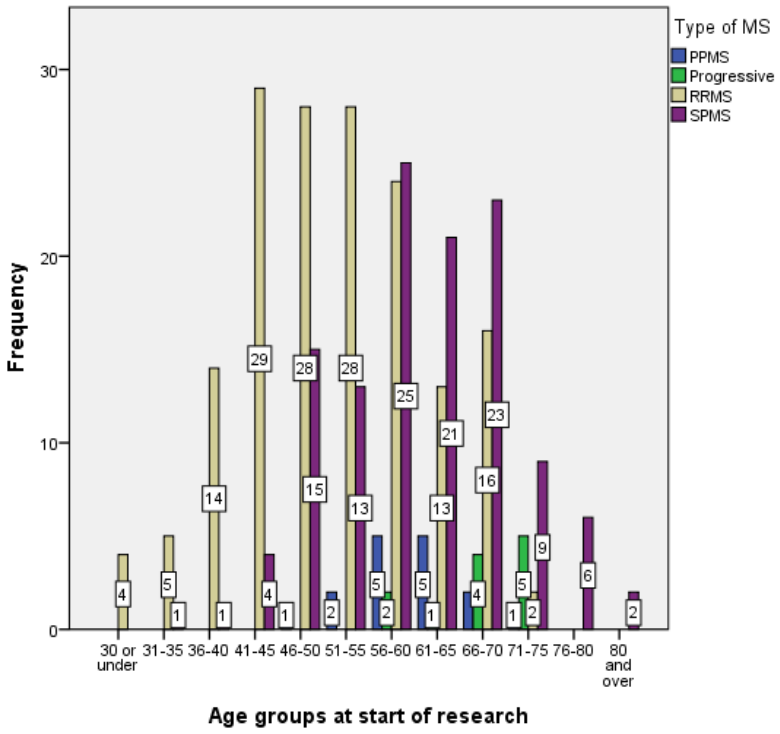

Figure 17 Type of MS by age

The reasons why some participants were unclear about what type of MS they had was not explored. However, I would suggest that it is possible that some were not aware that they had secondary progressive MS as they had never been told or had never asked if they had transitioned to this stage. The study of Davies, et al. (2016) reveals that healthcare professionals find it challenging to determine when a person with MS has entered the transition phase to SPMS or has definite SPMS, this resulting in diagnostic uncertainty (Sand, et al., 2014). Despite recognising the importance of discussing SPMS in a timely manner thereby allowing patients to prepare for the future, clinicians found initiating the conversation challenging. Also, professionals reported that patients rarely raised the subject of transition themselves, so professionals struggled to know when they should tackle the subject (Davies, et al., 2016). From experience, patients can find being given a diagnosis of SPMS devastating, particularly as currently there is no treatment. This reflects the work of Sand, et al. (2014) who describe how due to the subtle nature of early progressive disease, caution is often used when applying a progressive label, in light of the lack of evidence-based treatments. My view is further reflected in the work of Kessels (2003) who suggests that the information given by a doctor often has profound implications for a patient with the stress caused by the diagnosis potentially being enhanced by the information about the prognosis and treatment.

5.4.6 Summary

I would consider the sample of patients taking part in this research to be representative of the wider MS population when figures from other research projects and the literature are considered. The population is comparable when characteristics such as gender, age at the start of the research, age at diagnosis, time since diagnosis and type of MS are considered. Whilst external validity has been demonstrated I would suggest that as the sample of patients for this study was drawn from the local population of patients with MS who are able to attend outpatient appointments the results should only be generalised to this type of group.

5.5 INTERVENTIONS

All interventions taken up or declined were recorded on the intervention recording sheet, Appendix I. The frequency of each intervention offered is shown in Appendix

J and examples of why various interventions were offered following discussion of the MSIS-29v2 are presented in Appendix K.

A total of 812 interventions were taken up and 25 declined. Reassurance was the intervention most frequently given; many participants sought reassurance that they are doing well and managing their MS in an appropriate manner. This reflects the findings of Donaldson (2007) who suggests that simply listening to patients' concerns, even when no remedies are available, may result in improved HRQoL.

The second most frequent intervention offered was medication for both disease modification and symptom control. During the research period many more patients changed the type of disease modifying therapy they were taking than would do so normally within a twelve-month period. In January 2015 an oral medication, Tecfidera, became available for the first time for people with relapsing remitting MS. Some participants had been injecting themselves for up to fifteen years at this point and so welcomed the option to change to an oral medication. This accounted for thirty-three medication changes and also many of the MRI requests during the research period as an MRI is required within three months of commencing Tecfidera. Medications for symptom control were commenced, stopped, or doses altered. Following discussion about side effect profiles some medications were declined. For example, some participants declined neuropathic pain relief as this may cause weight gain.

A number of MRIs were requested during the research period. Regular MRI scans are part of the monitoring requirements for participants receiving Tysabri. Also, MRI scans were ordered if a participant's condition had deteriorated, potentially requiring an escalation in therapy.

Participants were referred to the continence service for both bladder and bowel problems. Bladder problems included: accidents (incontinence), frequency, hesitancy, leaking, nocturia, urgency, not fully emptying bladder (residual urine), and inability to initiate passing urine. Many participants described more than one issue. The predominant reason for a referral for bowel issues was constipation.

The most commonly declined intervention was a referral or re-referral to the continence service, with a total of eight potential referrals being refused. Other interventions declined included: counselling, dietician, physiotherapy, disease

modifying therapy, medication for stiffness/spasms and, referral to the wheelchair services.

Although it was evident that the MSIS-29v2 informed the interventions offered I am aware that other factors such as the nature of the consultation may also have had an influence. It is likely that some, if not all, of these interventions would have been offered during a consultation without such a questionnaire.

5.6 DATA QUALITY

Two types of missing data, item non-response and unit non-response, are a particular problem in longitudinal panel analysis. Both are discussed in the following two sections and in section 5.12.8.

5.6.1 Unit Non-response

Unit non-response is a problem that is peculiar to panel designs. Panel attrition, a form of unit non-response, arises when participants drop out of a study; this threatens internal and external validity. In this study attrition was low, with only three participants withdrawing consent and three dying. Unit-non-response also occurs when people are missed from some waves of data collection but are not permanently lost to the panel, for example when questionnaires were not given out.

A major feasibility issue for this research project was determining ways to ensure that participants received the MSIS-29v2 before their clinic appointment. The issue of identifying and then providing research participants with a questionnaire had to be overcome as not all patients attending clinics were research participants. Fortunately for the consultant-led multi-professional clinic and at the outlying Community Hospital nurse-led clinics this problem was easily resolved (section 4.5.2). However, it was problematic for nurse-led clinics at the main hospital as the nurse running the clinic had to identify participants in the waiting room prior to their appointment and provide them with their forms. For reasons already discussed (section 5.3) this did not always occur.

Only 583 of the 636 MSIS-29v2 forms which should have been distributed were given out (92%). The MSIS-29v2 was not given to all attending participants at 33 of the 141 clinics run during the research period. They were not given out at twenty nurse-led

clinics and thirteen consultant-led multi-professional clinics. The number of forms not distributed per clinic varied from one to four. Additionally, forms were not given when two appointments occurred in very quick succession; two participants required an urgent consultant review following a nurse-led appointment. Both participants were seen by the consultant within two weeks and thus it was deemed clinically inappropriate to give the questionnaire again so soon. The number of participants eligible for longitudinal analysis reduced when the MSIS-29v2 was not given to participants at the second or subsequent appointments.

5.6.2 Item Non-response

Item non-response occurs when individuals do not answer a particular question. Not all patients answered all questions resulting in missing data item. Table 6 shows the total number of participants attending appointments at T1, T2, T3, T4 and T5, and the percentage of participants who did not answer all questions at each appointment. Note that patients attending two appointments attended an appointment at T1 and T2; patients who attended three appointments attended an appointment at T1, T2 and T3, and so on.

No of appointments attended	**1**	**2**	**3**	**4**	**5**
No of participants attending	311	248	78	20	3
% Participants with missing item data	8	7.3	2.6	5	0

Table 6 Missing data

The nurse running the clinic checked if any missing data was deliberate. No participant stated that they had deliberately not answered a question, rather that they had missed it. One person who had missed more questions than most was interviewed in phase 2. They stated that they had just missed answering the questions rather than choosing to not answer them. This is described by Hand (2008) who suggests that participants may just miss answering a question for no particular reason or may omit to answer the question erroneously.

Three participants omitted to turn the MSIS-29v2 over and thus did not complete questions 13-29 on the back. One participant who did not turn the form over was

helped to complete the questions on the second side by the nurse in clinic but at question 20 (not answered) were too overwhelmed to continue. All questions were answered at subsequent appointments by these participants.

Five hundred and eighty-three questionnaires were given out and 105 (0.62%) questions were not answered giving a response of 99.38%. This reflects the findings of Fayers and Machin (2016) who suggest that for any one item there will always be a few (1-2%) patients with missing data. It is also comparable to the real-world data of Gray, McDonnell and Hawkins (2009) who described their data quality as excellent with 99.98% of questions completed.

Questions were most frequently missed at appointment one (T1) and in the psychological impact section (question 21-29), possibly because participants were unfamiliar with the form. Which questions were not answered at which appointments is tabulated in Appendix L. When participants omitted to answer questions, they missed between one and four per questionnaire. Hand (2008) describes how a missing data item can be informative. The work of Solari, Ferrari and Radice, (2003) demonstrated that Italian patients had routinely not answered questions about sexual function, and satisfaction with sexual function, an area not covered by the MSIS-29v2. When the data was analysed no question was missed particularly frequently indicating that the nature of the questions was acceptable to all participants, reflecting that patients were involved in the design of the MSIS-29 (Hobart, et al., 2001).

As described in section 4.5.4.13 each missing question score can be replaced with the person-specific question mean score. When this was done the number of questionnaires which could be analysed for longitudinal change increased. All questionnaires from appointments 2, 3 and 5 could potentially be analysed. Questionnaires from 18 out of 19 participants were examined for 4 appointment follow-ups.

The number of participants where longitudinal follow-up is potentially possible is shown in the Table 7, below. However not all participants who attended two or more appointments were given a full complement of forms or took up interventions and thus the numbers eligible for longitudinal analysis reduced further.

No of appoint-ments attended	No of participants attending appointment	Participants excluded	Number eligible for analysis
2	172	No of participants only given one form=15 No of participants given no forms=2 * One participant withdrew consent when attending for second appointment Therefore analysed as one appointment participant **	Therefore, number for comparison at follow up appointment T2=155
3	58	Nine participants only given forms twice One only given forms once	Number available for three form comparison (T3) =48
4	18	One participant completely missed for whole study *** Two participants only given 3 out of four forms One participant only given two out of four forms	Number available for four form comparison(T4) =14
5	3	One participant only given 4 out of 5 forms	Number available for five form comparison (T5) =2
	Total=323		

Table 7 Participant numbers for longitudinal analysis

* Forms were not given as the nurse running the clinic omitted to give the forms to these potential participants.

** Participant withdrew consent as they could not see the relevance of the research to them.

*** This participant was not given forms due to a transcription error by myself when compiling the list of participants from the returned consent forms.

5.6.3 Floor and Ceiling Effect

A floor effect which occurs when a participant scores minimum on a scale was noted on 22 occasions (3.4%) for the physical impact score and on 30 occasions (4.7%) for

the psychological impact score. These figures are similar to those of Costelloe, et al. (2007) who noted a floor effect in the physical impact score in 6% of patients with lower disability levels. Although EDSS scores were not recorded as part of this research those who scored floor effects were generally less affected by MS and have lower EDSS scores recorded in their notes. The results for this work are also comparable to those of Gray, McDonnell and Hawkins (2009) in whose research a floor effect was observed in 2.0% of cases for the physical impact score and 7.3% of participants for the psychological impact score.

A ceiling effect which occurs when a participant scores the maximum on a scale was noted on four occasions (0.6%) patients for the physical impact score and on eight occasions (1.3%) for the psychological impact score. These figures are somewhat lower than the ceiling effects noted by Gray, McDonnell and Hawkins (2009) in 3.6% of patients for the physical impact score and 2.4% of patients for the psychological impact score. They are considerably less than the recommended maximum of 15% stated by Gray, McDonnell and Hawkins (2009).

5.7 PARTICIPANT AND STAFF COMMENTS

Many comments were recorded by both participants and staff at the end of the MSIS-29v2. The other CNS MS and I found the participants comments particularly useful as they helped to clarify issues such as why a patient stated that they had deteriorated. Comments revealed that an increased impact of MS could be related to life events such as personal health issues which were unrelated to MS, or health issues of significant others; e.g. looking after a wife with dementia. Participants also described how issues related to work contributed to an increased impact of MS.

Staff comments clarified why, despite being offered intervention, some participants were not reporting an improvement in HRQoL. For example:

- Several interventions had been suggested and referrals accepted at previous appointment. At T2 some referrals were still pending, and the participant was not compliant with advice. At T2 the impact scores demonstrated a greater impact of MS
- The patient had had a fall and so had reduced confidence

- Had deteriorated due to pain related to a fracture. Was very limited at home so deteriorated psychologically between appointments
- Increased isolation as increased difficulty to use stairs: stays upstairs most of the time. Most 4's- all related to restriction of stairs
- Functional electrical stimulation device (FES) broken so mobility reduced[1]
- Not liking injecting
- Worse due to stress related to trying to retire due to ill health: significantly deteriorated
- Infected injection sites.

The comments of staff also indicated why participants had improved following interventions; for example, now attending the day hospital.

The reasons why some tests or interventions were requested were noted by staff in the comments section. For example, the patient was positive for the JC Virus and so needed an MRI scan; the patient was in relapse so required steroids. The comments also provided information about referrals/treatments not related to MS. For example, a referral to the pain clinic, brain tumour. It was also recorded, when known, if the MSIS-29v2 was completed without help from the participant. Some of the comments, both patient and staff are referred to in section 5.10 where they are analysed to help explain the impact scores in relation to the responses to the HTQ.

[1]Functional electrical stimulation (FES) is a treatment that applies small electrical charges to a muscle that has become paralysed or weakened, due to damage in the brain or spinal cord. The electrical charge stimulates the muscle to make its usual movement. In MS it is mostly used as a treatment for foot drop, where disruptions in the nerve pathways between the legs and brain mean the front of the foot cannot be lifted to the correct angle when walking.

5.8 LONGITUDINAL FOLLOW-UP

Longitudinal analysis was used to determine if, after the implementation of intervention/s, a change in the physical and/or psychological impact of MS was detected when using the MSIS-29v2. The time gaps between appointments were not even. Rather they reflected the time required to assess the effect of the interventions as described in section 4.5.4.12 or the stability of a participant's MS. Participants with more stable MS were reviewed less frequently. The frequency of attendance and therefore the time between completion of questionnaires varied from 3-12 months. Longitudinal analysis occurred between the time points of the appointments. The number of participants eligible for longitudinal analysis was affected by both unit and item non-response as discussed in sections 5.6.1 and 5.6.2.

5.9 DISTRIBUTION-BASED RESPONSIVENESS

The distribution of the differences of the physical impact scores and the psychological impact scores of the MSIS-29v2 were individually assessed using histograms. These showed the data to be approximately normally distributed thus meeting the criteria for parametric analysis. The paired-samples t-test was selected to analyse differences between the impact scores (physical and psychological, respectively) for early appointments when compared with later appointments under the null hypothesis of no treatment effect. $p<0.05$ was considered statistically significant.

Of the 155 participants who only attended two appointments and completed two forms only 121 took up any intervention. When the physical impact scores pre- and post-intervention for these participants were compared using the paired-samples t-test the samples were not found to be significantly different. This was also true for the psychological impact scores. Likewise, no statistically significant differences were found when the physical impact and psychological impact scores were compared within the groups of participants who had attended three, four or five appointments. These results are surprising in respect of the potential benefit that interventions can provide and the responses to the HTQ as reported in section 5.10.

As stated earlier in this work (section 4.5.4.2) for a t-test at the 5% significance test to have a power of 80% to detect any change the minimum number of evaluable volunteers is 253. One of the challenges for research in specific conditions is that

sample sizes can be small. In the year prior to commencing the research 598 patients had attended clinic appointments, so it seemed likely that there would be enough participants for statistical significance to be achieved. A good response rate was achieved (n=323), the sample still potentially being large enough. However, the number of patients who attended two, three or four appointments was lower than the statistical cut-off required. Thus, although a large sample was recruited for the quantitative phase of the project the final numbers of participants was not great enough to be able to demonstrate statistical significance. As no statistical differences were found, results could not be reported as effect sizes for participants who attended two, three or four appointments. I would suggest that the variety of interventions offered and differing times between reviews and response shift could also have contributed to this result.

Thus, I inferred that there was no discernible statistically significant benefit from interventions in this research as assessed by MSIS-29v2.

5.10 ANCHOR-BASED RESPONSIVENESS

There is little published in the literature as to what score changes represent a meaningful change in the HRQoL of a patient following assessment with the MSIS-29v2 or even if the changes reported by patients are clinically relevant. A positive change in the physical and/or psychological impact of MS is demonstrated by a decrease in one or both of the two sub-scores.

The data for those participants who had attended more than one appointment was examined for correlation between changes in physical and psychological impact scores and the participants responses to the health transition question (section 4.5.4.8). The HTQ was used as a reference measure for external responsiveness in this study. It represented a measure of self-perceived change in health. To enable statistical analysis responses were coded as follows: significantly improved=2, slightly improved=1, No change=0, slightly deteriorated=-1 and Significantly deteriorated=-2.

Anchor based responsiveness is determined using receiver operating characteristic (ROC) curves. Due to the small sample sizes in this research ROC curves were not plotted.

5.10.1 Participants who attended two appointments

Of the 155 participants who attended two appointments only 121 participants took up at least one intervention. Seventy-eight participants (65%) received reassurance as their only intervention. This possibly reflects the more stable nature of their MS as they only required two reviews in twelve months.

Figure 18 demonstrates that, following at least one intervention, 49 participants (42%), when answering the HTQ, described their HRQoL as remaining the same. Whilst 18 participants (15%) described a slight or significant improvement, 51 participants (43%) experienced a slight or significant deterioration.

When asked if their quality of life had improved, remained the same or deteriorated from T1 to T2, the answers from 41 of the participants correlated with changes in the physical and psychological impact scores. In these cases, the scores for both domains had either increased, decreased or one had remained the same and the other had increased or decreased; the response to the HTQ reflected these changes. For example, the impact scores reduced for one participant who was prescribed pregabalin for neuropathic pain, paresthesia, restless legs and difficulty sleeping; they commented that *'the tablets are great'*. They stated that they had *'significantly improved'*, demonstrating a very positive effect of this particular intervention. At T2, they only required reassurance. Another participant who was only offered reassurance at T1, had reduced impact scores and had 'slightly improved' according to the HTQ; they stated *'Better because I have moved to a bungalow! No stairs :)'*. One participant who had 'improved significantly' according to the HTQ and had lower impact scores wrote: *'Although my wife is still in hospital I am coping well. We are now financially secure. I have retired but have taken on a six-month part time contract'*. These two examples reveal that the actions of patients can have a big impact on their life and that they do not need to be initiated by the multi-disciplinary team to make a difference to HRQoL.

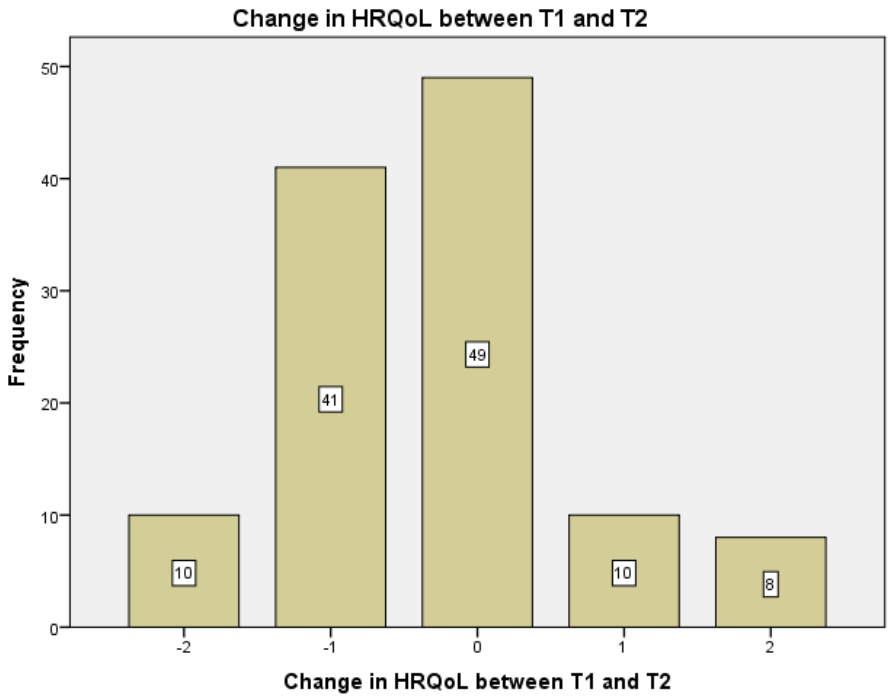

Figure 18 Change in HRQoL between two appointments

For two participants the impact scores remained the same from T1 to T2 and they reported no change in their HRQoL. For one participant at T2 the two impact scores indicated a deterioration and the HTQ response was 'slightly deteriorated'. This participant had been referred to the continence service at T1 for frequency, urgency and nocturia. On review at T2 they had described several bad days with spasms and neuropathic pain; they were offered and accepted an increase in the medication they were receiving. Thus, although the previous intervention may have improved their HRQoL, the effect of new symptoms had increased the impact of MS and reduced their overall HRQoL. I would suggest that for this patient the MSIS-29v2 did not detect a change in the impact of MS following an intervention as at their subsequent review they were experiencing new symptoms. Another participant whose impact scores had increased and who responded to the HTQ 'slightly worse' stated, *'Balance is worse so confidence in walking outside decreased'*. However, they told the clinic nurse that the physiotherapy referral from T1 was helping. Again, this is evidence that although interventions often do help, the variability of MS means that this may not always demonstrated when the MSIS-29v2 is completed at a subsequent appointment.

Thirteen participants' answers did not correlate with the direction in which the impact scores changed. The impact scores for 17 participants indicated a reduction in the

impact of MS but they stated there was no change in their HRQoL. Eighteen participants impact scores demonstrated an increased impact of MS, yet they answered no change to the transition question. For the remaining 28, one of the physical impact or psychological impact scores increased whilst the other decreased, and so it was not possible to determine if the participants answer to the quality of life question correlated with the change. Three participants did not answer the health transition question concerning a change in their QoL.

On analysis of the data a statistically significant relationship (Spearman's correlation coefficient, r= -0.28, p=0.002) was demonstrated between the change in physical impact scores from T1 to T2 and the change in the HTQ scores from T1 to T2.

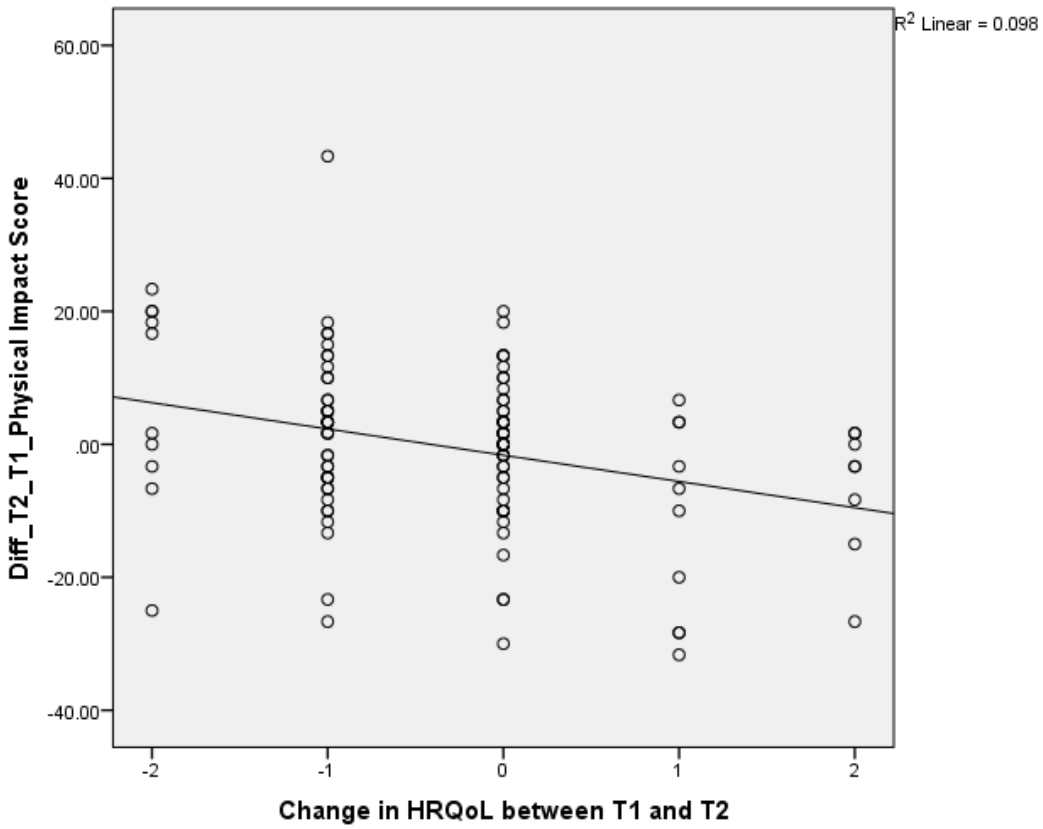

Figure 19 Scatterplot and line of best fit showing the relationship of the change in physical impact of MS and response to the HTQ

The scatterplot (Figure 19) demonstrates an approximately linear relationship with the expected negative gradient. Patients located in the upper left quadrant experienced an increased physical impact of their MS between T1 and T2 and described a deterioration in their HRQoL when responding to the HTQ. Conversely those patients

who experienced a reduction in the impact of their MS and responded to the HTQ indicating an improved HRQoL are located in the lower right quadrant.

The correlation coefficient of -0.28 is significant at the p=0.01 level and according to Cohen's rule of thumb for effect size (1988) indicates a medium effect size. Effect sizes should be used as rough guides. Figure 19 shows that R square (coefficient of determination) = 0.098, which indicates that only about 10% variation in *y* (Diff_T2-T1_Physic) can be explained by *x* (change in HRQoL between T1 and T2).

Figure 20 shows that a statistically significant relationship (Spearman's correlation coefficient r= -0.41, p=0.000) was also demonstrated between the change in psychological impact scores from T1 to T2 and the change in the HTQ scores from T1 to T2.

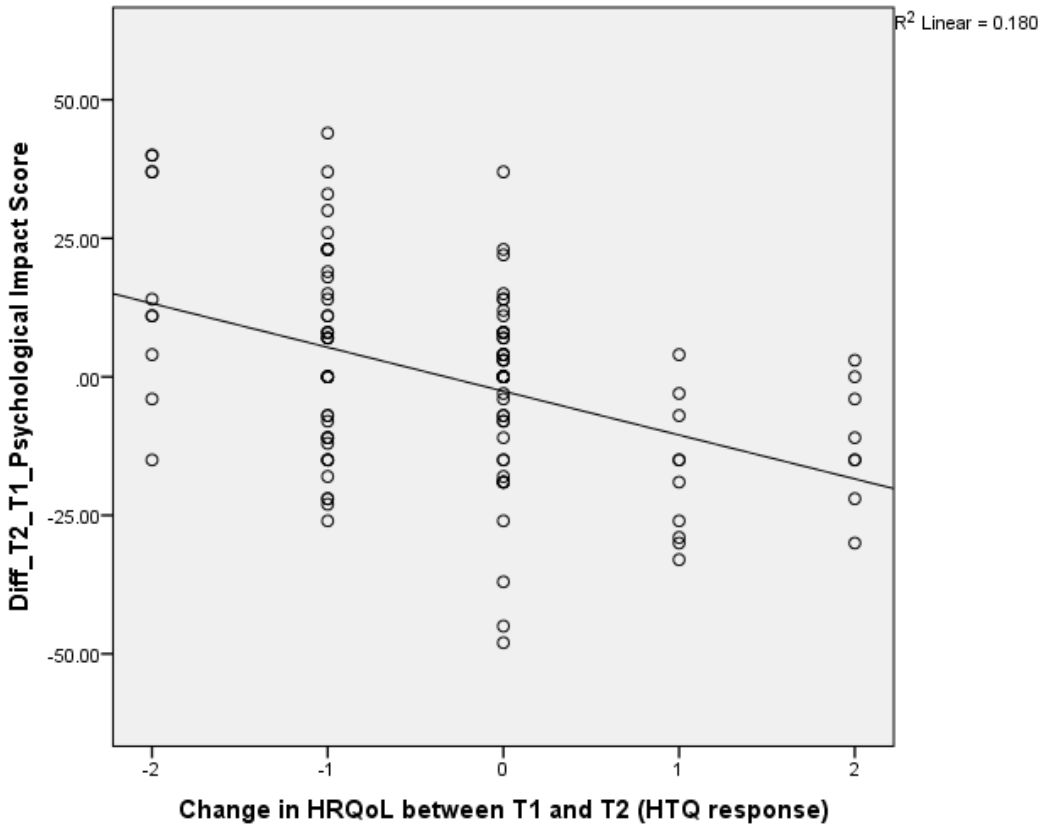

Figure 20 Scatterplot and line of best fit showing the relationship of the change in psychological impact of MS and response to the HTQ

The scatterplot (Figure 20) again demonstrates an approximately linear relationship with the expected negative gradient. Patients located in the upper left quadrant experienced an increased psychological impact of their MS between T1 and T2 and

described a deterioration in their HRQoL when responding to the HTQ. Conversely those patients who experienced a reduction in the impact of their MS and responded to the HTQ indicating an improved HRQoL are located in the lower right quadrant.

The correlation coefficient of -0.41 is significant at the 0.01 level and according to Cohen's rule of thumb for effect size (1988) indicates a medium effect size. Figure 20 shows that R square (coefficient of determination) = 0.180, which indicates that only about 18% variation in *y* (Diff_T2-T1_Psych) can be explained by *x* (change in HRQoL between T1 and T2).

Because of the small sample sizes scatterplots were only produced for those participants who attended just two appointments during the research period.

5.10.2 Participants who attended three appointments

Of the 58 participants who attended only three appointments, 48 took up interventions at T1; three participants did not answer the health transition question. Forty-four participants took up interventions at T2; all answered the HTQ.

Figure 21 demonstrates that between T1 and T2 and following at least one intervention 17 participants (38%) described their HRQoL as remaining the same whilst seven participants (16%) described a slight or significant improvement. Twenty-one participants (47%) experienced a slight or significant deterioration.

Between T2 and T3 17 participants (39%) described their HRQoL as remaining the same whilst 10 participants (23%) described a slight or significant improvement. Seventeen participants (39%) experienced a slight or significant deterioration (Figure 21).

An equal number of participants reported no change in HRQoL between appointments, i.e. T1 to T2 and T2 to T3, although these are not necessarily the same patients.

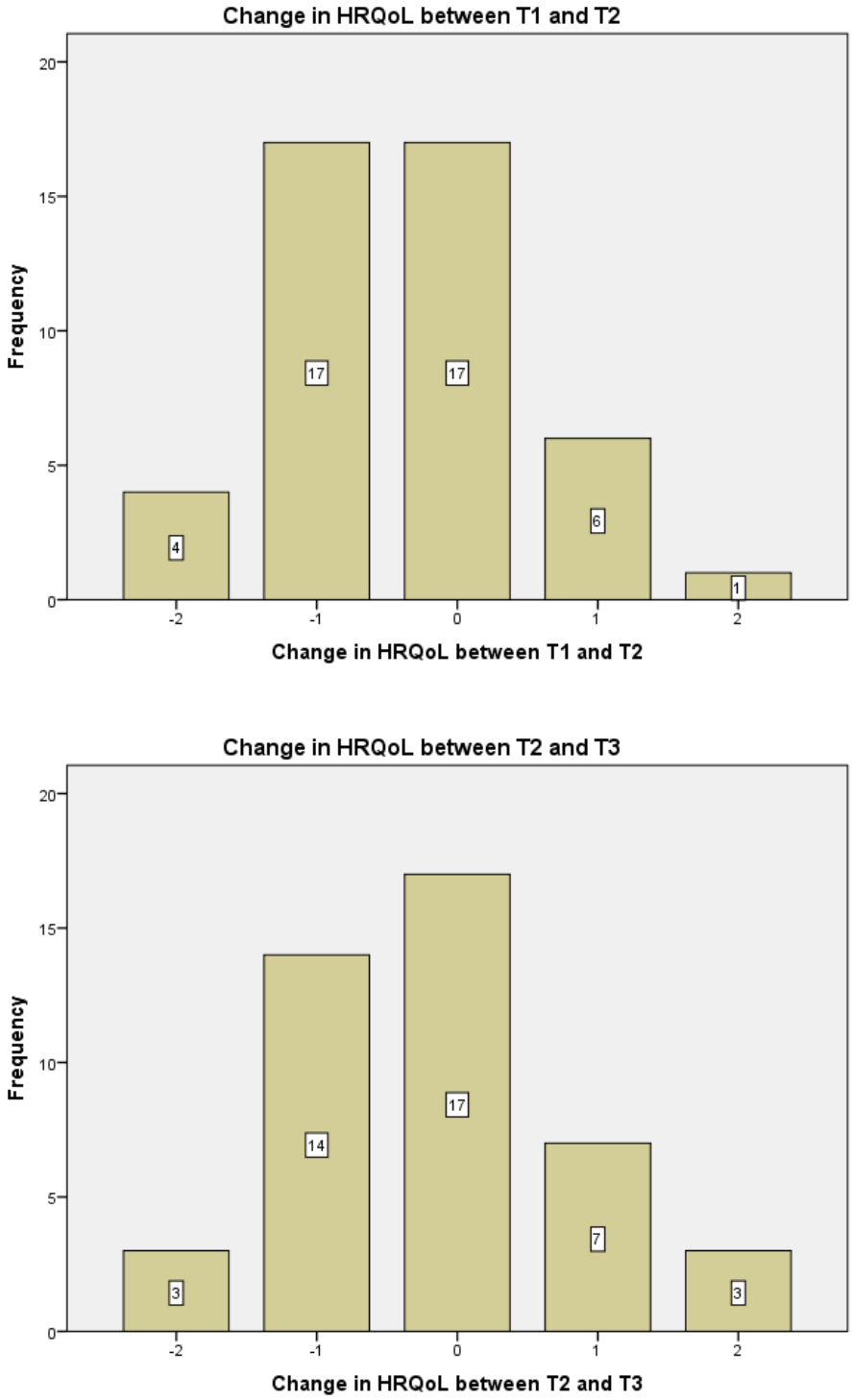

Figure 21 Changes in HRQoL for three appointments

5.10.2.1 T1 to T2

When asked if their quality of life had improved, remained the same or deteriorated from T1 to T2, the answers to the HTQ of 18 of the 45 participants eligible for data analysis correlated with the changes in the physical and psychological impact scores.

One participant for whom the impact scores had reduced, and who had stated that her HRQoL had 'slightly improved' attributed this to a referral to the continence service and pads being provided; in this case the MSIS-29v2 revealed a positive impact of an intervention which correlated with the patients view. This is also demonstrated by another participant whose impact scores had reduced and who had said they were 'significantly better'. They stated *'My quality of life continues to improve following a lifestyle change 18 months ago. Apart from a slight relapse (last week) which I think is due to going back to work I feel better than I have* in *years*.' At T1 it was suggested that they try decaffeinated drinks to see if this helped reduce bladder frequency and urgency. The impact of self-management is also evident here in the form of lifestyle changes. One participant for whom the MSIS-29v2 at T2 indicated a lower impact of MS responded to the HTQ as 'no change'; they commented '*feeling frustrated at slowing down and not being able to do things i.e. DIY'*, which could have potentially accounted for their response to the HTQ.

For eight participants, one of the physical impact or psychological impact scores increased whilst the other decreased, and so it was not possible to determine if the participants answer to the health transition

question correlated. This is illustrated in the following two examples. One participant whose physical impact score had increased but psychological score had decreased stated 'no change' in her HRQoL yet added in the comments: '*Pregabalin has made such a difference because I sleep through the night. Such an improvement in my life. No longer tired and so able to do so much more'.* This demonstrates that the benefit of interventions may occur in only one domain of HRQoL and may not be evident to the patient. Another participant whose physical impact score reduced, but psychological score increased, responded to the HTQ as 'slightly improved', attributing this to change of DMT from an injectable to an oral medication stating that *'new meds do seem to be helping reduce day-to-day MS symptoms'*. They were unclear why the psychological impact of MS had increased.

5.10.2.2 T2 to T3

When asked if their quality of life had improved, remained the same or deteriorated from T2 to T3, the answers from 18 of the 48 participants correlated with changes in the physical and psychological impact scores. Twelve participants described no

change when the impact scores indicated an improvement; two had impact scores indicating a deterioration.

Two participants' answers did not correlate with the direction in which the impact scores changed, i.e. their impact scores indicated an improvement, but the participants stated their quality of life deteriorated. For one participant who was prescribed medication at T1 for pain, stiffness, and spasms the impact scores were lower, yet the patient's response to the HTQ was 'slightly deteriorated' and the patient complained of feeling more fatigued. The nurse comments, *'recently had dental work that had gone wrong, no appetite and increased spasms'* could explain why they said they had deteriorated.

For the remaining 10, one of the physical impact or psychological impact scores increased whilst the other decreased, and so it was not possible to determine if the participants answer to the quality of life question correlated.

Interestingly, one participant who attended three appointments and took up no interventions described no change in their HRQoL when answering the HTQ. This could indicate that their MS was very stable or that they were adjusting to changes and required no interventions.

5.10.3 Participants who attended four appointments

Of the 18 patients who had attended four appointments, 10 took up interventions at T1, 16 at T2 and 12 at T3.

Figure 22 demonstrates that between T1 and T2 and following at least one intervention 40% of participants described their HRQoL as remaining the same whilst 10% of participants described a slight or significant improvement; 50% experienced a slight or significant deterioration.

Between T2 and T3 56% of participants described their HRQoL as remaining the same whilst 13% of participants described a significant improvement; 31% experienced a slight or significant deterioration.

Between T3 and T4 42% of participants described their HRQoL as remaining the same. No one reported an improvement; 58% experienced a slight or significant deterioration.

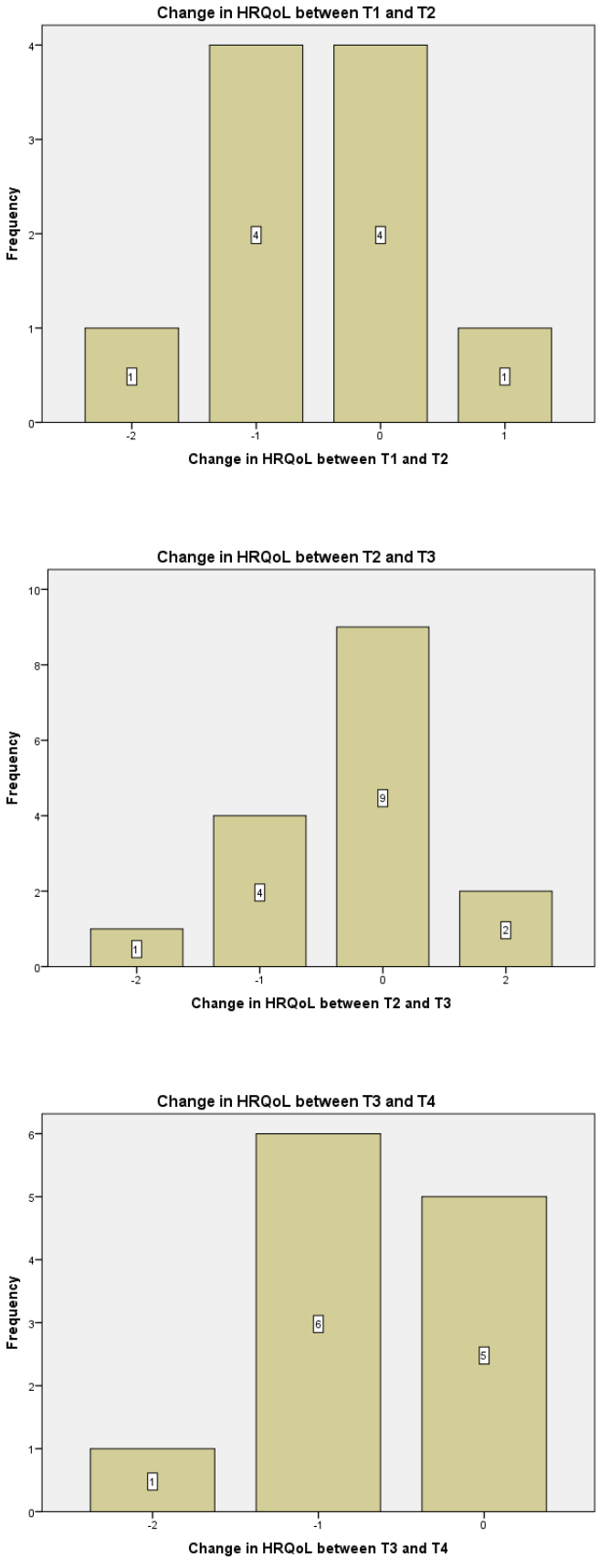

Figure 22 Changes in HRQoL for four appointments

Although the numbers of participants attending four appointments only is small it would appear that for these patients taking up intervention appears to help maintain HRQoL or minimise deterioration rather than improve it, when assessed using the HTQ. As these participants were seen more frequently than others during the research period it is possible that they were experiencing issues with their MS such as relapses or deteriorating symptoms. Thus, I would suggest that maintenance of HRQoL rather than improvement would be a realistic expectation.

5.10.3.1 T1 to T2

When asked if their quality of life had improved, remained the same or deteriorated from T1 to T2, the answers to the HTQ from three of the ten participants correlated with changes in the physical and psychological impact scores. For one of these participants the dose of amitriptyline was increased at T1 for head pain; at T2 they stated: *'had gastroenteritis and felt very unwell as couldn't keep meds down- felt really depressed'*. These events occurred shortly before the review and therefore I would suggest that it was not possible at this time to detect whether the medication had made a difference to HRQoL as measured by the MSIS-29v2.

Two participants' answers did not correlate with the direction in which the impact scores changed; the scores for one indicated the impact of MS was less yet they said no change and vice versa for the other participant. For the remaining five, one of the physical impact or psychological impact scores increased whilst the other decreased, and so it was not possible to determine if the participants answer to the quality of life question correlated.

5.10.3.2 T2 to T3

When asked if their quality of life had improved, remained the same or deteriorated from T2 to T3, the answers to the HTQ for four of the sixteen participants correlated with changes in the physical and psychological impact scores. Nine participants' answers did not correlate with the direction in which the impact scores changed. For the remaining three, one of the physical impact or psychological impact scores increased whilst the other decreased, and so it was not possible to determine if the participants answer to the quality of life question correlated.

5.10.3.3 T3 to T4

When asked if their quality of life had improved, remained the same or deteriorated from T3 to T4, the answers for three of the twelve participants correlated with changes in the physical and psychological impact scores. Five participants' answers did not correlate with the direction in which the impact scores changed. Four described no change in their HRQoL yet the impact scores indicated a worsening. One of these participants was given reassurance at T3 and stated at T4 that she was now permanently in a wheelchair. Her response to the HTQ may indicate a change in standards or values, and conceptualisation of QoL (Schwartz and Sprangers, 1999). For the other participant the scores indicated a reduced impact of MS, yet the participant indicated no change. For the remaining three, one of the physical impact or psychological impact scores increased whilst the other decreased, and so it was not possible to determine if the participants answer to the quality of life question correlated.

One of the participants impact scores fluctuated slightly over the time of the research, sometimes the physical impact score reduced, and the psychological score increased or vice versa; or both slightly increased despite counselling, a referral to the continence service and changes in medication doses. At each appointment the participant answered the HTQ question indicating deterioration, sometimes significant, yet always attributed this to their son being diagnosed with cancer. Even although they described positive benefits from counselling when interviewed this was not reflected in the MSIS-29v2 scores.

5.10.4 Participants who attended five appointments only

Of the two participants whose MSIS-29v2 who attended five appointments, and who completed the MSIS-29v2 five times, the changes in the physical and psychological scores correlated with the answers to the HTQ for three of the four times intervals for one participant and for two of the time intervals for the other participant.

One of the participant's response to the HTQ correlated with lower impact scores in both domains, which they attributed to, *'since stopping the Avonex I feel so much better. The fatigue has lifted'*, demonstrating that stopping interventions can also give positive benefits to people with MS.

From the above analysis it was evident that there was not always correlation between the participants perception of changes in their HRQoL and the MSIS-29v2 scores. I would suggest that the patient's perception of the impact of MS is of more value than impact score changes when considering whether assessment makes a difference to patients or the assessment is of value to them.

5.11 ISSUES WITH THE MSIS-29V2

Throughout phase 1 two issues became evident for those completing the MSIS-29v2.

5.11.1 Help to Complete the MSIS-29v2

Help was required to complete the MSIS-29v2 on 92 (17%) occasions. Reasons for requiring help are discussed in section **Error! Reference source not found.**. From o bservation, it was evident that whilst some relatives discussed the MSIS-29v2 with the participant, others completed the questionnaire without participant involvement. As this was not systematically recorded it was impossible to measure any impact this may have had on responses. However, the fact that some patients will have completed the instrument with help arguably reflects the reality of using self-assessed measures. This point is also discussed further in section 7.2. Being able to complete the MSIS-29v2 either alone or with the help of a significant other is key to the feasibility of assessment of HRQoL. Unfortunately, there were no resources available for those who attended appointments alone and who were not able to complete the MSIS-29v2 unaided. From experience, I would suggest that a number of these patients would benefit as they are not always the most articulate people.

5.11.2 Limitations of the MSIS-29v2

Several limitations relating to completion of the MSIS-29v2 were determined during phase 1. These are presented below and discussed further in chapter 6, section 6.4.

The results demonstrated that some participants found the lack of an option to clarify their answers to questions frustrating. They described the need to clarify and give more specific answers than the predetermined answers allowed, reflecting the work of Bowling (2014). The examples in Table 8 highlight areas where a lack of clarity in relation to responses for some of the questions was evident.

Participants thought it was important for the healthcare professional to know what was affected, for example, right leg, left hand. The answers to the questions stimulated discussion, resulting in possible interventions being suggested, discussed and potentially taken up.

Question number	Question	Example responses
Question 1	How much has your MS limited your ability to do physically demanding tasks?	One participant answered, *'a little'*, clarifying that she has a cleaner.
Question 2	How much has your MS limited your ability to grip things tightly?	One participant clarified answering *'extremely'* for their left hand and *'moderately'* for their right hand.
Question 3	How much has your MS affected your ability to carry things?	One participant commented, '*it depends how heavy- over 50kg presents a problem'*. Another stated that *'when holding on, I can carry with one hand'*.
Question 5	How much have you been bothered by difficulties moving about indoors?	One participant answered that they had been bothered *'a little'* by difficulties moving about indoors, clarifying that they use a wheelchair indoors. Another answered *'not at all'* stating that she uses a wheelchair indoors.
Question 6	How much have you been bothered by being clumsy?	One participant stated that he is clumsy as he blind.

Question number	Question	Example responses
Question 8	How much you have been bothered by heavy arms and/or legs?	One participant indicated that they were *'not bothered at all by heavy arms'* but were '*extremely bothered by heavy legs'*. Another answered they were '*extremely bothered by heavy arms and/or legs'* but clarified that only one leg was affected. Another stated that it was their feet that were affected. Three participants underlined or ringed legs when answering this question. Another ticked legs. One participant crossed out 'or', indicating that she was bothered by heavy arms and legs.
Question 9	How much have you been bothered tremor of your arms or legs/	One underlined 'arms' when responding to this question.
Question 10	How much have you been bothered by spasms in your limbs?	One underlined 'arms' when responding to this question. One participant answered *'extremely'* but wrote that the spasms in his limbs only occurred 'periodically'.
Question 11	How much have you been bothered by your body not doing what you want it to do?	One participant wrote that for some parts there were no problems and that others were extremely affected.
Question 17	How much have you been bothered by problems using transport (e.g. car, bus, train, etc.)?	One participant clarified stating 'car'. Another wrote 'bus'.

Table 8 Examples of responses to questions of the MSIS-29v2

When discussing the responses given it became evident that some participants felt the answers of 'not at all' (scored as 1), 'a little' (2), 'moderately' (3) and, 'extremely' (4) to be too restrictive, mimicking the work of Boynton and Greenhalgh (2004). Some participants answered questions indicating that they would like to reply between two answers; for example, their answer lay between 'a little' and 'moderately'. 'A little' was not a strong enough description but 'moderately' indicated a greater impact than they felt appropriate. These findings reflect those of (Fayers and Machin, 2016) who describe how a structured questionnaire can be frustrating and restricting for a patient if the supplied answers do not describe their condition. Where patients had indicated an answer between two values, the higher value was recorded for the purpose of data analysis.

Some examples of how participants answered questions are given below in Table 9.

Question number	Example responses
Question 1	One participant wrote that her reply was between 'a little' and 'moderately'.
Question 4	One participant at their first review ringed between 'moderately' and 'extremely'.
Question 6	One participant circled 2 and 3 in one large circle.
Question 11	One participant placed a tick midway between the response 'a little' and 'moderately'. This participant responded in the same manner for questions 13 and 14.
Question 20	One participant wrote 3.5.
Question 22	One participant gave up a stressful job one week before the initial review. Over the two-week period in which they were required to consider the impact of their MS they stated that they *'had gone from being extremely bothered by problems sleeping and also feeling anxious or tense to not at all bothered by these issues'.*
Question 26	One participant ringed both 'moderately' (3) and 'extremely' (4), but drew an arrow going from 3 to 4.
Question 27	One participant ringed 'moderately' and 'extremely' and wrote 'to' in between.
Question 29	One participant wrote 3.5.

Table 9 Examples of responses to scoring of the MSIS-29v2

5.12 METHODOLOGICAL LIMITATIONS

Despite finding support for assessment of HRQoL, there were a number of methodological limitations that have emerged through the course of this phase of the research which must be considered.

5.12.1 Sample Size

Although the required patient-participant sample size to determine statistical power was calculated prior to commencement of the research the number of patients who attended more two or more appointments during the data collection period was less than this, meaning that statistical analysis was limited. Even if all the patients who had attended two appointments had been considered in one group less than 253 took up an intervention at T1, this being below the number required for statistical significance.

5.12.2 Lack of a Control Group

The lack of a randomised control group, a consideration raised by the National Ethics Research Service, meant that potentially it was not possible to know whether any change was due to an intervention initiated at the outpatient appointment, the lapse of time since last appointment, stability of the MS, shift response or some other influence (de Vaus, 2001). There was also a possibility that improvements occurred due to participant participation in the research (Arnoldus, et al., 2000) when the consultation took a different format and participants were asked more about those areas where they revealed that MS was impacting on them.

5.12.3 Cognitive Impairment

The cognitive function of patients was not tested before administering the questionnaire. Nor were patients asked to disclose cognitive impairment. This is an important consideration given the requirement to self-administer the MSIS-29v2. Studies by Gold, et al. (2003) Marrie, et al. (2003) and Baumstarck, et al. (2012a, 2012b) showed that a moderate degree of cognitive impairment in multiple sclerosis does not affect reliability and validity of self-report measures. The work of Benedict, et al. (2004) refutes this. However, the MSIS-29 was tested by van der Linden, et al. (2005) and found to be reliable for those with cognitive impairment. Future studies should examine the possible impact of cognitive impairment on the ability of patients to complete the MSIS-29v2.

5.12.4 Assisted Completion

As noted in section 3.10.1 it could be perceived as a limitation that some patients required help to complete the MSIS-29v2; however equally this could be seen as a pragmatic reflection that many patients manage and discuss their health with significant others.

5.12.5 History and Longitudinal Assessment

This research demonstrates that analysing longitudinal data with varied intervals of data collection and differing interventions for a diverse group of individuals is extremely problematic. Participants completed the MSIS-29v2 at their first appointment (T1) following commencement of the research and then at subsequent appointments (T2, T3, T4, T5). The length of time between appointments varied from participant to participant from three months to a year. The problem of extraneous events potentially becomes greater as the time between questionnaires increases. This was potentially a problem for those patients only reviewed yearly and may have contributed towards a skewing of the results. MS is a highly variable condition and thus it is conceivable that participants could have had a relapse, infection or experienced a general deterioration in their condition between completing questionnaires. Health-related quality of life could be reduced in the short or long term depending on the severity of the event. As data was not collected about these factors I had to consider that it was not possible to fully attribute any changes in the impact scores to interventions commenced, potentially compromising the internal validity of the research.

When assessing longitudinal effects of interventions on HRQoL longitudinal correlations of change scores may be weak (Costelloe, et al., 2007). They suggest that this may in part be due to the relative short periods of follow-up or differing perceptions between the patient and the neurologist as to whether change has taken place (Hoogervorst, et al., 2003). This was an issue as patients could only be followed up for 12 months during the data collection phase. The time between follow-up periods was relatively short for those patients who had attended three or more appointments during this data collection period. The lack of ability to detect change could also be accounted for by the response shift phenomenon which is recognised in QoL studies. Costelloe, et al. (2007) describe response shift as an intrinsic, unavoidable and

undesirable aspect of self-report measures which may limit the validity of such measures over time. Response shift is discussed further in chapters 6 and 7.

5.12.6 Maturation

Campbell and Stanley (1963) suggest that when change is being studied some of the change may be due to the passing of time rather than the interventions. As MS is a chronic progressive condition it was likely that some participants would deteriorate over time. Although the questionnaire asks the participants to reflect back over the last two weeks, if deterioration had occurred and the time between assessments was great it is likely that some of the changes in scores were due to the deterioration, rather than the interventions offered to potentially reduce the impact of the physical or psychological symptoms. Some participants may also have adapted to their change in condition and consequently described an improvement in their HRQoL.

5.12.7 Testing

Testing participants on several occasions can contaminate results and thus affect internal validity (Campbell and Stanley, 1963). In this research many participants were assessed at several outpatient appointments. Thus, they could have become familiar with the questionnaire which may have affected the way they responded. When given the MSIS-29v2 to complete, the clipboard also held previous questionnaires from that participant. Thus, participants were able to look back at previous questionnaires which could also have potentially influenced how they completed the current one. During outpatient appointments, several participants did state that they had looked at previous questionnaires to compare their results. Score changes might then be attributable to participants reviewing their previous questionnaire responses and thus measuring their condition in relation to these answers. Although a problem during the research period the ability to compare with previous ones would not be an issue if the MSIS-29v2 was embedded into everyday practice as patients would not have access to previously completed forms.

Additionally, (Campbell and Stanley, 1963) suggest that completing questionnaires can sensitise people to issues which they had previously given little thought and this, rather than therapeutic interventions, could produce changes which would potentially

be reflected in the questionnaire scoring. This became apparent when interviewing participants in phase 2 of the research and is discussed in section 6.3.4.2b.

5.12.8 Missing Data

Telephone and email support play a huge part in the care offered to the patients where this research occurred, thereby providing a proactive service to patients who would possibly have to wait many weeks to be reviewed face-to-face. When research participants contacted the service by telephone or email because they were experiencing problems any interventions which were commenced, altered or stopped were not captured on the intervention sheet and thus potentially were not evaluated at the next appointment. Additionally, any changes in HRQoL noted on a questionnaire could not be related back to such interventions.

Similarly following an outpatient clinic appointment when a treatment was offered such as steroids, or pain management was altered, participants would be subsequently reviewed in the telephone clinic. Thus, the effect of these interventions on HRQoL would not necessarily be captured.

5.13 SUMMARY

This phase of the research demonstrated that assessment of HRQoL is feasible, although not without difficulties. Feasibility issues determined included both distributing the MSIS-29v2 to participants immediately prior to appointments and patients being able to complete it alone. Two types of limitations of the MSIS-29v2 were found; participants highlighted the inability to give clear and precise answers to some questions. The four responses were found to be too restrictive for others.

This phase also showed that the results of an assessment of HRQoL can be used to inform therapeutic interventions, although it is probable that some interventions may have been suggested without such an assessment.

When considering the question *'Can a HRQoL measure detect change in HRQoL after the implementation of therapeutic interventions?'* no statistical significance was found between the implementation of interventions and the physical and psychological domains of HRQoL using the paired-samples t-test. However, it would appear from the patient perspective that interventions helped to maintain HRQoL or to least

minimise deterioration, as evidenced by the HTQ responses. The health transition question and the interviews of phase 2 indicated positive benefits of the interventions at times and an improvement in HRQoL. However, these results could also be accounted for by the variable nature of the condition and the response shift. Additionally, patients could have felt better for taking actions even if they were not statistically significant. The length of time of the study and the fact that patients could review their previous questionnaire/s may also have influenced the results.

When the transition question responses were analysed it was apparent that some of those patients who had attended two or three appointments within the year of the research period did report an improvement in HRQoL following interventions. I would suggest that this reflects the fact they are frequent attenders who require and are getting more interventions. However as already discussed (5.10.3) for those attending four appointments no such improvement was noticed. The graphs of Figure 22 show that over the twelve-month research period following the uptake of various interventions the HRQoL of the majority of patients was maintained or only deteriorated slightly. This is a positive finding and reinforces the findings of the literature review which suggest that maintaining or optimising HRQoL is key to the care of patients with MS.

The findings of this study are unique in that the MSIS-29v2 impact scores were compared with an HTQ when considering whether the implementation of an intervention makes a difference to HRQoL.

The question of whether a HRQoL measure can detect changes in HRQoL following interventions is considered more fully in chapter 7, section 7.4. In conclusion, the exploratory character, sample size and time frame of the research is likely to have prevented me from drawing more pragmatic conclusions.

Chapter 6

Results and Discussion of Phase 2

6.1 INTRODUCTION

The aim of this phase was to address the following research questions:

- Is assessment of HRQoL feasible in daily clinical practice?
- Can the results of HRQoL assessment be used to inform therapeutic interventions?
- Does assessment of HRQoL with an appropriate measure make a meaningful difference to patients?

The presentation of results from phase 2 includes descriptive information about the sample of participants selected from phase 1 who consented to take part in phase 2. Contextual information includes the reasons participants were selected. Following this the qualitative findings from the interviews are presented and discussed, illustrating the main themes that have emerged from data analysis. Methodological limitations relating to this phase are considered. Some results are discussed more fully in Chapter 7 when the findings of phases 1 and 2 are drawn together.

6.2 SAMPLE AND SETTING

6.2.1 Patient-Participant Characteristics

Eighteen participants from phase 1 were invited to take part in phase 2 as described in section 4.6.4.1. Of these fifteen returned a signed consent form (response rate=84%).

Participants selected for this phase had to have attended at least two outpatient appointments. Initially participants were chosen to represent the different types of MS, differing ages of onset and differing lengths of time since diagnosis. A mix of those receiving and those not on disease-modifying therapy were selected; four participants were receiving no DMT when selected for interview. The type of clinic appointment attended, the types of intervention offered, the changes in the impact scores between appointments, the response to the HTQ and correlation between changes in the physical and psychological impact scores and response to the HTQ were all considered. Five participants either experienced a relapse during the research period or a deterioration in their MS. How the MSIS-29v2 was completed also influenced who was initially invited for interview. Two participants were selected because they had missed questions or ringed two answers, thereby enabling me to discuss the

reasons and consider the appropriateness of the MSIS-29v2 for future use. Subsequent participants were selected based on the interview responses, thereby ensuring a wide range of views were collected. The reasons for selecting particular patient-participants are presented in Appendix V.

The background and patient-participant characteristics are tabulated below in Table 10 and Table 11. The final sample comprised of eight (53.3%) males and seven (46.7%) females. The age of participants ranged from 30 to 70 years old, with a mean age of 52.6 years (median=53). The time since participants had received their diagnosis varied between 2 years and 26 years and the mean time since they had received their diagnosis was 10.93 years (median=9) years. Eight participants (53.3%) were diagnosed with relapsing-remitting MS and seven (46.7%) with secondary progressive MS. No participants with primary progressive multiple sclerosis were interviewed. Of the sixteen participants with PPMS who took part in phase 1, nine had only one completed one form, and one died during the study. Of the remaining six, I considered that only two would be appropriate for interview; the remaining four either suffered with extreme fatigue (1), cognitive issues (2) or a lack of confidence (1).

	Patients n=15
Sex (female)	7 (46.7%)
Marital status	
Married Partner Single	10 (66.7%) 3 (20%) 2 (13.3%)
Employment status	
Full-time employment Housewife/Househusband Part-time employment Retired due to ill health Retired	5 (33.3%) 1 (6.7%) 2 (13.3%) 6 (40%) 1 (6.7%)
Type of MS	
Relapsing-remitting MS Secondary progressive MS	8 (53.3%) 7 (46.7%)

Table 10 Sociodemographic and clinical characteristics of the study population

Except for sex ratio, the participants interviewed are representative of the 311 participants of phase 1 from which the interviewees were drawn (mean age of 55.91, range 28-82 years; median time since diagnosis 12 years; 52.3% RRMS, and 38.7% SPMS). Further characteristics of the sample are presented in Table 11.

Interview and Participant No	Gender	Age at time of research in years	Time since diagnosis in years	MS Type
1	Male	30	8	RRMS
2	Male	48	4	SPMS
3	Female	45	10	SPMS
4	Female	54	26	RRMS
5	Female	46	14	SPMS
6	Female	59	22	RRMS
7	Female	41	12	RRMS
8	Male	49	2	RRMS
9	Male	53	3	RRMS
10	Male	66	3	SPMS
11	Female	66	9	RRMS
12	Male	70	24	SPMS
13	Male	57	14	SPMS
14	Female	49	9	SPMS
15	Male	56	4	RRMS

Table 11 Characteristics of the patient-participants in Phase 2

6.2.2 Staff-Participant Characteristics

Only three healthcare professionals were involved in this research, myself and two others, one is a consultant neurologist and one a CNS MS. The staff-participants are referred to as HCP1, HCP2 and myself throughout the text. My views are presented throughout the following chapter and related to the responses of the two staff interviews.

6.2.3 Patient-Participant Interviews

Eleven participants were interviewed at the Acute Hospital, three at the outlying Hospital and one at their place of work as this participant had transport and mobility issues. Interviews lasted between fifteen and thirty-two minutes. I wanted to keep the interviews relatively short so as not to tire participants unduly.

Initially as the researcher-interviewer I wore uniform for the interviews. However, after four interviews, role confusion, as described by Holloway and Wheeler (1995) was evident; participants brought their experience and memory of the patient-clinician relationship to the research setting (Gardner, 1996), participants viewing me as a nurse rather than a researcher and raising issues about their current symptoms or problems. As their CNS, I found this duality of roles very difficult to manage reflecting the views of Holloway and Wheeler (1995) as I have always endeavoured to answer patients queries in a timely manner. During the interviewees I recognised the need to divorce myself from my clinical role and thus took the decision to inform participants that their concerns would be addressed after the interview. As a clinician, I was disconcerted that these patients had not felt able to call the MS Service to discuss their concerns; as a researcher, however, I know from the body of literature, that many MS patients do not appear to fully understand their condition. This dilemma of duality of roles, clinician versus researcher has also been highlighted by Carolan (2003) and is a common dilemma faced by clinicians who undertake research within their clinical area. Civilian clothes were worn for the remaining interviews; participants no longer mentioned their own symptoms but focused fully on the questions, many providing insightful information.

After fifteen interviews I decided in consultation with my supervisors that data had been collected from a diverse sample and analysis had reached a point where no new themes were occurring (i.e. data saturation) as described by Strauss and Corbin (1998). Thus, recruitment ceased.

6.2.4 Staff-Participant Interviews

The two members of staff were interviewed at the Acute Trust Hospital. The interviews lasted between thirteen and seventeen minutes. They were relatively brief as we already knew each other and so focused on the interview schedule. Uniform was worn for these interviews.

6.3 PRESENTATION OF DATA

The purpose of this section is to present the major findings of the qualitative phase of the study which emerged through the inductive thematic data analysis process. The analysis was built up from the data, rather than originating from a pre-existing theoretical framework or my expectations. Key themes are presented. The verbatim extracts selected have been chosen because they provide powerful or insightful accounts of any given theme, thereby substantiating them. Whilst some extracts represent the view of the majority of respondents, others illuminate the views of only a few. Denscombe (2014) suggests that interview extracts can be used to good effect in social research; they let the reader 'hear' the points as stated by the interviewee, act as an illustration of a point, and they may be used as evidence supporting an argument that is being constructed in the report by the researcher. Where interview extracts are used, names have been removed to ensure anonymity; interview number and gender is given, enabling cross referencing to Appendix V.

6.3.1 Themes

Three major themes together with sub-themes and their associate-themes were identified which captured key aspects of the data: these are listed below in Table 12.

The data from patient-participants and healthcare professionals are presented together revealing how the assessment of two dimensions of HRQoL is perceived by both groups. The commentary of the HCPs is prominent when I discuss the theme of 'process' which looks at outpatient appointments and the use of the HRQoL measure in relation to assessment of HRQoL.

The term interviewee, participant and patient are used interchangeably throughout the analysis.

Theme	**Sub-theme**	
Condition	History of MS	
	Reaction to the diagnosis of MS and burden of the diagnosis	
	The uncertainty and lack of predictability due to MS	
	Identity	
Self	Reflection of the impact of MS on self	
	Reflection of the impact of MS on daily life	
	Reflection of the impact of MS on significant others	
	Assessment of HRQoL	
	Quality of life	
Theme	**Sub-theme**	**Associate-theme**
Process	Outpatient appointments	Role of HCPs
		Style of consultation
		Experience of attending outpatient appointments
		Benefits of attending outpatient appointments
		Issues of concern addressed
	MSIS-29v2	Properties of the MSIS-29v2
		Informing the consultation
		Impact of completing the MSIS-29v2 on self
		Impact of completing the MSIS-29v2 on care offered
		Assessment of changes in HRQoL
		Practical considerations

Table 12 Themes, sub-themes and associate-themes

The themes of condition and self were identified when the transcripts were analysed and the relevance of the impact of a diagnosis of MS to assessment of HRQoL realised.

6.3.2 Condition

This category explores how the participants viewed the condition of multiple sclerosis. As an introductory question I invited participants to talk about their experience of living with MS. Participants talked about the way they regarded themselves and the way others viewed them following their diagnosis. It was evident that their identity

was affected. Identity is discussed in section 6.3.2.4 and related to self in section 6.3.3. As discussed in chapter 2, MS is an incurable unpredictable condition which affects people in many ways; people will inevitably react to such a diagnosis differently. It was striking how important this part of the interview was to the participants and how rich the resulting data was. Ultimately, this information contributed to understanding the participants use of the MSIS-29v2 and whether there is a role for such an assessment in daily clinical practice.

From the transcripts the sub-themes of: history of MS, reaction to diagnosis of MS and the burden of the diagnosis, uncertainty and lack of predictability due to MS, and identity were identified (Figure 23).

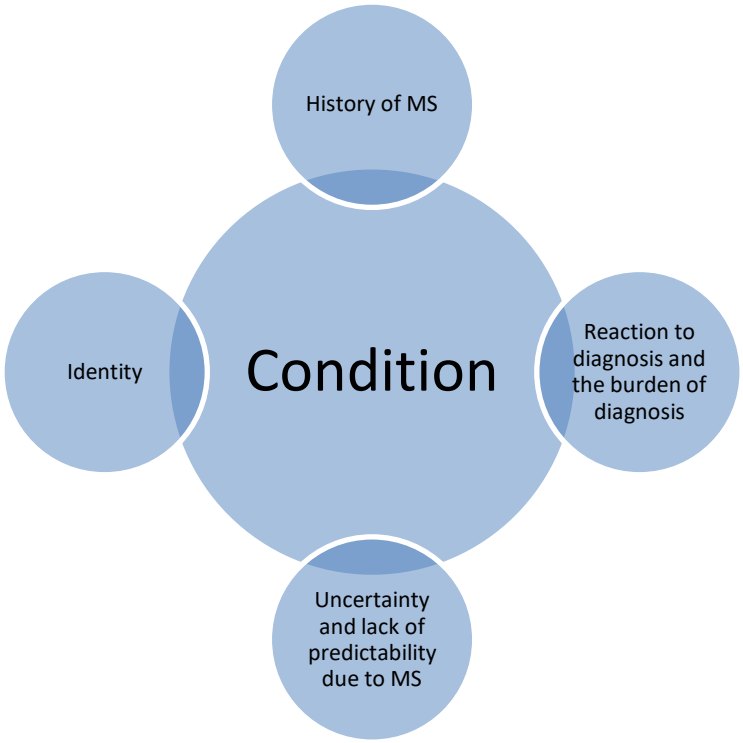

Figure 23 Relationship of the sub-themes to the theme 'Condition'

6.3.2.1 History of MS

Although participants were asked to recount their experience of living with MS, it was evident that some participants were keener to describe their experience of being diagnosed with MS. Some participants were diagnosed quickly:

> *'I felt like that I did not have a build-up really for me, it just happened over night.'* (P3:F)

However, as discussed in section 2.6.1, diagnosing MS can be difficult and often takes time. This was illustrated by four interviewees (P4, P8, P10, P11) who described how they had been living with symptoms, sometimes of an intermittent nature, for several years prior to diagnosis. Some developed further symptoms before a diagnosis was finally given:

> *'It just seemed to slow. (Life). It started off as just an ache in the back of the leg. And then no one could identify what it was. So, I had been living with it for a lot longer than I realised I'd had it.'* (P10:M)

This comment reflects the work of Koopman and Schweitzer (1999) who suggest that if symptoms are mild or vague in nature the time to diagnosis may be lengthy. The above quote also resonates with the work of Courts, Buchanan and Werstlein (2004) who discuss how patients described the period before diagnosis as a time of trying to make sense of symptoms, seeking medical help and feeling powerless.

The experience of Participant 1 also illustrates how complex it can be to diagnose someone with MS:

> *'They first thought it was a brain tumour and then they thought I had a stroke. And then after a week of being in hospital they then diagnosed me.'* (P1:M)

It is very likely that the journey a person has been on prior to receiving their diagnosis will ultimately affect the relationship with their healthcare practitioners, how they cope with the diagnosis (Johnson, 2003) and ultimately their HRQoL.

6.3.2.2 Reaction to Diagnosis of MS and the Burden of the Diagnosis.

Receiving a diagnosis of MS is a challenge for patients and their families. When a person is diagnosed with a life-long incurable chronic condition, such as MS, it is inevitable that they will experience a variety of different emotions, including distress, anxiety, anger, depression and even relief, both in relation to acceptance of, and adaptation to the diagnosis. Lysandropoulos and Havrdova (2015) suggest that MS can be described as a journey of feelings which change over time. These reactions are likely to impact on and ultimately affect their HRQoL. Thus, I suggest that assessing HRQoL, thereby determining issues of importance to the patient, could contribute to an improvement in HRQoL for these patients.

Realising that there is variability within the condition and that different people with MS develop different symptoms, that one person won't develop all the symptoms, and that no two people develop the same symptoms is all part of understanding MS. P8 suggested that:

> *'Developing an understanding MS allows you to deal with it, get around the problems and thus life becomes a little easier'* (P8:M)

whilst Participant 3 suggested *'it made the condition less frightening'*. Participant 14 described how they had grown to understand MS over time.

One participant was relieved to be given a diagnosis as they could understand why they felt the way they did, echoing Burgess (2010b) who discusses how some people feel relief at finding out what is wrong with them. Two (P10, P13) described the shock of being diagnosed with an incurable illness and the subsequent gambit of emotions experienced, illustrating the findings of Johnson (2003) in which many people reported being devastated and shocked at their diagnosis. Lysandropoulos and Havrdova (2015) also describe how at the time of diagnosis patients can feel afraid, angry and wonder 'why me?'

Generally, it appears that it takes people time to recognise and accept that they have MS:

> *'You have to acknowledge MS before you can then move on and accept the condition.'* (P1:M)

This quote reflects the views of Moss-Morris (2013) who suggests that adaptation to chronic illness is an on-going process and will potentially re-occur at different stages in the disease trajectory. The realisation that one has been diagnosed with a long-term condition was described by Interviewee 8 as a big challenge and by Participant 1 as shocking and frightening; P1 stated that *'diagnosis just has to be dealt with'*, suggesting a pragmatic approach. This view contrasts with others who struggle to come to terms with the diagnosis, possibly for many years. For example, Participant 6 suggested:

> *'I would be much better if I actually settled on well this is where I am, and this is how I ought to be dealing with it instead of pretending it's not there.'* (P6:F)

She (P6) concluded that after more than 20 years she is still struggling to accept her diagnosis and the impact on her, attributing this to the fact that she has declined slowly. P6 acknowledged that she may need help to accept her diagnosis. Moreover, there was recognition by Participant 6 that she ignored symptoms which were making life difficult and that MS was impacting on her life more than she acknowledged to herself. It is possible that this view coloured the way she completed the MSIS-29v2 and HTQ, particularly in relation to longitudinal comparisons. Although Participant 4 also struggled to accept their diagnosis for a very long period they stated that:

> *'It took me a while to actually get used to having the label but knowing what's going on with you is better than not knowing,'* (P4:F)

thereby demonstrating that with time acceptance and understanding can occur.

For Participant 14, compromising has enabled her to cope with the diagnosis, live with MS and, achieve certain goals. Both P14 and P15 suggested that their outlook on life had changed as a consequence of diagnosis:

> *'I have to compromise and in one way that's how I cope with it I think.'* (P14:F)

> *'Thinking about my outlook on life, yeah I think it is very unfair but there you go. It's like any disease innit? Nobody wants it.'* (P15:M)

A range of emotions were described by participants when they talked about the burden of living with MS including anger, irritation, frustration and fear. Whilst P15 stated that he was angry, Interviewee 10 considered MS an irritating condition, interfering with activities of daily life. This view was supported by Interviewee 11 who suggested that the condition is also frustrating, and there is a gradual loss of independence, but it was necessary to keep going; Participant 14 agreed:

> *'I knew people that had it before I was diagnosed, and then when I was diagnosed I realised I have just got to get on, you can't sit down and so that's the reason I think I am more motivated. I think my quality of living is, and how I coped with it, is that I now think of MS as not something you can fight, but I think of it as my partner, so it's like my second partner. Even (partner) says things, and I go we've got to talk to the, let me think about the MS, and you have to think about that and the MS does come first in your life because it's always there, and again*

> *you can't fight it, but you have got to work with it and compromise.'* (P14:F)

This participant has adapted to her limitations and uncertain disease progression by altering her life and self in socially and personally acceptable ways (Barker, et al., 2014). Charmaz (1995) describes how this process of adapting shades into acceptance as demonstrated by this participant. It is likely that some of this participant's MS symptoms were not visible to her partner, reflecting the view of Cella, et al. (1996) who describe how the disease, although limiting, may not be readily apparent to others.

6.3.2.3 The Uncertainty and Lack of Predictability due to MS

The uncertainty and a lack of predictability of MS were frequently mentioned during the interviews reflecting the work of Koopman and Schweitzer (1999) who describe a diagnosis of MS as opening the door to uncertainty, variability and unpredictability. Both day-to-day variation and the possibility of deterioration over time were described. Participant 7 described the impact of the daily fluctuations of her MS:

> *'It can differentiate between being really good and erm being so care free and then just having problems with walking. It differentiates every single day.'* (P7:F)

Another (P3) reflected on how the daily variation in her symptoms affected everyday choices such as the type of shoes to wear that day; she described how one just learnt to adapt. She (P3) was also experiencing some deterioration in her symptoms at the time of the interview and recognised the impending need for treatment to settle these symptoms and thus reduce the impact of MS on her daily routine. These two examples illustrate the findings of Benito-León, et al. (2003) who describe how the unpredictability or uncertainty of MS relates to symptoms, treatments, relationships, disease progression and future planning, and potentially contributes to emotional distress and the practical challenges associated with living with the disease, all of which adversely affect HRQoL.

The narrative of P3 reveals how she could be considered to be an expert patient; she has become highly skilled at living with a chronic condition as described in section 3.4.6, demonstrating some of the various strategies which may be utilised when coping with the uncertainty of living with MS such as learning to manage symptoms on a daily basis and understanding the variability of the disease. Positive thinking was also

felt to be an important part of coping with the fluctuation of symptoms, as every day is different which can be frightening (P3). Although Finlayson and van Denend (2003) describe how, because of the unpredictability, many people find it difficult to adapt to and cope with their diagnosis and its consequences, this patient had gained many of the necessary skills over time.

Patients are often concerned about their short and long-term disease activity, how they will progress and what type and level of disability they will acquire, whether they will have severe relapses and become severely disabled quite quickly, or whether their MS will follow a benign course. Although people with MS live with uncertainty regarding their prognosis as MS often follows a variable and uncertain trajectory (Lublin and Reingold, 1996), for some the disease can follow a relatively benign path as illustrated by Interviewee 6. When considering the impact of her MS she described herself as lucky; she had had MS for a long time and had seen others who were diagnosed after her deteriorate more rapidly. This suggests a long period of relative stability in her condition and reveals that although all patients face an uncertain trajectory, MS does not affect everyone in this manner.

The unpredictability for the future was described by several interviewees. Participant 3 touched on the realisation that she may get 'really bad', with symptoms becoming worse and worse. The unpredictability of the condition was stated by Participant 2 as their 'biggest concern'. They acknowledged that they wanted to know when they would achieve a level of stability, stating that then they would be able to 'deal with it'. Both Participants 2 and 9 acknowledged that no-one can tell a person with MS when the progression will stop. For Participant 9 the uncertainty of the progression of the disease had been of extreme concern, however, he was able to rationalise this following counselling, subsequently demonstrating stoicism:

> *'Well the biggest thing I had was the fear of nobody knows how the MS is going to progress. There is no one who can tell ya. And I had that fear. And now I've got that fear of what will be will be. There's no point worrying about it, coz if it's going to happen it's going to happen. And that's what he (counsellor) taught me to do.'* (P9:M)

The qualitative research of Somerset, Sharp and Campbell (2002) and Finlayson, van Denend and Dalmonte (2005) highlights how day-to-day and longer-term uncertainty

are central to the experience of living with MS and are often difficult to come to terms with. Understanding the potential impact of MS in the future enabled Participant 1 to make the most of life as they felt that they were 'pretty' good at the time of the interview. It is evident from the data presented that patients understood MS to be a variable disease with inherent uncertainty as described by Dennison, et al. (2016).

6.3.2.4 Identity

Identity is largely concerned with the question: *Who are you?* Charmaz (1995) describes how identity refers to the way an individual defines, locates and differentiates themselves from others. This reflects the view of Oyserman, Elmore and Smith (2014, p69) who define identities as 'the traits and characteristics, social relations, roles, and social group memberships that define one'. Identities can be focused on the past,- what used to be true of one; the present,- what is true of one now, or; the future,- the person one expects or wishes to become, the person one feels obligated to try to become, or the person one fears one may become (Oyserman, Elmore and Smith, 2014). Chronic illness makes it increasingly important to attain, maintain, or recreate a valued identity, this being influenced by: the type and degree of illness, meanings of illness experiences, timing and sequencing of illness, and expectations of and for the self (Charmaz, 1987). In addition, Charmaz (1987) describes how identity levels may change, particularly in response to the evaluation, recognition, confirmation or disconfirmation, and treatment by others in the social context. Charmaz, (1987) study demonstrated that chronically ill persons aged 20-91 revealed a strong rejection of identities founded in invalidism. Identity in illness also must be considered in the context of factors such as ethnicity, gender and culture.

Whilst the variability of MS means that living with MS can be physically, emotionally, psychologically and financially challenging (Aronson, 1997, Riether, 1999), the challenge of living with MS may be increased further as people who are diagnosed with MS have generally established their identity as a person without MS (Finlayson, Van Denend and Dalmonte, 2005). Wilkinson and das Nair (2013) describe how continual changes in functional ability also threaten an individual's identity.

Analysis of the transcripts revealed that a diagnosis of MS did not appear to influence the way some participants, e.g. P11, P12, P13, P15 viewed themselves as a person. However, Participants 2 and 9 viewed their identity very differently to that before diagnosis, both having been bread-winners. This reflects the findings of Barker, et al

(2014) who found that some people with MS reported a loss of identity. Participant 2 pronounced of his diagnosis and the severity of his decline:

> *'The whole thing has changed lives irreparably.'* (P2:M)

Participant 9 described how:

> *'I've gone from a person who's supported his family to someone who's now on benefits.'* (P9:M)

These two patients' words reflect the work of Charmaz (1987) and Haslam, et al. (2008) who describe how the changes to a person's identity following a diagnosis of MS can a have negative psychological effect on the individual. Self-efficacy, self-esteem and perceived control over life also appear to have been affected as described by Bowling (2014). Contrastingly, Participant 13 described a positive impact of his diagnosis; he changed his career several years after diagnosis and is now working in a field where he feels his diagnosis has enabled him to employ an empathetic approach. These examples echo the work of Finlayson, Van Denend and Dalmonte (2005) who describe how when people are diagnosed with MS they may have to rethink who they are, their strengths and limitations as a person and their plans for the future. Barker, et al. (2014) suggests that forming new identities reduces the negative effects of the loss of identity, a point demonstrated well by Participant 13 above.

There were also some perhaps surprisingly positive aspects to being diagnosed with MS. For example, Participant 14 suggested that she had become a more positive person following diagnosis. Her identity however had changed as she was no longer able to do what she wanted as she had to consider the impact of MS. Participant 13 stated:

> *'I would say that multiple sclerosis visiting me in my life has been a very positive factor, and it has allowed me to become the person that I have always wanted to become.'* (P13:M)

It was also acknowledged that having a diagnosis of MS can change the way others perceive those with MS. Family and friends were frequently regarded as viewing the participants as individuals who required help; e.g., as someone who needed help to walk when out and about or needed help with activities of daily living:

> *'I find that people are kind of checking that I can get up some stairs, or something, which they didn't used to do.'* (P11:F)

Whilst some reactions to a diagnosis of MS by family and friends were understood by the participants, other reactions appeared misplaced. Participant 3 described how others have reacted to her diagnosis, suggesting that she is lucky as she has a mobility car. She refutes this, suggesting that the car and her blue badge are the tools that allow her to keep going and enable her to work. It is possible that her viewpoints could have implications regarding how she perceives her HRQoL and how she completed the MSIS-29v2. Another participant (P14) felt that colleagues and friends viewed her differently to how they did prior to her diagnosis although did not clarify how. She described:

> *'The guy I am with now, it's really weird being back with him, because he knew me before the MS, and he does not see my disability at all. But, when I don't feel well or anything he's all like ok, ok, and he'll understand.'* (P14:F)

One participant (P15) reported that whilst he didn't feel different in the way he saw himself, others treated him differently:

> *'They look at you like they feel sorry for you, don't they?'* (P15:M)

The theme of condition demonstrates many aspects related to the complexity of living with a diagnosis of MS, some of which may adversely affect HRQoL. I would suggest that using a HRQoL measure in daily clinical practice could aid detection of such aspects.

6.3.3 Self

Self is considered a difficult construct to define (Leary and Tangney, 2014). It may be considered to be an individual's character or behaviour, i.e. the set of someone's characteristics, such as personality and ability, that are not physical and make that person different from other people. Leary and Tangney (2014) suggest that the self is involved in (1) peoples experiences of themselves, (2) their perceptions, thoughts, and feelings about themselves; and (3) their deliberate efforts to regulate their own behaviour. Thus, they suggest that self has there very different meanings. The work of Leary and Tangney (2014) suggests that self and identity are linked.

Chronic illness with impairment intrudes upon a person's daily life and undermines self and identity, forcing identity changes (Charmaz, 1983; Charmaz, 1995). Charmaz

(1995) describes how chronically ill people grow more resolute in self as they adapt to their impairments, gaining a deeper awareness of self, situation and of their place with others. Goffman (1959) describes how, when an individual comes in contact with other people, that individual will attempt to control or guide the impression that others might make of him by changing or fixing his or her setting, appearance and manner. At the same time, the person the individual is interacting with is trying to form and obtain information about the individual. MS can have a devastating impact on a person's sense of self (Boeije, et al., 2002).

This category explores how the interviewees viewed living with multiple sclerosis, which will inevitably affect the way they view their HRQoL. Within this theme five sub-themes (Figure 24) are presented. Three emerged from the analysis of the interview transcripts when patients were asked about their experience of living with MS and two from direct questions. The impact of living with MS on self, daily life and significant others is considered in the first three sections. Finally, the sub-themes of 'assessment of HRQoL' and 'judgement of QoL' are described.

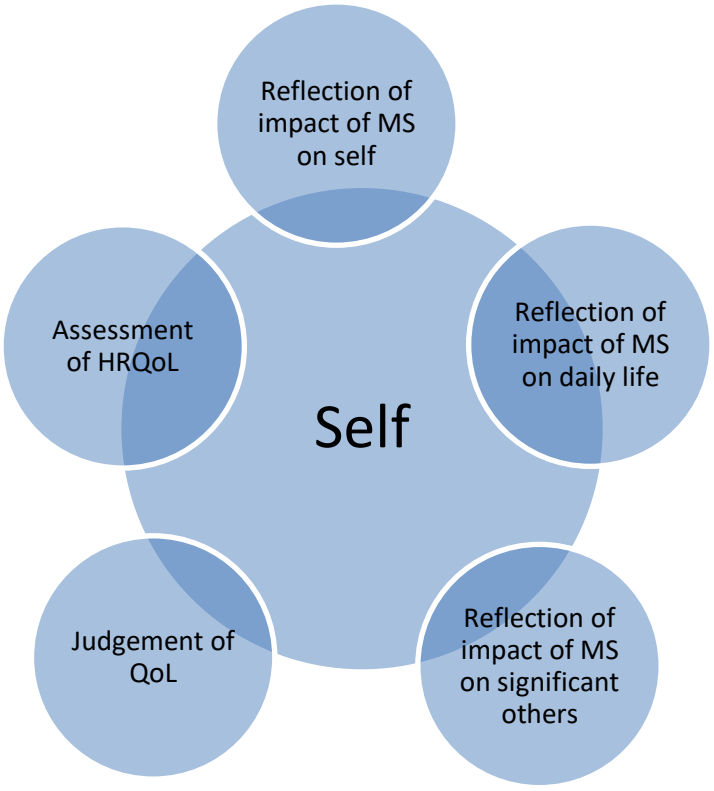

Figure 24 Relationship of the sub-themes to the theme 'Self'

6.3.3.1 Reflection of the Impact of MS on Self

The impact of MS on those interviewed was evident in a wide range of areas, including the physical and psychological domains of HRQoL, one participant describing how the psychological symptoms were harder to deal with than the physical. The degree of impact is affected by individual differences in patients understanding of their condition, degree of optimism, coping skills, emotional adaptation or reprioritisation of values (the latter are both examples of response shift) (Rose and Weinman, 2007) many of which are apparent in the following narrative. Words such as demoralising, reduced confidence, restricting, and frightening were used to describe the impact of MS. This type of terminology underscored the significant psychological impact that MS can have on people with the condition.

MS is a progressive condition and thus it was inevitable that some participants would have noticed a deterioration in symptoms and increasing disability with associated decline in function over time:

> *'I do feel that this last eighteen months things have got a bit worse.'* (P6:F)

> *'I suppose I have got a bit worse over the years*.' (P3:F)

Keeping track of progression, whether it is in the form of daily fluctuation or a gradual increase in disability level can be difficult, particularly for those with cognitive issues. Some describe how it is only by reflecting back to what they could do at key events such as birthdays that they are able to recognise changes in their abilities. These key events act as markers of changes to social and physical self. An assessment of HRQoL would be another way of monitoring change. Patients are encouraged to keep of diary of changes and bring a list of questions or concerns about their MS to appointments; new symptoms, changes in symptoms and the effect on that person are often presented. The assessment of HRQoL would potentially be informed by these records. Participant 1 illustrates the use of a diary:

> *'I generally keep a log of how I am anyway. So, then you can actually see if it's getting worse. Sometimes you can't look back three months, you've got to have documented it, otherwise you forget. Yeah with MS yeah it (memory) can be a bit of a challenge.'* (P1:M)

Participant 5 reflected on how she was experiencing more symptoms in relation to her MS. She described a decline in physical function as she was falling more frequently; she also reported a decline in cognitive function, relating how she has become more forgetful, muddled and confused, forgetting significant events such as birthdays:

> *'I say since about November they (cognitive abilities) have definitely deteriorated, and I feel muddled every day now. Whereas I used to be able to go right this is a problem that needs dealing with, this is how I deal with it. Now I kind of go erm what am I doing? You know, and I will get half way through doing something and I will completely forget what I am doing and it's just driving me crazy'* (P5:F)

These points reflect the work of Hoogs, et al. (2011) who describes how mental speed processing may influence a wide range of daily activities, including recreational activity, social interaction and task completion and also Hankomäki, et al. (2014) who state that the cognitive issues of processing speed and handling of complex information deteriorate in MS.

Several participants reflected on the impact of their MS on themselves and daily life when considering how their MS had progressed since diagnosis, contemplating what they used to be able to do as opposed to what they can do now. These reflections are congruent with the work of Devins and Seland (1987) who describe how chronic illness can disrupt lifestyles by interfering with continued involvements, valued activities and interests. Whilst some participants focused on the daily variations of the impact of MS and the 'roller-coaster ride' (P3, P7) with the associated uncertainty and fear created by this, others described how the impact of MS had changed over time (P11). The impact of a deterioration in symptoms meant that handrails were required on stairs, energy levels were lower, walking stamina was reduced and, the type of footwear that could be worn had changed. A reduction in independence was discussed by some participants; limitations in ability to function alone were described, an arm was required to hold onto when walking, help was needed do up shoe laces. Limitations and the inability to no longer be able to do things such as mow the lawn were frequently described as irritating and frustrating. Many of these limitations are due to illness-induced stressors such as physical disability and incapacitation and decreased strength and stamina as described by Devins, et al. (1993).

Some participants were determined not to let MS affect them, adapting to their changed level of function. The impact scores of one participant, who lives in a nursing home, is wheelchair dependent and requires all physical care indicated that her MS had no impact on her; she described a full social life. This patient demonstrates the work of Lysandropoulos and Havrdova (2015) who describe how MS patients with a high degree of physical disability may continue to participate fully in life and consequently view their QoL more positively. The patient admits to fully accepting her limitations; reflecting the findings of McCabe, Stokes and McDonald (2009) who describe how the way in which a person with MS copes with the condition impacts on their HRQoL.

Participants 5 and 6 reflected that the impact of MS on them was not as bad as for other people with MS but considered that they should be looking after themselves more. Participant 5 felt that she was 'good', and life was good in view of that fact that friends who were diagnosed at about the same time as she were in a much worse state than she was. This theme seems to pervade the data collected with those who perceive themselves as better than others with MS feeling lucky.

Only one participant described mourning for what she had lost as her life had changed so much. She reflected upon the impact:

> *'It does affect me, yeah, I know, I think I have mourned for what I have lost because my life has changed big time, umm, it affects me from being able to do the things I want to do; I would love to do more travelling, I would love to do more things, but I know about my limits.'* (P14:F)

This participant suggested that MS had changed her lifestyle but not her, as MS has interfered with her social activities. This is an example of 'illness intrusiveness' which is defined as 'illness-induced lifestyle disruptions that interfere with continued involvements in valued activities and interests' (Devins and Seland, 1987).

6.3.3.2 Reflection of the Impact of MS on Daily Life

Analysis of the transcripts also revealed both physical and psychological impacts of MS on daily life. Morales-Gonzáles, et al. (2004) suggest that the core symptoms of MS impact considerably upon the activities of daily living of people with MS. More broadly, Moss-Morris (2013) describes how chronic illnesses are diseases that endure

over time and have the potential to profoundly impact on people's day-to-day lives. It was apparent from the narratives how the effect of MS on daily life was closely interlinked with how MS impacts on oneself.

Some participants (P5, P8, P11) reflected on tasks that they had been able to do in the past but were now no longer capable of doing. Others described limitations in their ability to work and a poorer QoL because of their MS symptoms. This echoes the findings of Carr, Gibson and Robinson (2001) who suggest that HRQoL is concerned with whether a disease or impairment limits a person's ability to fulfil a normal role (for example, whether the inability to climb stairs limits a person at work). Lysandropoulos and Havrdova (2015) also describe how patients may have a poorer QoL due to patient-centred factors such as depression, inability to work, fatigue and cognitive decline. Participant 9 described how, prior to diagnosis, they had worked full-time and cared for their family; they now required much support from the family, this change occurring over a matter of months. This affected their identity also as they were no longer the 'breadwinner'. Some participants had retired due to ill health whilst others had reduced their hours. These figures reflect many studies which reveal that as many as two-thirds of MS patients are unable to maintain employment (Honarmand, et al., 2010).

Walking ability and stamina were reflected on frequently. Participant 10 described catching a bus rather than walking. Going out alone, perhaps to the shops, and social lives were restricted, the lack of independence (P11) being cited as a reason for not participating in activities. Hence it becomes harder for people to maintain their sense of self as evident in aspects of performance of daily life. Many interviewees required an arm to hold when walking so could not go out alone thus appearing to the world as someone who requires care rather than someone who is independent. These finds are commensurate with the findings of Hakim, et al. (2000) who describe how withdrawal from social activities and a shrinking circle of friends was common among patients with MS, especially those with severe disability.

Conversely, Participant 5 described the impact of her MS:

> *'It doesn't have too much of an effect on my daily life. I don't, I refuse to let it affect me too much.'* (P5:F)

I would suggest that this reaction implies that this patient is coping well and has adapted to the diagnosis of MS. Alternatively, this could be seen as countering the victimhood narrative associated with MS and other long-term chronic conditions, demonstrating a resistance to the condition rather than being defined by it. This may potentially have affected how the participant completed the MSIS-29v2. Either the participant could be seen as minimising the impact she was experiencing, or this could be interpreted as a positive reframing of her illness experience which could be enhancing her HRQoL.

Only one participant mentioned the future when talking about her experience of living with MS. Completing the questionnaire enabled this participant to consider future planning; for the short-term she made adaptations to her house and in the longer term she planned for end of life. These findings are in accordance with the views of Devy, et al. (2013) who suggested that assessing HRQoL might help to predict future difficulties for patients. In this case, it was the participant who identified areas for concern and addressed them accordingly.

6.3.3.3 Reflection of the Impact of MS on Significant Others

Participants recognised that the impact of a diagnosis of MS and the resulting limitations reached beyond themselves, impinging on their family and friends. Disease progression may impact significantly and detrimentally on relationships and family planning. Potentially the impact of MS can be far reaching. In my sample those predominantly affected were partners and children.

Whilst Participant 6 described how her husband worried about her because of her MS, Participant 2 acknowledged that there had been many changes for the both him and his family. Poor memory was described by one participant as having an impact on others; she had forgotten her child's birthday. These examples are consistent with the findings of Lysandropoulos and Havrdova (2015) who describe how a diagnosis of MS is traumatic not only for the patient but also for the patient's family. Life plans such as relationships and family planning may be adversely affected by such a diagnosis. Participant 7 described how, because of the impact of MS, she did not feel able to have another a baby.

There was overwhelming evidence from the interviews that those with MS required help from others, either friends or family. Participants described how people would

watch them when walking to check they wouldn't fall, help them with personal hygiene requirements or be required to cook for them. Dependency tensions were evident as family members did not know whether they should assist the person with MS. P3 suggested that as a consequence of the impact of MS on her she had developed a strong supporting network of friends and family.

Participants also described how their families had adapted to their condition. Whilst Participant 12 suggested that his family were used to the MS and so did not treat him differently, Participants 4 and 5 described how their partners and children had adjusted to the impact of MS and learnt to live with the symptoms. Explaining to a child that a parent has MS was touched on by one participant.

I suggest that depending upon how much a patient recognised the impact of MS on themselves, daily life and others prior to completing their first MSIS-29v2, and how their view changed subsequently, could have affected the way that they completed further forms. Potentially more appropriate interventions could be offered, ultimately contributing to an optimised HRQoL.

6.3.3.4 Judgement of Quality of Life

When asked: '*Who do you judge your quality of life against?'* most participants stated their former or past self, the majority believing that their old quality of life was better:

> *'I don't even what to compare them. (old and current self). Well it's... I know I use the word feel like a nothing but that's quite a short way of putting it.'* (P9:M)

When considering this statement, the concept of illness intrusiveness comes to mind. This participant's loss of the ability to participate in many valued activities can be assumed to be contributing to their reduced HRQoL as described by Shawaryn, et al. (2002). This view contrasts dramatically with the opinion of Participant 7 who, when considering her current QoL, compared it to her old quality of life which she described as 'disgusting'; pregnancy had made her re-evaluate her life. One participant compared her QoL to others describing how, compared with them she was lucky, that she was doing alright, and life was good.

Participant 8 stated that:

> *'My wife has a hell of a lot to do with my quality of life. She helps massively.'* (P8:M)

This comment potentially reflects this patient's acceptance of, and adaptation to living with MS. Similarly, Participant 11 also demonstrates acceptance and adaptation when she described how she compares her QoL with her old self, describing how she is more limited in what she can do now.

6.3.3.5 Assessment of HRQoL

To explore the research question; *'Does assessment of HRQoL with an appropriate measure make a meaningful difference to patients?*' interviewees were asked: *'Do you think that the assessment of your HRQoL with the questionnaire has made a difference to you?* If the assessment of HRQoL was not found to make a positive difference to participants I would need to question whether assessment should continue in the future.

Various views concerning assessment were determined from the narratives. Some participants felt that assessment of HRQoL had not made a difference to them yet described several benefits.

Participants described increased self-awareness following assessment:

> *'I think, as I have said before, it has made me more focused and more aware of what I am going through and things that, you know, that are happening to me every day. It's made me think hang on a minute I need to deal with that you know so it's it's a lot better. It's made me more serious about the whole thing.'* (P5:F)

> *'I understand myself more……. I think it (the assessment) makes me more aware of myself.'* (P14:F)

I found that using the questionnaire resulted in a different type of consultation; the patient responses prompting a very different kind of discussion, particularly in the earlier part of the research period.

Although Participant 8 stated that the assessment made him more able to understand his MS and deal with it he described how he was not bothered about assessing HRQoL but recognised that his QoL had improved. Interviewee 2 suggested that the

questionnaire made one think about what had changed. I would suggest these are positive findings, particularly if participants later made changes to their lifestyle or accepted interventions which could be of positive benefit to them. This is illustrated by Interviewee 10; once he realised the impact of his MS he decided that he needed to address the situation:

> *'It was more the fact of seeing that I was on the extremely column. That, er, it was necessary to try and just ease back and relax, so that I came down to the lower end.'* (P10:M)

Participant 12 stated that his quality of life had deteriorated at each assessment, but this did not concern him as:

> *'I am one of those, I think you've just got to get on with it you know. Whatever it is. It's no good just sitting back and thinking oh you know I'm deteriorating. You just push yourself as much as you can, to get as much as you can out of life really.'* (P12:M)

These sentiments are reflected in the views of participant 13:

> *'It didn't make me think oh my god I'm getting worse, it's just reality. It's just reality, and life is an ebb and flow.'* (P13:M)

The role of HCPs in the assessment of HRQoL was mentioned by Participant 12; they described how assessment was important because if a deterioration was noticed or they had a problem, the HCP could refer the patient on to the appropriate department who could deal with it. The work of Miller and Allen (2010) describes how incorporating HRQoL measures on an individual level can enrich the clinical encounter by informing the clinician of the patient's current HRQoL status, a point with which many of the patients and all HCPs interviewed reinforced. Two participants described how the questionnaire benefitted both patients and HCPs; a point with which I would agree. From the nurse perspective, the more information we have the more productive the appointment potentially is for the patient. HCP1 suggested that the MSIS-29v2 should be incorporated into practice as measuring QoL is important.

Also, participants suggested that by comparing their questionnaires they could assess and monitor changes in their HRQoL; some described how being able to see changes was a good thing:

> *'Sometimes people ask you how you are feeling, and you say well I haven't changed much. But, by looking through the forms you can see slight changes, either in the bad way or the good way, which I think was a good thing to do.'* (P12:M)

Following cessation of data collection, many patients when attending outpatient appointments asked where their questionnaire was, stating that they missed it. One described how it made her think about her MS which she didn't do every day. Hence, it may be assumed that these participants found the assessment of benefit to them.

In summary, the process of assessment of HRQoL enabled some participants to become more aware of the impact of their condition and subsequently more active in the management of their MS and care. From the above comments, I would conclude that assessment of HRQoL did make a difference to patients and its inclusion in everyday practice should be considered.

6.3.4 Process

Within the theme of process, two sub-themes are described: outpatient appointments and the questionnaire, i.e., MSIS-29v2; there is considerable overlap between some of the associate themes described within the two sub-themes. For example, there is common ground between the experience of attending outpatient appointments when the MSIS-29v2 was utilised, the impact of the questionnaire on the consultation, and properties of the MSIS-29v2 with regards focusing thoughts and concerns and informing the consultation.

The sub-theme of outpatient appointments is presented first. The five associate-themes, shown in Figure 25, which emerged from analysis of the interview narratives all relate directly to the experience of attending outpatient appointments. Two of the themes emerged from interview questions.

6.3.4.1 Outpatient Appointments

When attending neurology clinics at the Trust where this research took place, MS patients are reviewed at one of two hospitals, in a consultant-led multi-professional

clinic, or in a nurse-led clinic. Some participants are only ever reviewed in nurse-led clinics, others only at multi-professional appointments whilst some are reviewed in both. The types of appointment attended by each participant in phase 2 and place of review are given in Appendix V. As the MSIS-29v2 will potentially be used in the outpatient department I considered it important to develop an understanding of how consultations worked before and after the introduction of the MSIS-29v2, thereby allowing a considered opinion to be made regarding the impact of assessment of HRQoL in the outpatient setting.

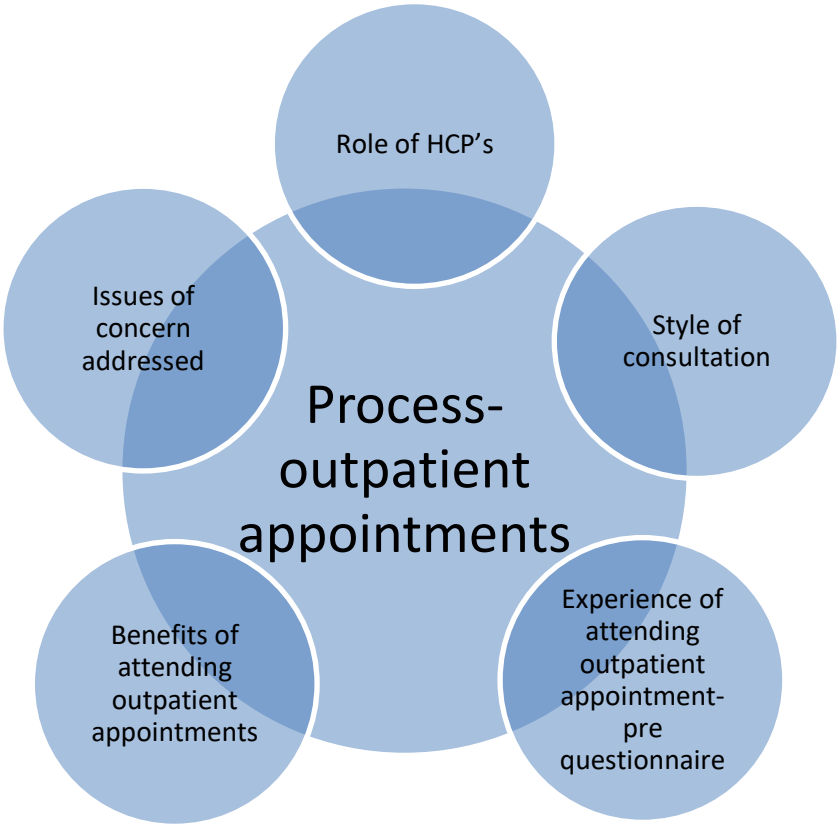

Figure 25 Relationship of the associate-themes to the sub-theme 'Outpatient Appointments'

a. Role of HCPs

Participants' accounts of their experience of attending outpatient appointments often digressed into the role of the nurse versus the consultant. Participant 3 perceives the role of the consultant:

> *'I think the neurologist is more if you've had an attack and things are deteriorating. I think sometimes the way I when I am stable I would be happy just to see an MS nurse, but obviously, there is times where you know that it is more evolved and perhaps you want to speak to your neurologist.'* (P3:F)

This was a common theme and illustrates the view of Dennison, et al. (2016) who describes how neurologists tended to be viewed as a 'diagnoser' with little time and interest in patients' ongoing struggles. This is refuted by the neurologist of this research in the following section when he talks positively of the benefits of using the MSIS-29v2 to help guide the consultation and learn about the impact of MS for individual patients. Contrastingly, the MS nurses tended to be perceived as ideally suited for discussing emotional and practical issues relating to MS, again reflecting the findings of Dennison, et al. (2016). It was felt that the CNSs understood patient problems and reviewed patients holistically.

A supportive role by the HCPs was acknowledged throughout the data in relation to the time of diagnosis, a life-changing event, and also subsequently:

> *'I think in my personal opinion that MS nurses are so important. When I first was diagnosed if it hadn't been for the MS nurse then I don't know what I would do.'* (P3:F)

> *'Since I was diagnosed I have had so much support, like from you guys.'* (P14:F)

This demonstrates both expert knowledge of the specialty area and an in-depth knowledge of the consultation process which Hodges, Poteet, and Edlund (1985) suggest are essential for the role of a consultant; I would consider this applies the CNS role also. It also reflects the work of Koopman and Schweitzer (1999) and Burgess (2010b) who describe how the need for support is crucial both at diagnosis and subsequently. Participant 6 and P12 described how they found the MS nurses listened and gave them the time and space to talk, describing professionalism throughout their

appointments. In contrast, it was acknowledged that the supportive role of the consultant was limited by the length of clinic appointments. The nurse-led appointments are of twenty minutes duration, whilst the consultant-led appointments tend to be shorter due to the demands on the service, generally lasting between five and fifteen minutes. The work of Dennison, et al. (2016) found that the patients were conscious that the valued support nurses could provide was limited by their workload. At the place of this research the consultant is very aware of the inadequacies of the length of clinic appointments and hence his abilities to be more supportive; regrettably this cannot be resolved due to recruitment issues:

> *'Neurologists haven't really got time to sit there and go through everything with you. So, then I think the MS nurse is great coz you can talk to them about it.'* (P3:F)

The value of the support of an MS nurse at the end of the telephone or email was also described by several participants. Patients felt able to contact the service when they were having a bad day, or new symptoms appeared, recognising that the nurses would return their call if not available to answer the call immediately, or reply to an email. One participant (P3) described how she derived reassurance from knowing that she could ring the MS service if needed between appointments, suggesting that without this alternative means of contact life would be very hard. The value of the long-term relationship with the nurses was also described; for several a level of trust had been developed over many years.

b. Style of Consultation

Patient-centred care with shared decision-making was described throughout the interview transcripts, which reflects the requirements of NICE Guidelines 138 (2012) and 186 (2014). Whilst the Calgary-Cambridge model provides a basis for consultations (section 3.4.2) it does not provide a framework of questions. All HCPs described how the outpatient appointments felt more structured using the MSIS-29v2, this being deemed a positive addition. HCP1 described how the style of consultation felt more complete using the questionnaire as it facilitated an understanding of the patients' social background and the wider issues they face, reflecting the view of Miller and Dishon (2006) who describe how directly assessing HRQoL can increase

physicians' understanding of the impact of the disease on patient perception of well-being and functioning.

Both HCPs interviewed described unease at asking certain types of question:

> *'I would be a little bit at unease to ask patients about their umm worries, about whether they are feeling depressed or not. It's probably a better way of eliciting this information through a questionnaire…'* (HCP1)

> *'Maybe it encouraged me to perhaps ask questions that are a little bit more tricky to ask, like the, especially around the irritability and concentration, confidence, depression side of things. So, I think it was easier to ask the patient because you're, because you're asking them through the questionnaire, especially if they'd like pointed it out there was a problem.'* (HCP2)

These views support those of Detmar, et al. (2000) who noted that some oncology physicians believe that their patients, rather than themselves, should be the ones to raise question about psychosocial (emotional) problems; the HRQoL measure, thus contributed to a more productive consultation. The patient-centred approach of using a HRQoL measure also helps the patient to 'live with the illness' rather than just 'receiving treatment for the disease' (Lohr and Zebrack, 2009) as the impact of MS is considered.

All HCPs believed the appointment to be of a better quality for both patients and staff when the MSIS-29v2 was used, as patient-perceived problems were addressed, with more interventions possibly being considered. The fact that options for care were suggested which the participant then pursued was commented on (P14), indicating that a partnership of care was occurring. Additionally, HCP1 suggested that using the MSIS-29v2 enabled the significance of therapeutic treatments to be considered.

HCP2 acknowledged that, as problems were illuminated by patients and information and ideas to address the problems discussed jointly, shared decision-making was

occurring. Interviewee 12 suggested that the appointment was equally balanced, with regards involvement of the nurse and themselves:

> *'It's normally 50/50 really which is very good. There is always a discussion prior to sort of giving me anything, whether you like it or not....'* (P12:M)

This was evidenced when he explained why he did not wish to take up offer of a referral to the wheelchair services. This participant felt that the care was centred around them, the patient, and that they were driving the appointment as they were the one with questions which needed answers. They described how they discussed the physical side of MS and also home-life problems, referrals being made as appropriate. A multi-disciplinary approach was being followed here; HCP1 described how the questionnaire promoted such an approach. Newsome, et al. (2016) suggest that such an approach to care is required for long-term conditions.

Participant 14 described being involved in care decisions. Whilst Participant 4 felt that she was informed about treatments that could help her, Participant 13 described how he felt both informed and involved in his care:

> *'I think it's an interactive service that you offer me, and you give me choice.'* (P13:M)

It was evident, however, that not all patients wanted the same level of involvement in their care. One participant did not wish to be involved in decision-making during the consultation as described in section 3.4.4. He suggested that he didn't know what medication would be appropriate for him, stating that *'that was the nurses' department'*. He described how when he had described troublesome symptoms, medications had been suggested which he had tried, and which had provided benefit. He stated that he did not feel pressurised into taking anything yet did feel involved in his care. Participant 8 stated that as long as his questions were answered and any doubts in his mind discussed, he was happy with the style of appointment.

Appointments were perceived as 'relaxed' by one patient; another (P6) described how she felt that she was given the time she needed to discuss her concerns but realised that there was not an infinite amount of time; she was happy with the length of the consultations.

c. Experiences of Attending Outpatient Appointments

When considering the future use of the MSIS-29v2 in routine clinical practice, gaining an understanding of patients' experience of attending appointments: before the research began; with the questionnaire, and; after data collection had ceased was essential if a considered and informed decision was to be made.

The experience of attending outpatient appointments from the patient perspective was addressed with the question: '*Can you tell me about your experience of attending outpatient appointments?'*. Many described broadly positive experiences; appointments were described as *'fine'* (P6, 9, P11) '*excellent*' (P2, P12), '*really positive'* (P13), or '*brilliant'* (P8). Participants felt well received when attending (P13), describing good treatment with written information from the MS Society or MS Trust, and supporting letters being provided as appropriate or requested:

> *'It is quite nice to come and to know you feel that somebody is taking an interest, Yeah, or somebody's monitoring what is happening.'* (P11:F)

> *'Because the staff obviously understand your problems, and you can discuss it quite easily with them. And they are always willing to sort of spend more time if they have to, to try and go through your problems.'* (P12:M)

Conversely, P2 and P13 did not feel that they got much out of attending appointments as they contacted the service by telephone whenever they had problems, and so generally had little to discuss at appointments. Interestingly, P13 had previously described appointments as *'really positive'*. Two patients (P1 and P5) suggested that attending appointments was rather a waste of time when they felt well and there had been no changes in their condition; but acknowledged the importance of attending as the HCPs needed to monitor their condition.

Participants were not directly asked about their experience of attending appointments before the introduction of the questionnaire. Participant 1, who describes themselves as very articulate and self-managing felt that the attending outpatient appointments before the introduction of the questionnaire was fine possibly suggesting they did not gain much from using the questionnaire.

It was important to determine participants' views concerning the use of the questionnaire at an outpatient appointment because, without positive feedback, the use of a HRQoL questionnaire in appointments would have to be questioned. Opinions were explored with the question: *'Did the questionnaire make a difference to your consultation?'*. There was considerable overlap in the transcripts concerning the experience of attending outpatient appointments when the MSIS-29v2 was utilised, and the properties of the MSIS-29v2 (section 6.3.4.2a).

The questionnaire was found to highlight areas where there was a physical or psychological impact due to MS. Those issues which were of concern to the patient could then be addressed. It was deemed that the appointment was more directed (P6), more productive and of a better quality when the questionnaire was used. Participant 13 suggested:

> *'I think it was different is because all of a sudden, you are physically presented with more information about me, that I haven't actually got to articulate to you, or remember to say or, whatever, so I think this is a good tool'* (P13:M)

This is concurred with by P12 who described how the HCP were given an insight into his current problems. It was also suggested that the MSIS-29v2 helps HCPs focus in on issues that have been circled when patients *'waffle on'* (P7). Consideration of issues for discussion, prior to entering the consultation room, was considered important by P4, the use of the MSIS-29v2 facilitating this. The questionnaire was also found to remind participants of issues that they needed to discuss and illuminate areas that they hadn't necessarily thought of or realised were due to MS (P8). It was suggested that the questionnaire made the patient more aware of what they needed to say and also how to explain symptoms:

> *'I was quite reassured by it really, coz you could explain, as I say you can explain the symptoms quite easily on the form. Rather than sort of trying to get there and forget things.'* (P12:M)

Participant 6 suggested that the questionnaire was about raising awareness, making them think about how 'it has been' rather than giving a less considered answer which they felt was not helpful to them.

One participant described how they felt the questionnaire could be beneficial for those who are less articulate as symptoms or concerns would be highlighted, it then being the responsibility of the HCP to discuss these, thereby giving the patient the opportunity to verbalise their concerns. The questionnaire was also found to enable/empower participants to discuss their issues with HCPs. Participant 5 described how the questionnaire had highlighted issues, which they then felt able to discuss, the questionnaire giving them the necessary confidence. Consequently, the appointment was more productive, the consultant offering various options for care which were discussed.

Further benefits of using the questionnaire were highlighted by P13 who described how, through comparison of responses between questionnaires, the HCPs were able to identify an improvement or deterioration in condition and then discuss how the participant was coping with the changes. This was considered reassuring, the participant describing how they then didn't feel on their own. It was also considered important that the HCPs could see how participants were coping (P4). These points are in accordance with the work of Miller (2002) who describes how the routine use of HRQoL measures allows physicians to review, quickly and systematically, patient functioning and concerns and to help patients to become active participants in their care.

When asked, *'Did the consultation feel different when using the questionnaire?'* views were divided. Six participants did not perceive the consultation to be any different when using the questionnaire. Length of appointment, lack of integration of the measure into the appointment, and the ability to vocalise issues without prompting were all described. Participant 7 who only attended multi-professional appointments, felt the questionnaire had not made any difference to her appointment as it was so short. Two participants described how they did not feel that the MSIS-29v2 had been fully integrated into the consultation; P11 suggested that the MSIS-29v2 was an 'add-on' and didn't feel that the appointment felt different using it. Despite saying this they stated that the appointment felt more productive as areas were highlighted for discussion. Participant 2 also did not perceive that the questionnaire has been integrated into the consultation; he described how talking to the healthcare professionals was a totally separate thing from the questionnaire in his mind. He stated that the questionnaire did not make a difference to his outpatient appointment but was

unable to clarify why. These two comments could indicate the need for further training when using the MSIS-29v2 in clinic. Participant 3 felt that the questionnaire did not make a difference to her as she was a very 'open' person who would discuss her worries. Another, (P15) stated that the appointment did not feel different and that the information provided was for the nurses. Although this participant is vocal in informing the HCPs with regards issues, he is less assured in terms of decision-making, as discussed in section 3.4.4. This participant indicated strongly throughout their interview that they had trust in the healthcare professionals and would follow advice:

> *'Well, I felt involved, even though I didn't know really what was going on. I mean I don't know what medication is gonna be good for me. That's your (HCPs) department.'* (P15:M)

Several participants did consider that appointments felt different when the MSIS-29v2 was used because the HCPs were presented with information about them which provided a starting point for the consultation:

> *'Yes, a lot different. Yep with this (questionnaire). Yeah yeah. Because of the prompting? (HCP) Yeah. Yeah. Because I'd answered it and then I went through and then you or whoever had it in front of ya and you knew what the answers were on there.'* (P9:M)

> *'If only because it gives insight obviously to the nurse or neurologist when you go to see them.'* (P12:M)

P14 suggested that because of how depressed she felt, she did not want to talk; however, the HCPs were able to use the questionnaire to guide the consultation, determine the root of the issue and jointly determine a plan of care; hence she felt that the questionnaire had helped, and that the consultation did feel different.

When interpreting participants accounts of their outpatient experiences it was necessary to consider that the participants and healthcare professionals are well known to each other, often with relationships that have developed over many years. Patients might have found it difficult to disclose any difficulties or tensions they had experienced in appointments. Nonetheless, I would suggest that discussion of the questionnaire responses by the HCP is imperative if the questionnaire is to be meaningfully incorporated into daily clinical practice. P9 and P12 both described how

their answers were discussed and care offered accordingly. The data revealed that the nurses discussed the responses to the questions on the forms with most patients. This is in accordance with Donaldson (2007) who describes how the information from HRQoL assessments should be viewed by patients as a valuable part of their care and must be used during consultations. Regrettably, Participant 1 who only attended consultant-led appointments did not believe that the questionnaires were reviewed. They were of the opinion that if the questionnaires were reviewed then there would potentially be benefits of using the questionnaire, a view with which I agree. Additional training or longer appointments could facilitate more effective use of the measure in this instance. I believe I was more adept at discussing responses during later appointments in the research period, potentially due to increasing confidence in using the MSIS-29v2. Jensen, et al. (2013) describe how, in qualitative interviews exploring patients' attitudes, the patients clearly state that if they see their patient reported outcome data being used by clinicians and influencing their care, this will encourage continued participation. It was therefore disappointing that some participants did not consider that the data had been discussed with them, especially as Baars, et al. (2004) suggest that nurses are seen as the most appropriate clinicians to undertake formal HRQoL assessments.

Participant 10 said that he missed completing the questionnaire when he attended appointments in the period after data collection had ceased. He suggested that he did not tend to consider issues that he wanted to talk about and so the questionnaire gave some structure to the consultation.

Participant 14 described how:

> *'You (nurses) always and Dr (consultant) always ask of my wellbeing, so I think that's there, but for the forms it makes me a bit more aware.* (P14:F)

Thus, it may be deduced that whilst there was high satisfaction with the appointments prior to the assessment of HRQoL, the measure was deemed to raise awareness. Several participants suggested that they did not prepare themselves for appointments. Thus, before the introduction of the questionnaire, I would suggest that issues or concerns may not have always been covered.

The HCPs all described their perceptions that using the questionnaire resulted in a better-quality appointment:

> *'I think for the patient, if they enjoyed doing the questionnaire, I think for them it was maybe a better experience because they perhaps felt that they got more out of the outpatient appointment by doing that. Because I know when they, and also quite a few people after it was finished would ask me "Where is their questionnaire?"'* (HCP2)

HCP2 also stated that because the participant had a better experience it:

> *'made me feel maybe better in some cases because erm, you know you'd pick something up that you wouldn't have picked up before.'* (HCP2)

These comments reflect the findings of Boyce, Browne and Greenhalgh (2014) who describe how professionals also appreciated PROMs which complemented their own clinical judgement. Boyce, Browne and Greenhalgh (2014) also found that the use of a PROM had the negative potential to narrow the focus of a consultation, an effect which was not found in this work. As an HCP I found appointments to be more productive as issues were more readily raised by research participants than by those not involved.

d. Benefits of Attending Outpatient Appointments

Various benefits were described when participants were asked: *'What do you feel that you get out of attending outpatient appointments?'*. Keeping in touch and the provision of reassurance and support are themes that pervaded the interview data. Phase 1 revealed that the most frequently offered interventions was reassurance. One participant suggested:

> *'A lot of relief actually, believe it or not. Relief that there is somebody there for you that's looking after your well-being as well, trying to help your well-being as well'* (P8:M)

Some patients (e.g. P4) described how their GP does not know much about MS and so found appointments extremely beneficial; continuity of treatment occurred, potential treatments were discussed and questions about MS answered honestly. Additionally, information was provided about which symptoms were due to MS rather than a blanket statement 'that's due to your MS' being given. Patients also described appointments

as beneficial because they could discuss any problems or issues they had (P1, P5, P11, P12, P15) and ask questions (P3). Appointments were described as helpful by two participants (P3, P10). Appointments were also used to review the impact of treatments or interventions (P5). However, it is important to acknowledge that patients may simply have wanted to be polite about their experience in view of their relationship with the HCPs; nevertheless the details they gave of their appointments do suggest positive benefits.

e. Issues of Concern Addressed

Although using a HRQoL measure could help issues of concern to be detected, it was interesting to know if patients considered what they wished to discuss prior to attending an appointment, or whether they discussed issues of importance to them. One prompt used during the interviews was: '*At the hospital do you feel that issues which are important to you are covered?'* When analysing the transcripts, it soon became evident that few patients (P10) consider what they wish to discuss prior to attending appointments. Using the MSIS-29v2 could help to address this issue. Participant 11 acknowledged that if issues were not covered:

> *'I mean I think if they're not it's partly down to me because I don't prepare myself enough.'* (P11:F)

Conversely, Participant 12 stated:

> *'If I do have a problem at home I always sort of ask the nurse, and always get the good answers.'* (P12: M)

Most participants felt that any issues they raised were addressed during the outpatient appointments. This is demonstrated by two interviewees. Participant 6 suggested that her concerns were addressed as she had space to talk about them during appointments. Similarly, Participant 14 asked questions as she was keen to hear whether there were any new treatments that could help to slow of stabilise her condition.

6.3.4.2 MSIS-29v2

The views of patients with MS and HCPs were sought concerning many aspects of the MSIS-29v2 and its use in the outpatient setting. It was essential to determine if the MSIS-29v2 was acceptable to patients and HCPs when used in the outpatient setting. Although the MSIS-29v2 has been demonstrated to be appropriate for use in many

situations including hospital settings this research differs in that it explored the opinions of users in the outpatient setting.

When analysing the interview transcripts six associate-themes emerged which are presented below in Figure 26. These all relate to the use of the MSIS-29v2 during routine outpatient appointments and are of relevance when considering the future use of the MSIS-29v2. The views of HCPs are included in this section and related to the patients' views as several of their interview questions focused on the MSIS-29v2.

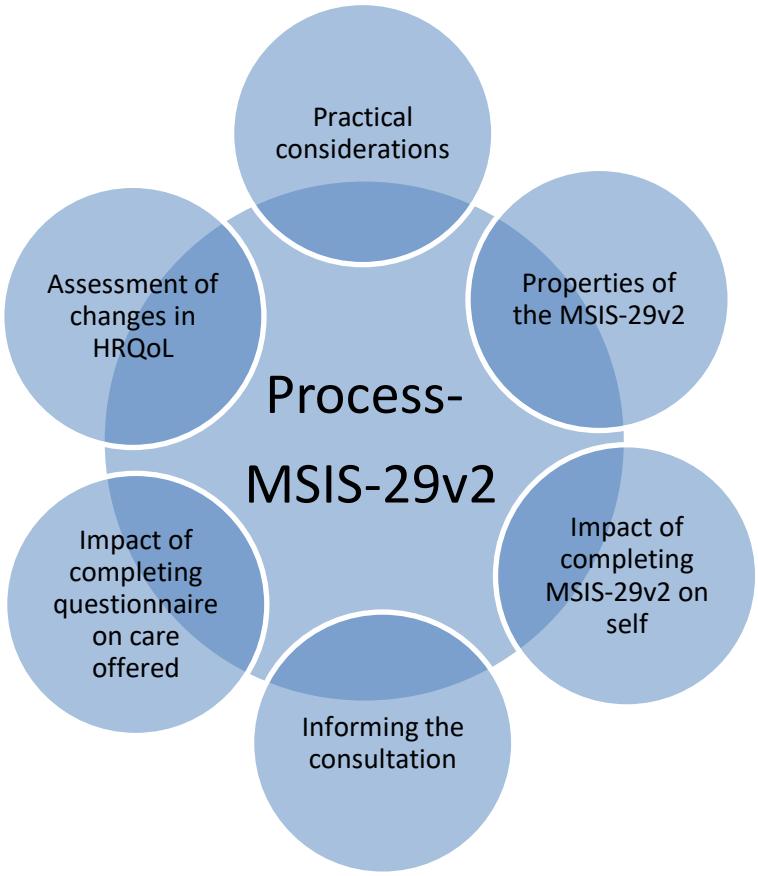

Figure 26 Relationship of the associate-themes to the sub-theme 'Questionnaire'

a. Properties of the MSIS-29v2

Several properties of the MSIS-29v2 were described when patient and staff participants were asked what it was they liked about the MSIS-29v2. The questionnaire was pronounced clear (P1), simple (P2, P15) and straightforward (P2, P4, P5). Whilst some questionnaires are long-winded and repeat themselves (P1, P5) Participant 5 felt it was not too long. It was described as well set out and therefore easy to read, follow/understand (P2, P12, HCP2) and easy to complete (P5); P5 stated:

'you just ring the answer nearest to how you feel'. Some patients indicated that they struggled with which answer to ring; this point is discussed later in this section. No concerns were raised regarding the content or the phrasing of individual items reflecting the work of McGuigan and Hutchinson (2004).

The MSIS-29v2 was described as broad-based and comprehensive (P12) covering most aspects of life (P13, HCP2) and every aspect of MS (P1, HCP2):

> *'I mean it covered most things. It obviously covered balance and things like that and things that you are capable of doing, which I thought was very good.'* (P12:M)

Later HCP2 realised that sexual function was not covered. The questions were considered relevant by Participants 6 and 10, with Participant 14 describing the tool as good because all the questions related to MS, which she suggested was something that generally does not happen in the real-world. I would surmise that this reflects the use of a disease-specific measure rather than a generic one. Over half of the patient-participants stated that there was nothing they didn't like about the MSIS-29v2. The words of Participant 6 suggest that the questionnaire is well designed, this potentially reflecting that people with MS were involved in its design, as described by Hobart, et al. (2001):

> *'I've not read it and sort of thought oh I wonder why you didn't ask that. So, I think there's pretty well everything on there. And I've never sort of thought oh I well wonder why you're asking that because it all makes absolute sense actually. It might not be affecting me particularly now, but I can think that well yeah it has done at sometimes. So, I can sort of see why the questions are what they are.'* (P6:F)

For a measure to be effective at assessing the impact of MS it should cover the full range of symptoms potentially experienced as a consequence of having MS. Thus, when interviewed participants were asked: '*Are there areas which aren't covered that perhaps there should be questions about?'.* Only three patient-participants described any such areas; Interviewee 1 suggested that memory, brain fog and word finding were

missing. One patient and all three HCPs commented that sexual function was not covered. The HCPs felt this was an important area that should be covered:

> *'That would be a good one to put in, because that's something that we don't ask patients, erm, naturally and at the end of the day.'* (HCP2)

The literature reviewed suggests that structured questionnaires are formulaic as only certain areas of life and symptoms are considered. When interviewed during phase 2 most participants could not describe areas/symptoms that they felt were missing from the MSIS-29v2 (section 6.3.4.2a). Some described how not all questions were necessarily relevant to them, however acknowledged that the MSIS-29v2 allows for this with the response *'Not at all'*. I would suggest that these findings reflect the rigorous design process of the MSIS-29v2 which included patient involvement (Hobart, et al., 2001).

The literature widely recognises that whilst sexual function may be adversely affected in MS it is not asked about as much as it should be, the MSIS-29v2 reflecting this omission. Some 40-80% of people with MS experience sexual dysfunction which contributes to reduced HRQoL (Nortvedt, et al., 2001). P15 suggested that the mental health side was not covered; I would suggest that because of the time between the use of the questionnaire and the interview they had possibly forgotten the questions of the psychological section which cover this area. Participants 12 and 14 could not think of anything to improve the MSIS-29v2, reflecting the view of Interviewee 6:

> *'I can't think that that I've ever come away from filling it in thinking I wonder why they didn't ask about that.'* (P6:F)

Only one participant 1 felt that the questionnaire was too general, and that adaptations were required to make it more specific as all patients are different. Drop in questions specifically for individuals were suggested.

Participants 2, 7, 12, 13 and 14 described the questionnaire as a very good tool. Two others elaborated suggesting that the questionnaire would be very helpful to many people including less vocal patients (P3) and newly diagnosed patients (P1, P3). Although this could be seen as an example of participants valuing an intervention on behalf of 'others' less capable than themselves, the fact that newly diagnosed patients were very appreciative of the instruments suggests it has a genuine role in practice. Participant 8 who was diagnosed just before the research commenced was interviewed.

He found the questionnaire to be informative, illuminating symptoms that he didn't necessarily know were due to MS. It enabled him to consider the impact of his MS before appointments and reminded him of symptoms he wished to discuss. It also made him aware that he was not the only person suffering with these symptoms. Several other participants echoed these sentiments. Participant 1 later contradicted himself suggesting that the MSIS-29v2 would scare newly diagnosed patients as it indicates symptoms or impacts which potentially could occur in the future.

Several participants, including P1, P11 and P14 described how the MSIS-29v2 raised their awareness of the impact of MS:

> *'It's a nice reflection to see where you have come from and where you are on that day'* (P1:M)

> *'I like the questions in the questionnaire because they do make me think; definitely make me think.'* (P14:F)

These points are discussed further in the following sections.

One patient (P14) described how the MSIS-29v2 could help HCPs to monitor patients:

> *'I think it's good for you, saying oh she's a bit down at the moment, we'll keep an eye on that.'* (P14:F)

We currently arrange additional clinic or telephone reviews for patients who are struggling because of their MS. However, if the MSIS-29v2 highlighted additional patients who required closer monitoring this must be considered a positive aspect of using such a tool.

Several issues were described concerning the number of response categories or their wording. Participant 9 liked the four choices, rather than 'yes' and 'no', stating that this was what was good about the questionnaire. Conversely, Participant 1 felt that five response categories would be better, describing the current four responses of: 'not at all', 'a little', 'moderately', and 'extremely' as too broad. Ironically, the original MSIS-29 had five response categories which were reduced to four following Rasch testing.

Difficulties experienced when selecting a response are illustrated by Participant 11 who suggested that she would probably under-estimate the impact of symptoms as she felt that it was difficult to go from 'moderately' to 'extremely', describing this as a big

gap; she suggested that she would answer 'moderately'. Participant 5 suggested that she fitted between two answers for the question concerning mobility. These views reflect the concerns of Boynton and Greenhalgh (2004) and Bowling (2014) who describe how fixed answers can cause frustration, particularly if a participant does not feel that the questionnaire covers all responses. The inability to provide an answer which accurately represented the impact of MS could have had implications when considering what to discuss because, as nurses, we tended to discuss the areas of higher impact; thus, we may have missed cues from patients concerning areas that might benefit from further exploration. The rating of the impact of MS was liked by two of the HCPs, one describing how this aspect allowed them to gain an understanding of how adjusted the patient was within themselves to their level of disability and associated limitations. They described how the scoring indicated whether interventions should be discussed and considered.

When the frequency of questions missed was analysed in section 5.6.2, no pattern was established; no particular question was regularly not answered. Participant 15 was selected for interview because he had not answered all of the questions at the four outpatient appointments he attended during the research period. When asked about this no specific reason was given. He speculated that it could be due to problems with concentration. Cognitive function is affected in approximately 40-65% of people with MS (Rao, et al., 1991a; Amato, Zipoli and Portaccio, 2006), so could account for such omissions.

The questionnaire asks patients for their views on the impact of their MS on their day-to-day life during the past two weeks. Both Participants 6 and 10 both questioned the period of two weeks to look back at symptoms, especially as they are reviewed six-monthly. Participant 6 did suggest, however, that if the period was longer than two weeks she might have forgotten the true impact of the physical and psychological components of her MS; two weeks was felt to focus the mind.

In summary, the questionnaire was well received by the majority of the patient interviewees and by both staff interviewees. It was suggested by Participant 2 that:

> *'It achieves what it set out to achieve'.* (P2:M)

I would suggest that the MSIS-29v2 is appropriate for use in the outpatient setting.

b. Informing the Consultation

From the patient perspective, there was a pervading view that the MSIS-29v2 informed the consultation, particularly as it was considered very easy to forget what one wants or needs to say when attending an outpatient appointment. It was considered that the questionnaire makes one consider the whole condition and areas it is affecting (P1, P11). The impact of MS was thus considered. Interviewees 6 and 11 considered that the questionnaire helped them to focus their thoughts, describing how they did not generally consider what they wanted to discuss prior to attending an appointment. One participant described how symptoms were highlighted that he was not aware of (P10). HCP1 suggested that:

> *'I felt that it was highlighting aspects of the problems of the patients which could be of overlooked basically.'* (HCP1)

Participant 5 also suggested that using the MSIS-29v2 made them aware of what did not need to be discussed at that time, thereby contributing to a more productive appointment. It was also considered that during the time patients were waiting to go into an appointment there was time for reflection which the MSIS-29v2 could guide. Participant 10 says, of using the MSIS-29v2:

> *'It's the only time that I think about some of those things as to whether they are causing a problem or not.'* (P10:M)

These examples demonstrate conclusively that symptoms and areas of concern were highlighted, time for reflection permitted, and areas for discussion determined as suggested by Lohr and Zebrack (2009). The examples also echo the realist synthesis of Greenhalgh, et al. (2017) which showed that PROMs completion prompts patients to engage in self-reflection about their health.

Some participants described an educational component to the MSIS-29v2; Participant 11 did not realise that some of her symptoms were due to MS. The MSIS-29v2 also revealed that she was experiencing 'hidden' symptoms of MS such as bladder or bowel dysfunction which many patients do not disclose as they are embarrassing, or they have learnt to live and are not aware that they are a problem, echoing the work of Giovannoni, Foley and Brandes (2012). Also, the questionnaire enabled some patients to talk about issues they had not mentioned before. It became apparent during analysis that four patients had lived with MS for a long time and accepted their symptoms as

'normal'. Thus they described how they did not realise something was a problem for them until they read about it on paper (P2 and concentration). This then gave them the impetus to address the issue and deal with it. P5 also suggested that the questionnaire made her realise that she did not have to manage symptoms alone or just accept them; rather she should discuss them and seek help to address them:

> *'I think because, again going back to the pains in my feet, which I am still getting every day. I just, I have got them, and they are an issue but like everything else I just thought oh well it's just part of the MS, so, I've just got to deal with it. Whereas that made me realise that maybe it's not just something I need to deal with. It's something that, you know that we need to take some action. And so, I was able to, it made me kind of go no stop ignoring that. And actually, do something about it. So, that was good.'* (P5:F)

One participant (P4) suggested that the questionnaire highlighted how well she was coping with some issues and illuminated areas where she needed help. The HCPs explained, of the MSIS-29v2:

> *'Yes, so it did make a difference because I think you could go through it properly once you had it and you could have a look and you erm, you could then pick up what was, erm what was worrying the patient or was a bigger problem for the patient and then you could do it in a more structured fashion, OK, although it took a lot longer.'* (HCP2)

Not only did the questionnaire help participants remember what they wished to discuss, participants recognised that the MSIS-29v2 informed the HCP in clinic of problems for discussion:

> *'I found them very good, Aha, erm because, well it's easier for the consultant to flick through and understand what your problems are, Mhmm, because sometimes you can go in there and it goes completely out your head what you want to ask them all or what you feel like, Right, and it's very handy having filled the form in before, Yep. that if you become sort of like forgetful then obviously, you know, the neurologist or the nurse has got the answers there, Ok, or a guide to the answers.'* (P12:M)

The consultation could then be directed around issues the participant had determined when completing the form, rather than the points they raised or 'chatted' about once in the appointment. Participant 3 also suggested that the questionnaire would enable HCPs to discuss the answers given by patients who would not necessarily have raised the concerns themselves. HCP2 agrees suggesting:

> *'it was good because then you could focus on the problems that they'd put, say like as a four erm and, then you could specifically ask them about those problems and it might be they'd already been dealt with but they, on a few occasions, erm specifically the questionnaire tipped up a problem that had occurred that we probably wouldn't have picked up in clinic otherwise, if we hadn't have had the questionnaire.'* (HCP2)

HCP2 described how when the MSIS-29v2 was not used problems were not always detected during an appointment:

> *'They'd ring back and say, 'I've forgotten to ask something' or maybe they'd call you back in a month and like you know, they'd have a problem that you hadn't perhaps picked up at that appointment and you'd have to deal with it like on the telephone a little while later.'* (HCP2)

The above points are in agreement with the findings of Fayers and Machin (2016) who suggest that a reason for assessing HRQoL is to establish information about the range of problems that affect patients.

All HCPs and two participants (P3, P4) described how the MSIS-29v2 made a difference to appointments as it revealed how patients with differing levels of disability viewed the impact of MS on themselves and everyday life. Patients felt that HCPs would then able to develop more of an understanding of the impact of MS on patients:

> *'It was quite useful because it was expanding our understanding of the wider issues that patients with MS do face.'* (HCP1)

> *'I think it did make a difference because it was structured, and because, it was, it was tricky because some of the patients, you, you look at their disability, erm and it depended on how the person was within themselves depends on where they tick the boxes. So like, you might have someone with limited, very limited erm, mobility and very disabled who would tick the minimal boxes because their life wasn't affected but you might have somebody who had minimal disability who, who was extremely affected, in their you know, that's the way they thought about their disease but it wouldn't necessarily, you'd need to do something about it if you know what I mean.'* (HCP2)

HCP1 suggested that because of an increased awareness of the impact of MS they would be asking more questions concerning daily activities:

> *'I became more aware through this questionnaire of how important it is to address these kind of issues, plus the psychological impact of the disease. The two major issues basically, because the other physical side we tend to ask them, routinely basically.'* (HCP1)

These points are in accordance with the work of Donaldson (2007) who discusses the effects of inclusion of HRQoL measures in routine care and its role in patient-centred care. She suggested that the use of HRQoL measures allowed the patient and the clinician to share information, helped both to be more knowledgeable about the effects of the disease and its treatment and, promoted the involvement of patients in the decision-making process.

It was also suggested that by both patients (P3, P4) and staff that completed forms provided information, thereby enabling HCPs to develop more of an understanding of the impact of MS on patients:

> *Highlight issues, yeah, in a more formal way rather you try to be more interrogating somehow in some difficult areas.'* (HCP1)

Thus, it is apparent that using the questionnaire helped both participants and HCPs to focus on symptoms and areas of concern and discuss these during the appointment. It was also evident that completing a HRQoL measure made patients and health professionals much more aware of the impact of their MS. Also, that areas which as healthcare professionals we do not routinely ask about are more comprehensively

covered when a structure is given to a consultation. It may be concluded that the MSIS-29v2 is of benefit to both patients and healthcare professionals.

c. Impact of Completing Questionnaire

It was considered possible that there would be some impact for those completing the MSIS-29v2. The nature of this impact required consideration in relation to future use of this measure. If a number of patients had become unduly distressed when completing the questionnaire and required formal counselling, it is unlikely that the measure could be incorporated into routine clinical practice. It was apparent from the transcripts that the questionnaire made patients consider their condition and its impact. It was suggested of the questionnaire:

> *'It does make you think about the whole condition and the areas which it could affect'* (P1:M)

> *'It was highlighting things I wasn't aware of, so it was to an extent a little concerning.'* (P10:M)

> *'It makes you think of the symptoms, more than what you would normally do without having sort of a form like that'* (P12:M)

Five participants (P3, P10, P11, P12 and P15) suggested that completing the MSIS-29v2 did not make them feel differently about their MS; Participants 12, 13, and 15 did not go home and think about the questionnaire. However, four participants (P5, P10, P13, P14) reflected that they only realised the true impact of MS on themselves when completing the questionnaire, describing how they do not usually think about their MS, associated symptoms, or themselves. Participants described an increased awareness of themselves as a consequence of using the forms:

> *'That's the trouble I don't want to think about it. Certainly, in the first ones I filled in I was surprised to find that let's say the irritability, I wasn't aware of it to any great extent. I have always had a temper or whatever. So yes, it was bringing out things that I wasn't aware of.'* (P10:M)

When asked how: *How did completing the questionnaire make you feel?* one participant replied:

> *'Reflective I think. It didn't make me feel sad. It umm you know, just reflective in actually thinking about my condition really and how it was affecting me at the time.'* (P13:M)

However, he did not consider this to be an unpleasant experience, the questionnaire did not have a negative experience on him and he didn't consider it painful to complete.

Another suggested:

> *'I think it makes, when you, when you, fill in any form for medical reasons it it does dawn on you what what you've actually got wrong with you, but I sort of put it to one side. I mean I can't change that I've just got to make the most of my situation.'* (P3:F)

Several participants described a reduction in mood after completing the MSIS-29v2. Participant 5 suggested that completing the questionnaire was good for her as it forced her to think about things. However, she did also acknowledge that it made her feel down for a short time. Similarly, Participant 9 described how completing the questionnaire made him feel down when he went home although not for long; he attributes the feelings to the stark reality of the questions stated in black and white. In contrast Participant 4 stated:

> *'I won't say it made me feel good or anything but it's just the fact was, it is addressing the situation of when my MS is really bad, how bad it can be……I think it shows how good I am in actually coping most probably.'* (P4:F)

Participant 6 also described how the questionnaire made her realise that she had symptoms and that she should be facing them and not pretending they were not there.

Some participants described how the new insight into the impact of MS prompted them to address issues of concern. This is illustrated by Participant 7 who described how the questionnaire had impacted on her as it had aided communication, suggesting that the MSIS-29v2 made her more open as she does not normally talk about her MS.

She described how, because of reading the questionnaire, she became aware of symptoms which she then addressed and then felt better in herself:

> *'It's made me realise that the fact that it's a condition, it's not an illness.'* (P7:F)

P14 concurs, suggesting that she had not realised how low in mood she was prior to completing the MSIS-29v2; once at home she considered her mood and took appropriate action. Similarly, P4 described how, because of completing the questionnaire, she has sorted out various aspects of her life which the MS was impacting on and consequently felt better in herself.

The questionnaire was also found to help family members understand the impact of MS on patients. This is illustrated by two participants. P4 described how significant others had a better understanding of how the MS affects her. Participant 14 suggested that everyone could relate to the questions, describing how her mother had developed more of an understanding of how she felt as a result of watching the patient complete the MSIS-29v2.

Other impacts of completing the questionnaire were the realisation that others felt that same way; Participant 11 described how the questionnaire made her realise that she was not the only one who feels as she does.

As a consequence of completing the MSIS-29v2 at least two participants (P4, P5) realised the symptoms they experience were not normal, but they have lived with them for so long that they know no difference; prior to the form P4 had accepted herself for what she was. She now realised that she needed to address her problems.

Also, an understanding was developed of the condition; Participant 8 focused on the education side of the questionnaire, describing how the questions of the MSIS-29v2 answered unresolved questions in his head and explained things, this being a positive point.

The impact of completing the questionnaire was spontaneously raised by HCP2 when interviewed. They were very aware of the potential stress that could result for some

participants and indicated that this would need addressing on an individual patient basis:

> *'Only that maybe with the quality of life questionnaires for some patients, erm is that they've got to think about what they can't do, and I think that can be upsetting for some group of patients but that's not for all of them. I think there would be people that enjoyed doing it.*
>
> *And there would be people that would, erm, that it would be upsetting for them because they, they're, it's like when they fill out a PIP (Personal Independence Payment) form, they've got to concentrate on actually what is, erm, you know, their bad points. Whereas maybe this would encourage some of them to think about their bad points if you know what I mean, but that, but that's, that's like with different patients, some patients their glass is half empty, some is half full.'* (HCP2).

When asked: *'Is there anything about the form in particular that you didn't like?'* several themes became apparent. The realisation that participants were experiencing issues in relation to their MS which they were not necessarily acknowledging meant that some people felt challenged by the MSIS-29v2:

> *'I suppose it was because it was bringing to my attention what I was having problems with. Erm at the time when I was filling this in I really wasn't thinking that er I was being stuck at home should we say. And there are questions on here that I really don't like answering.'* (P10:M)

Participant 7 did not like the fact that the form made her feel down and she was then unable to pick herself back up. Despite this she stated that she liked completing the questionnaires, describing how they made her re-evaluate the impact of MS; consequentially she realised that despite being 'bad' at one point she had got through it. Participant 14 described how she liked being able to rate how she felt; she then realised that she was 'not too bad'.

Thus, it may be concluded that completing the questionnaire had a powerful effect on the both those who completed it and significant others, enabling them to consider their condition, focus on how they feel and address some of the issues. The revelations of the patients have given me a much greater insight into how people live with MS.

d. Impact of Completing the Questionnaire on Care Offered

This theme emerged from analysis of the transcripts and the question: '*Do you think that completing the questionnaire has had any impact on you or the care that you have received?*'

It was evident from the analysis of the transcripts that, in many cases, discussion of the questionnaire did inform the care offered or received, although at interview not all interviewees could remember this; potentially this may have been related to the time interval between completing the forms and the interview date. Interventions in many forms were initiated following assessment. Interviewee 10 was prescribed a course of steroids from which he derived benefit. Participant 14 described how the questionnaire informed the care she was offered; counselling was discussed although declined. Another (P12) found the form very helpful although he could not cite any instances when his care had changed; with prompting he remembered that he (P12) had been referred to falls prevention which he had attended and found to be beneficial:

> *'Not really no. It's still the same* (Care). *But no. It's nice to talk to someone that understands your problems. I think so yeah. It does help a lot. Not that I can think of directly. I know it's very helpful when HCP has got the form she will go through it and discuss points that you are obviously sort of concerned about.'* (P12:M)

Participant 15 described how the discussion of the questionnaire had resulted in changes to his pain medication regime, and also his disease-modifying therapy. Changes to disease modifying therapy were discussed with Participant 11 but subsequently declined, demonstrating shared decision-making. Although physiotherapy and a referral to the continence clinic were made for this interviewee, she admits that she did not obtain the full benefit as she did not practice the exercises given. She (P11) stated that the physiotherapist had told her:

> *I don't think it's worth you coming, but if things get worse then let me know and that's fine.* (P11:F)

Hence, although care can be arranged, it is evident that the outcome can be dependent on patient engagement.

Another (P5) described how, when care requirements were detected a discussion with the consultant ensued, options being discussed, and a mutually acceptable plan agreed; the participant described how this style of consultation felt good as she knew what the consultant was thinking and what to expect. Participant 9 described how, as a consequence of completing the questionnaire, he was offered more than prior to its use, the MSIS-29v2 highlighting issues for which he could be offered help. HCP2 stated that issues for which interventions could be offered were detected using the MSIS-29v2 which would not have been picked up without using it. Care options were subsequently discussed; referrals were made for physiotherapy and counselling. The counselling was extremely beneficial for this participant:

> *'I will say since the questionnaire come out it, mhmm, it has made it better. And why do you say that? I have been given more. One of them was the counselling I was given, Right, which I was never offered before. Ok. And it only came up because of the erm (coughs) excuse me questionnaire. Right. And that helped me enormously. Good. I've never actually spoken about MS to anyone apart from family. Right ok. But this counsellor, it was here that I had it and it was amazing. Mhmm. Really helped.'* (P9:M)

Three participants were unsure that the questionnaire had had any impact on the care they had received. Participant 1 stated he did not know if the questionnaire had had any impact on the care he received but clarified saying that he did not feel that he needed much care at that time. Whilst Participants 3 or 13 were unsure that the questionnaire had impacted on the care they were offered, they elaborated describing themselves as either vocal (P3) or a good communicator (P13) and expressing how if they needed anything they would telephone for advice; both stated that their care was very good.

The capacity of the MSIS-29v2 to focus thoughts was cited by some participants who felt that as a consequence of this, the requirement for interventions was discussed.

Participant 2 described how using the questionnaire possibly had an impact on his care because:

> *'going through it made you... one of the questions may ignite a little box in the back of your mind and make you think oh I had better mention that.'* (P2:M)

Potentially issues were then detected, and interventions suggested that would not have occurred without the use of the MSIS-29v2. Participants 5 agreed suggesting that the questionnaire made her actually think about what she was going through on a daily basis, enabling her to explain things more easily and, because she was more focused after doing the questionnaires, she was able to give people a bit more information. Participant 6 suggested that as the HCP focused on the answers to the MSIS-29v2 during the consultation, the ensuing discussion may result in the need for interventions. Participant 8 goes further suggesting that:

> *'answering the questions, answered a few questions and also put a few more questions in your head so you can ask the questions in the consultation'.* (P8:M)

From an HCP perspective, the focusing of thoughts enabled a discussion around the responses given which at times revealed the requirement for interventions.

HCP1 describes the consultation process as more complete using the MSIS-29v2. They describe it as better for the patient and better for them in understanding the social background of the patient and the wider issues, and problems that they can face. This concurs the work of Detmar and Aaronson (1998) who describe a significant increase over time in the physicians' perceived awareness of their patients' problems in daily living, relating the effect in part to the fact that the clinician has known the participant for a period of time and, partly due to the QoL summary.

HCP1 suggested that an understanding of the wider issues patients face:

> *'Could improve our therapeutic interventions, both pharmaceutical or otherwise in terms of counselling, in terms of involving them in activities organised by local bodies or whatever, umm with the use of physical activity, social activity, things like that.'* (HCP1)

Thus:

> *'It makes you understand how significant or not significant is the therapeutic offers you give them basically. So, you tend to treat these patients according to protocols, when probably treatment per se doesn't improve their quality of life, because it doesn't really, you don't handle the variety of issues they face which can be addressed in a different way probably, so it expands the management field basically.'* (HCP1)

Specific quality improvements might arise from considering HRQoL assessment feedback; they include ordering additional tests, referring the patient to a new specialist, amending prescribed medicines or treatments, using personalised advice and education on symptom management, and altering the goals of treatment plans to better reflect patient concerns (Greenhalgh, Long and Flynn, 2005; Santana and Feeny, 2014).

If a measure is to be useful in clinical practice it should be able to promote detection of patient issues and identify needs for supportive intervention (Greenhalgh and Meadows, 1999; Lohr and Zebrack, 2009; Solari, 2005; Santana and Feeny, 2009). I would suggest that the MSIS-29v2 can do this when used in routine outpatient appointments, care being tailored to patient requirements, resulting in a patient-perceived improvement of HRQoL. These findings also reflect the work of Boyce, Browne and Greenhalgh (2014) who concluded that professionals value PROMs when they are useful for the clinical decision-making process.

Although it is evident that the requirement for interventions was detected though the discussion of the responses to the questionnaire, it is likely that some, although maybe not all of these interventions would have been suggested and discussed during an outpatient appointment without the use of the MSIS-29v2. During the research period three participants (P4, P5, P15) changed to a second-line oral DMT, this treatment change reflecting the course of their MS. For participant 5 the benefit of changing to a more efficacious DMT was demonstrated by the change in her quality of life; she was able to take part in her hobbies more fully as her tiredness reduced. These changes in treatment would have occurred without the use of the MSIS-29v2.

Thus, it is evident that the responses to the questionnaire informed the consultation and raised issues for which care, and interventions could be offered.

e. Assessment of Changes in HRQoL

Part of this research was concerned with the detection of change in HRQoL after the implementation of interventions. As described in section 4.5.4.7 a question concerning change in QoL and a comments box were added to the MSIS-29v2 for this research. Both CNS MS described these additions as beneficial, enabling clarification around changes in HRQoL to be discussed and any comments elucidated upon.

The results of phase 1 demonstrated no significant differences during longitudinal analyses of the questionnaires. However, when participant's individual questionnaires were analysed from both the point of view of individual questions and impact scores, changes in the form of improvements and deterioration were apparent. Following an intervention an improvement in or at least maintenance of HRQoL scores would be expected. However, this was not always apparent possibly due to the complex array of factors affecting the stability of MS and the subjective nature of HRQoL assessment. It was evident from one interview that the impact scores of the MSIS-29v2 did not always demonstrate a reduced impact of MS; Participant 12 commented that his pain was better, but this was not reflected in the impact scores or HTQ. Bueno, et al. (2015) suggest that the impact of a high degree of clinical heterogeneity, as evident in MS, on HRQoL is poorly understood. By exploring the views of participants about the impact of MS it is possible that this body of knowledge could be added to in the future.

Many patients suggested that the HCPs did discuss the MSIS-29v2 responses. HCP1 described discussing changes of scores in the two domains covered by the MSIS-29v2:

> *'I do recall you questioning them why some of their scoring changed over a period of time regarding the domains here, of things we don't usually ask people in clinic because we would usually ask them about some physical disabilities which we don't cover other things which are depression, social interaction, housing, all these kinds of things.'* (HCP1)

Changes in a patient's care regime should affect HRQoL, ideally for the better. This would be demonstrated when the scores from one questionnaire to the next are

compared. Three participants stated that their HRQoL had improved following starting new treatments. Participant 5 suggested that her quality of life had significantly improved following the commencement of a new drug; her energy levels had improved, she had less bad days, and she was better than she had been for a long while. This was reflected in the scoring of her MSIS-29v2 forms. Another Participant (P15) described an improvement following the initiation of pain relief.

Not every interviewee experienced a change in the HRQoL during the research period. Participant 3 described how there had been no dramatic changes in her MS recently; however, she experienced daily fluctuations. Again, this was reflected in her scores and comments.

f. Practical Considerations

Although the data analysed clearly demonstrated that patient-participants wish to continue using the MSIS-29v2, this can only occur if deemed feasible by the healthcare professionals running the clinics. The main barrier identified in this research was a lack of resources. For this research project, the staff involved endeavoured to ensure that the questionnaires were given to participants immediately prior to their appointment, as discussed in section 4.5.2. However, this was not without issues, predominantly related to time. This was illustrated by HCP2 who, when asked what they didn't like about using the MSIS-29v2, stated:

> *'Giving it out before I did clinic, because it was too stressful because it took too much, it took too much time up of the clinic and if you had a busy clinic…and the fact that I kept forgetting to give it out.'* (HCP2)

HCP2 also described how outpatient appointment delays could occur if participants did not arrive early for their appointment as the MSIS-29v2 had to be completed prior to them being reviewed. This was deemed frustrating but could potentially be resolved by giving out questionnaires at the end of an appointment for use next time. These findings echo the work of Boyce, Browne and Greenhalgh (2014) who describe how the workload associated with data collection was identified as a significant barrier to the routine use of PROMs in nine studies reviewed.

Several suggestions were made by participants concerning giving out the questionnaires after the research period. Participant 11 suggested:

> *'I mean it would almost be worthwhile having one of these about a week before an appointment, so that you could come with it. Kind of as a, oh yeah, I must bring that up. Otherwise life goes on and you forget to bring things up, quite honestly. When I have an appointment, you can give me one of these, but I can fill it in before I come to the next one or something like that. Might be quite useful.'* (P11:F)

This idea has positive implications as it would enable those who required assistance to complete the questionnaire to seek help. However, the MSIS-29v2 would have to be distributed either electronically or by post and so has several cost implications which make this recommendation unfeasible. HCP2 suggested giving out the MSIS-29v2 at the end of a clinic appointment for completion immediately prior to the next appointment. I would suggest that they could be placed in the MS leaflet rack in the outpatient department with an explanatory letter. I would deem both options feasible, although favour the first as a brief explanation can be given to the patient if required.

Initially, as clinicians, it was challenging to effectively incorporate the MSIS-29v2 into the flow of the consultation. This reflects the work of Greenhalgh, et al. (2017). The MSIS-29v2 was disruptive of our normal pattern of communication with patients when first used. I would suggest that this issue would potentially reduce with increased experience of using the MSIS-29v2 both from a patient and HCP perspective. However, the perceived benefits meant that with continued use the measure became a valuable part of the appointment.

For a measure to be successfully used acceptability is essential; approval is required from those using it, both patients and staff. The MSIS-29v2 was extremely well received by the majority of participants, with thirteen patient-participants and all HCPs wanting its use to continue; indeed, several patients including Participant 10 were disappointed that its use may cease.

HCP2 raised the issue of appropriateness suggesting that giving the questionnaire to those with severe cognitive issues was not appropriate. They also recognised that not all patients would want to complete the form; respecting patient choice is imperative.

Frequency of useage was also discussed. Comments varied from every appointment to yearly.

Thus, although several issues were raised concerning feasibility, it was evident that continued use of the MSIS-29v2 was felt to be possible.

6.4 METHODOLOGICAL LIMITATIONS

Several methodological limitations relate to phase 2. The first concerns sampling. Initially, I purposively sampled participants with varied clinical and sociodemographic characteristics to build up a picture of patients' views regarding HRQoL assessment. However, in accordance with the qualitative methodology I did not seek to sample representatively. The sample of participants was not representative of the wider MS population as no participants experiencing primary progressive MS were interviewed. Therefore, the findings of the present study are not strictly representative of the MS population attending outpatient clinics at the place of this research.

A further limitation is that only participants able to travel to a hospital for interview could be interviewed. An exception was made for the participant who was interviewed at her place of work as I felt that she would contribute a wealth of data. Also, those who were more disabled, suffered with fatigue or were full-time workers may have not felt able to attend an interview. Hence, the opinions of these types of patient concerning the use of the MSIS-29v2 may not have been fully explored.

The healthcare professional sample size was very small, this being limited by the size of the neurology department at the site of the research. Thus, the results must be interpreted with caution. It would be valuable to establish the views of a larger number of healthcare professionals regarding the assessment of HRQoL in the outpatient setting.

6.5 SUMMARY

This qualitative phase enabled me to realise the participants viewpoints regarding assessment of HRQoL. The data gathered from the interviews showed that participants were willing to share their experiences about using the MSIS-29v2 to assess two dimensions of HRQoL. The data revealed that the MSIS-29v2 was generally liked; both staff and patients wished for its use to continue, varying reasons being given.

Patient-participants described the opportunity to consider and reflect on the impact of MS on themselves prior to entering the consultation room and so felt more prepared for their appointment. Patients described how the use of the HRQoL measure made a difference to them during consultations with regards to the information discussed and the care offered; the question responses gave a structure to the consultation, which was then more focused, with important issues being considered. HCPs found the MSIS-29v2 helpful in guiding the consultation. Outpatient appointments were generally deemed more productive by patients. Some patients described feeling more empowered, suggesting that attending an appointment can be intimidating. The MSIS-29v2 was described as informative, educating one about MS, and making one realise that others experienced similar symptoms, and therefore it was felt to be an invaluable resource.

Patients did not appear unduly concerned about changes in HRQoL scores, rather the individual answers to the questions were more important to them, revealing the actual impact of MS on themselves. These findings contribute to the knowledge and understanding about the use of HRQoL measures in outpatient consultations, the value of such a measure being realised. All HCPs and many participants wished to continue using the MSIS-29v2.

In the following chapter the data produced from both studies of the research is drawn together, the results being discussed in relation to the research questions.

Chapter 7

Discussion of Findings of Phases 1 and 2

7.1 INTRODUCTION

The aim of this study was to determine whether there is a role for the assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice. The literature review revealed no published studies regarding assessment of HRQoL in patients with MS and whether it made a difference to them. This study builds on the findings of previous works, both in the field of MS and other areas, and looks at the feasibility of assessing HRQoL using the MSIS-29v2 in daily clinical practice in a UK neurology outpatient department. It explores whether HRQoL assessments can be used to guide therapeutic interventions and subsequently detect changes in HRQoL and, in addition, whether patients consider such an assessment to be beneficial. Many previous studies have focused on the psychometric properties of HRQoL measurement; no published studies have considered assessment from the perspective of the patient with MS. During the research period it became evident that evaluating the role and impact of the MSIS-29v2 was more complex than initially considered.

The key findings of both phases of this doctoral research are drawn together within this chapter and related to the literature review of Chapter 3. This chapter addresses each of the proposed research questions presented in Chapter 1 (section 1.5) before answering the main question: Is there a role for the assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice?

7.2 IS ASSESSMENT OF HRQOL IN PATIENTS WITH MS FEASIBLE IN DAILY CLINICAL PRACTICE?

Within this section the feasibility of assessment of HRQoL using the MSIS-29v2 in daily clinical practice is examined. Practical limitations are considered in respect of use in the outpatient setting. The effect of the inability of patients to self-assess is discussed and the potential role of proxies considered. The views of patient and staff-participants are recognised throughout.

My study has demonstrated that using the MSIS-29v2 in routine clinical practice is feasible although not without issues, particularly during the initial phase of its use. Detmar and Aaronson (1998) determined that introduction of individual QoL assessments in routine outpatient oncology practice was feasible, and whilst my

findings are commensurate with this, I would dispute the claim of Schäffler, et al. (2013) that PROMs can easily be implemented in MS daily clinical practice. Several difficulties were encountered during the research period which are considered in the following text.

With regards to assessing HRQoL during the research period, there was no additional funding to enable the research participants to be identified on arrival in clinic and forms issued. Nor was there any help available to participants who attended alone and had cognitive or manual dexterity issues. Arguably these issues mean that the results of this work are more readily transferable to the everyday setting as the level of support will not change from the research to the everyday setting. They all affected the feasibility of assessment of HRQoL during the research period, as indicated in the work of Solari (2005) and Boyce, Browne and Greenhalgh (2014) who argue that a lack of resources for the administration, collection and storage of the data may be a barrier to HRQoL assessment. However, once the assessment of HRQoL is integrated into daily practice all patients will have the opportunity to complete the MSIS-29v2 and thus identifying participants will no longer be an issue.

Santana, et al. (2015) suggest that a lack of knowledge in how to effectively utilise the data in a clinical encounter limits successful implementation. Healthcare professional support for performing assessment of HRQoL was key to the success of this research. Thus, prior to starting data collection, a meeting was held with the clinicians involved in this research to introduce the MSIS-29v2; implications of its use were debated, and interpretation and scoring of data discussed. One of the major concerns of the healthcare professionals was that the introduction of the MSIS-29v2 might potentially increase the time required per patient consultation which would then affect waiting times of the outpatient clinic, supporting the views of Detmar and Aaronson (1998). In reality, using the MSIS-29v2 during appointments did take time to adjust to; both clinical nurse specialists initially found that appointments took longer due to the new format of consultation required. This increased burden on time when using the measure mimics the systematic review report of Porter, et al. (2017) who looked at the perspectives of patients and professionals on the use of patient-reported outcomes in primary care. Although the two disciplines are different, I would suggest the appointment process is similar in both. In my research setting both clinical nurse specialists are keen to continue using the MSIS-29v2 because of the resulting benefits

for both patients and themselves. Job satisfaction has improved as the consultation is more effective and both patients and staff have a better understanding of the impact of MS on a patient's life.

When considering using a health-related quality of life measure, not only do patients have to be able to access it, the output should be discussed accordingly. When interviewed some participants did not always believe their completed MSIS-29v2 had been reviewed effectively with them during their outpatient appointment. Some of these participants reported only a minimal physical and/or psychological impact of MS which may have contributed to the belief that the MSIS-29v2 responses had not been evaluated. If there was no, or minimal impact reported, then there is little to discuss in relation to the measure. I would suggest that in the multi-disciplinary clinics a lack of time rather than knowledge may have contributed to the MSIS-29v2 not always being discussed exhaustively. Conversely, the MSIS-29v2 was found to be particularly beneficial to both the HCPs in the multi-professional appointments as these are often very short; the MSIS-29v2 highlighted areas of greatest MS impact which could then be discussed, enabling a more productive appointment, both from the patient and HCP perspective. If a large number of patients had raised concerns about the MSIS-29v2 not being discussed, then I would have to question the feasibility of use.

It was important to me that the measure selected for this research would be appropriate for use in the daily routine clinical practice setting. Most patient-participants found the MSIS-29v2 quick and easy to complete; many were able to complete it in the waiting room prior to their appointment without assistance. The interviewees data revealed the questions to be relevant, and the ensuing discussion of the responses was found to be beneficial. High levels of data completeness also indicate that the MSIS-29v2 was acceptable to patients. One participant was interviewed as they had missed several questions on all the forms they completed. They attributed this to reduced concentration which reflects the work of Gold, et al. (2001); they suggest that reduced attention and concentration could impair a patient's ability to complete long HRQoL measures, or in this case a short measure. Although this could potentially affect overall results in a research study, this would not be a major issue in everyday practice as HCPs can pick up these questions when analysing the measure with the patient. All participants were willing to complete the MSIS-29v2 at every visit to the outpatient

clinic during the research period, indicating that questionnaire fatigue was not experienced.

These favourable findings reveal that HRQoL assessment can occur in daily practice with a short, easy to use measure, namely the MSIS-29v2; they support the comments of Freeman, Hobart and Thompson (2001) who propose that without such a short, easy to use measure HRQoL assessment is unlikely to occur in clinical practice. The MSIS-29v2 was also found to be acceptable to the three healthcare professionals involved in my research. It was deemed user friendly, practical to administer, and easy to score and interpret. These findings reflect the comments of Sharrack, et al. (1999) who describe how any measure must be acceptable to healthcare professionals whilst Hobart, Lamping and Thompson (1996) and Amato and Portaccio (2007) state this should be true for patients.

Although the MSIS-29v2 was found to be suitable for the majority of patients a few exceptions were noted. It became evident that not all participants were able to self-complete the MSIS-29v2, the research demonstrating that 17% of patients required help. Observationally, reasons for inability to complete the form unaided included: the physical burden of completing the questionnaire; communication deficits such as poor sight; physical limitations including poor manual dexterity and; cognitive impairment. These problems all increase with the severity and progression of MS and make it particularly difficult to acquire health-related quality of life data for those patients for whom it may be most needed to inform clinical decision making, as suggested by Addington-Hall and Kalra (2001) and Tripoliti, et al. (2007).

Sloan, et al. (2002) and Skevington, Lotfy and O'Connell (2004) propose that questionnaires for use in clinical populations should be as brief as possible in order to minimise respondent burden. Although the MSIS-29v2 is described as short in the literature, respondent burden was demonstrated by one participant who, with the help of her husband, took 45 minutes to complete the MSIS-29v2, describing the form as daunting; she declined to complete further questionnaires. She also demonstrates the findings of Addington-Hall and Kalra (2001) who state that some might find completing a HRQoL measure too burdensome. I would suggest that as per Matthews (1998) her speed of information processing affected her ability to assess HRQoL. For this participant, the ethical appropriateness of measuring HRQoL required consideration; I would consider that this patient was one for which information derived

from the MSIS-29v2 is most needed in order to inform clinical decision-making, in line with the work of Addington-Hall and Kalra (2001).

In a few cases I observed that the person who attended the appointment with a participant completed the form without that participants involvement. In this case the person who completed the form could be considered a proxy. Van der Linden, et al. (2005) psychometrically evaluated the MSIS-29 for proxy use, concluding that it is a reliable and valid instrument when used by proxies. As the MSIS-29v2 was used in this research; I would hope that these results would also apply to this version and that reliable information resulted. I would consider proxy rating preferable to no information, as the resulting information about the impact of MS, although potentially not a complete and accurate representation of the patient, can then be used to guide treatment options for a patient who potentially has little 'voice' of their own. Discussing the responses would also help validate the answers given. The review of Sneeuw, Sprangers and Aaronson (2002) found in general that moderate to high levels of patient-proxy agreement were reported.

Although patients with minor cognitive impairment were able to complete the MSIS-29v2 some did state that they were glad that the measure only looked back over the previous two weeks as they would not be able to remember further back in time. These comments resonate with the findings of Marrie, et al. (2003); they describe how cognitive impairment may potentially have an important impact on the reporting of HRQoL as knowledge and recall of one's current and past experiences are needed to assess the impact of disease on HRQoL. Benedict, et al. (2004) suggest that cognitive decline could result in invalid self-reporting of HRQoL. Severe cognitive impairment was found to be a barrier to assessment of HRQoL due to the time taken to complete and discuss the measure. Addington-Hall and Kalra (2001) propose that in cases of severe cognitive impairment the information could be gained from proxies. For this research a decision was made to exclude those with severe cognitive impairment because of the limited length of clinic appointments. Thus, other methods of assessment such as proxy evaluation need consideration if the HRQoL of these patients is to be evaluated.

Regarding feasibility and continued use of the MSIS-29v2 after the research period, several issues became evident. Although the MSIS-29v2 gained approval of the staff for the research period, the practicality of introducing the concept of HRQoL

assessment to all patients, and the feasibility of ensuring that patients can access the questionnaire prior to their appointment are proving stumbling blocks in establishing the successful implementation of the questionnaire as part of the standard clinical routine. This reflects the views of Gutteling, et al. (2008a) and Boyce, Browne and Greenhalgh (2014) who describe how, if the use of a HRQoL measure is considered disruptive to normal work routines, this can be a barrier to its use. I believe that the benefits of using a HRQoL measure outweigh the disadvantages and so ways of giving out the MSIS-29v2 are being considered. This is discussed further in section 8.6.

In summary, this research has shown that during the research period, assessment of HRQoL using the MSIS-29v2 was feasible in daily clinical practice for those who were able to complete the forms unaided or who attended with a significant other, providing they were not significantly cognitively impaired. I would propose that these results should transfer to the non-research setting. Staff education, distribution of questionnaires and the ability of patients to self-complete an appropriate measure are all key to successful integration in daily clinical practice.

7.3 Can the Results of HRQoL Assessment be used to Inform Therapeutic Interventions?

Within this section the effect of the using the MSIS-29v2 on the consultation style is considered, the impact of using the questionnaire during an outpatient consultation is presented and whether or not question responses may be used to inform therapeutic interventions examined.

My findings indicate that the responses to the questions of the MSIS-29v2 provided a framework for the outpatient consultation. This was not something which I had expected to find; it was not discussed in the literature I read concerning HRQoL in MS patients. This may have been because most of the literature discusses use in the research rather than the outpatient setting. The results would not have been as apparent without the qualitative phase, but they greatly add to the findings. The interview data revealed that the responses to the questions guided the consultation as they enabled patients to express their concerns and discuss these during their appointment. The healthcare professionals all described the MSIS-29v2 as excellent at enabling patients to express their concerns. HRQoL issues were detected and discussed and the HCPs

made more aware of patients' problems; this reflects the work of Detmar, et al. (2002) who reported similar findings in daily oncology practice.

A key finding of this research relates to the detection of symptoms as, without realising patient-perceived issues, interventions cannot be considered. The MSIS-29v2 records information about a range of problems. From analysis of the interview data it became apparent that the systematic approach of the MSIS-29v2 served as a prompt to patients, causing them to consider their symptoms and the way that MS was impacting on them. This finding is in concurrence with those of Aymerich, Guillamón and Jovell (2009) who describe how HRQoL instruments can also reveal aspects of illness that are not reflected by standard clinical instruments, and they can measure results that are of major concern to the patient. Patient-participants described how problems were detected which had not been highlighted in appointments prior to using the form and intimated that the measure covered areas which were not always raised in the consultation prior to its use. The focusing aspect of the measure was described as very useful by the majority of those interviewed. Symptoms that patients had been struggling with, had overlooked due to possible memory problems or did not realise were due to MS, were illuminated by the MSIS-29v2 and discussed. These findings reflect the work of Rothwell, et al. (1997) who describes how the assessment of HRQoL reveals aspects of the disease that are not generally obvious during an outpatient appointment but can markedly affect individual's lives. They also echo the work of Higginson and Carr (2001) who suggest that some patients' problems can be overlooked unless specifically enquired about, especially psychological and social ones. It was evident that the questionnaire was found to highlight issues from the patient perspective which they would not otherwise have raised, as discussed by Lysandropoulos and Havrdova (2015). Furthermore, the MS nurses were prompted to assess areas that they might otherwise have missed or find harder to address, or that patients feel embarrassed to mention. The interview with one of the HCPs provides evidence for this, describing how sensitive issues, such as depression, are not always discussed. Thus, I would conclude that the MSIS-29v2 is a valuable addition to the consultation process, contributing to a more productive appointment.

Additionally, several participants described how their understanding of the impact of MS had improved, as symptoms that they did not normally consider or discuss were raised. Whilst these participants were comfortable with discussing their issues it

should be remembered that just because a symptom has been illuminated by a HRQoL assessment it does not mean that a patient wishes to discuss it. They may have been aware of the issue prior to the HRQoL assessment and chosen not to discuss it at previous appointments, reflecting the work of Greenhalgh, Long and Flynn (2005) who noted that patients or clinicians may not wish to discuss certain topics in the consultation. As an HCP I would ask about all issues raised on a completed form but, respect the patient's wishes should they not wish to discuss one at that particular time. It could be that the issues are upsetting for the patient and should only be considered when that patient deems the time to be right. Although this aspect of the MSIS-29v2 may not have contributed to therapeutic interventions being offered, it certainly contributed to the patients' understanding of the impact of their MS, and thus again I would conclude that the MSIS-29v2 played a valuable role in the consultation.

Outpatient appointments are of a fixed length, so it can be difficult to cover all the issues a patient wishes to discuss. Alternatively, some patients do not vocalise issues. Thus, as an HCP, one can be left with the feeling that the appointment has not been as useful as it could have been. The fact that the issue and associated level of impact was also determined when using the MSIS-29v2 was of benefit to both staff and participants. It was then possible for the patient and HCP to assess which problems were having most impact and needed discussing in depth. These could either be addressed or referred on to other members of the multi-professional team as appropriate. For some, the fear of deterioration in their condition was evident and for these patients discussing the importance of treatment compliance would be of benefit. Devy, et al. (2013) suggest that discussing HRQoL with a patient may increase their confidence in the therapist and indirectly improve treatment compliance. Also, in accordance with Devy, et al. (2013), areas such as an increase in disability, which would potentially impact on the HRQoL of patients in the future, were detected and addressed.

The MSIS-29v2 promoted more discussion about the impact of MS and how patients cope with everyday life. Appropriate therapeutic interventions could then be introduced and discussed; this demonstrates that the MSIS-29v2 covers domains for which interventions can be readily provided. The later point reflects the guidance of Freeman, et al. (2000) who describe the importance of selecting a measure bearing in mind the purpose of the study. In this study the aim was to optimise HRQoL of those

with MS. It is possible that training clinicians to ask the 'right' questions could be equally effective as using a HRQoL measure. However, I would suggest that the guiding influence of a HRQoL measure on a consultation is beneficial as it enabled the patients to highlight issues of concern to them and staff to discuss accordingly.

An interesting finding of this research relates to the influence using the MSIS-29v2 had on the appointments of those not taking part in the research. Initially during the research period for those not taking part in the research, the style of appointment tended to be symptom led; for example, how is your bladder, bowels, walking, and then if time allowed the consultation focused on how the patient was coping with life, asking for example if they were becoming socially isolated. However, as time progressed it became evident that using the MSIS-29v2 influenced my style of appointment. There was a carry-over effect of the research into daily practice as I found myself asking more about the impact of MS on patient life. These findings echo the work of Hobart (1997) who describes how assessing HRQoL enables the extent of the impact of the health problem and its treatment to be determined, and the effect on a person's ability to perform activities and roles that she/he values to be determined from that individual's perspective. This finding further confirms my earlier finding that the impact of using a HRQoL measure in daily clinical practice extends beyond just assessment of HRQoL. The influence on communication is discussed below.

The three clinicians of this research recognised that communication was improved when a HRQoL measure was used, reflecting the work of Detmar, et al. (2002). The information obtained from the MSIS-29v2 enhanced communication and facilitated management of patients. These findings are consistent with the results of previous studies. Detmar and Aaronson (1998) determined that individual QoL assessments in routine outpatient oncology practice appeared to stimulate physicians to inquire into specific aspects of the health and well-being of their patients. The two phases of this research both demonstrated that such an inquiry leads to areas where interventions might be of benefit. Again, in oncology care, Donaldson (2007) suggested that the use of HRQoL measures allowed the patient and the clinician to share information, helped both to be more knowledgeable about the effects of the disease and its treatment and, promoted the involvement of patients in the decision-making process. Similarly, Santana and Feeny's (2009) work with heart and lung transplant patients concluded that the results of their HRQoL assessment were clinically relevant and enhanced

communication. Also, the information provided facilitated management of their patients. My research found that the use of the MSIS-29v2 facilitated changes in care management as often therapeutic interventions were discussed and subsequently taken up, contrasting with the view of Greenhalgh, Long and Flynn (2005) whose paper found that the use of HRQoL measures in clinical practice has little influence on clinical decision-making, and Boyce and Browne (2013) who found little evidence that the feedback from PROMs changes care management. Although the MSIS-29v2 highlighted issues which were discussed and interventions offered, it is likely that some of these may have been considered without the use of such a measure as many patients do raise concerns during outpatient appointments. Rather, I would suggest that a greater understanding of the impact of MS from a patient perspective is realised by both the patient and HCP, potentially enabling more timely interventions to be considered.

In summary, the MSIS-29v2 provides a framework for consultations and has contributed to a change in consultation style to one where patients feel more empowered to discuss their concerns, patient-centred care is practised, and informed decisions made. Communication has been facilitated. The results of the assessment of the physical and psychological impact of MS enables patient-perceived symptoms to be determined and their significance to be realised by both patients and health care professionals. The results of this research demonstrate that the results of an assessment with the MSIS-29v2 can be used to inform therapeutic interventions once patient determined issues have been realised and an understanding of the impact of these issues gained.

7.4 Can a HRQoL Measure Detect Change in HRQoL after the Implementation of Interventions?

The MSIS-29v2 has been proven in various studies to detect changes in HRQoL. Of particular relevance to this study is the work of Hobart, et al. (2004) who describe how the MSIS-29v2 may be used in longitudinal studies to monitor the natural history of the disorder and in evidence-based practice to monitor the progress of people with MS from their perspective. This research was conducted in the outpatient setting where the purpose was to assess changes in individual patients HRQoL over the course of twelve months, a purpose for which Hobart, et al. (2004) stated that the MSIS-29 can

be used. Whether the MSIS-29v2 can detect changes when used within the everyday outpatient setting, with patients across the disease trajectory attending appointments at various time intervals and receiving differing interventions, is now discussed. This is considered both at the group level and individual level.

The literature reviewed indicates that HRQoL is an outcome of considerable interest in relation to the therapeutic success of healthcare interventions in chronic illness, conditions with significant disease burden and, conditions in which curative interventions are either limited or uncertain. Multiple sclerosis is one such condition. Wilson and Cleary (1995) suggest that the principal goal of clinical care is improvement of patient outcomes which can be determined through changes in HRQoL assessment scores.

When considering whether HRQoL has improved, Yorkston, Johnson, and Klasner (2005) suggest that one should consider the intervention commenced and what difference this has made to life as a whole. The following scenario (Yorkston, Johnson, and Klasner, 2005) demonstrates the complexity of determining whether an intervention has made a difference. For a patient who stumbles and falls at her place of work, the physician may consider the scenario from the perspective of symptom management and seek information about leg strength and coordination, whilst the physiotherapist may view this situation from the perspective of functional status and whether mobility aids are required to maintain independence. The individual, however, may view this scenario from a more global and personal perspective and ask questions such as: ‘what do my co-workers think of me?, ‘should I really be working?, how can I manage financially if I no longer work.

In this longitudinal study, no statistically significant differences were noted within the physical or psychological impact scores of the MSIS-29v2 for groups of patients between baseline and follow-up appointments (i.e. distribution-based responsiveness) following the initiation of interventions. Thus, I have to conclude that the MSIS-29v2 did not detect a change in HRQoL after the implementation of interventions. This lack of statistical significance could be attributed to group size as this was below that required to enable significance to be demonstrated. However, there are many other reasons why a statistical change in HRQoL may not have been detected and also, why at times there was a lack of correlation between the changes in impact scores and patients’ perception of any change in their HRQoL. These are now considered.

When assessing treatment effects, a change in HRQoL may reflect adjustment to disease, a response shift, a treatment effect, disease progression or, a combination of these. The lack of detection of change may also be due to the numerous different interventions that were offered and the varying time gaps between reviews. Additionally, I would suggest that the variable responses to interventions and the wide range of score changes may account for small to moderate effects and indicate that all participants do not respond equally.

As a measure of subjectivity, quality of life may reflect adjustment to disease (Ford, et al., 2001b). Beiske, et al. (2012) suggest patients with more advanced disease may develop psychological coping strategies. Thus, the longer the duration, and the older the individual, the more likely they are to perceive a relatively good quality of life. Conversely, younger people with relatively recent onset, who are experiencing difficulties in mobilising but are not yet wheelchair users, may perceive their quality of life as poor (Ford, et al., 2001b). This mismatch between disease severity and HRQoL may also be due to the response shift theory which proposes that, over time, individuals with chronic conditions change the internal criteria which they use to assess their own HRQoL and that this involves not only a recalibration of internal standards, but also a reconceptualisation of the meaning of items and a reprioritisation of values (Rapkin and Schwartz, 2004). Thus, when the impact of interventions on quality of life is considered, adjustment (both emotional and physical) to the disease, recalibration, coping skills, changes in identity and response shift should be borne in mind. The results may also be related to the participants altered perception of HRQoL over time, or that they had simply learnt to cope with the limitations of the disease (Hadgkiss, et al., 2012). Expectations may have changed to match experience (Carr, Gibson and Robinson, 2001). Osborne, et al. (2012) also describe how, although HRQoL can be assessed using an appropriate measure, the ability to detect improvement after an intervention is complicated by maturational and adaptational changes. Maturational changes occur as a result of ageing whilst adaptational changes are related to time since diagnosis. Dealing with hidden symptoms as suggested by Ford, et al. (2001b) and Lysandropoulos and Havrdova (2015) also interacts with an individual's health status to determine the overall impact of the disease on HRQoL. As these factors are likely to vary over time the impact of MS will vary. Thus,

detection of changes in HRQoL due to the implementation of clinical interventions may not be detected at the time the MSIS-29v2 was completed.

When assessing HRQoL in either the trial or outpatient setting consideration must be also given to the fact that changes in scores may reflect life events rather than disease changes. Also, the results may be heavily influenced by the subject's personality and mood disorders (Amato and Portaccio, 2007) as well as physical and cognitive attributes. King-Kallimanis, et al. (2011) and Boucekine, et al. (2013) describe how self-reported data in longitudinal studies is often difficult to interpret due to response shift. The differing stages of disability of those involved and the variable nature of MS could also have affected the results. Additionally, symptoms may be transitory and thus potentially were not always detected when the tool was used (Ford, et al., 2001a). It is possible that during the time between assessments symptoms came and went. Thus, I would propose that the length of time between appointments may have affected results. If an intervention had been offered and the patient not reviewed for many months subsequently, the impact of that intervention may have been superseded by other life events such as an infection, hot weather or a relapse, all of which affect MS symptoms and thus the way that the patient would have responded to the questionnaire.

When comparing the MSIS-29v2 responses between two questionnaires it was apparent that whilst the answers to some questions demonstrated an improvement in HRQoL, others demonstrated a deterioration; hence the overall score remained the same or only changed slightly, this amount being imperceptible to the patient. These findings are important as the may represent why statistical changes were not apparent in HRQoL despite interventions. They reflect the work of Osborne, et al. (2012) who describe how HRQoL scores may remain unaltered, but individual elements contributing to the overall score may alter with time. I was unable to conduct an analysis of this type in my study as it would have required a substantially larger sample to produce statistically significant results.

Hobart, et al. (2005) describe how, if the changes in impact scores were small it is possible that the ability of the scale to detect change can be perceived to be limited. Whilst statistically this is true, from observation I found that the MSIS-29v2 did demonstrate change for many patients at an individual level but often only very small changes. It is probable that for some patients the very small changes in scores between appointments potentially accounted for the lack of correlation between the MSIS-29v2

impact scores and the HTQ. Where impact scores had increased or decreased very slightly and the response to the HTQ was 'no change', it is likely that the difference was not enough for the patient to detect and so could be considered to be below the smallest detectable change score or minimally important difference for one or both scales.

The focus of use of a HRQoL measure in the outpatient setting with regards detecting meaningful change differs from in the trials setting where the focus is frequently on comparing groups of patients and monitoring changes and responses to treatment. I believe that in daily clinical practice concern should be centred around individuals and monitoring changes and responses to treatments. This view echoes the work of Freeman, et al. (2001) who describe how measuring the outcomes of therapeutic interventions from the patient's perspective is important.

Although not detected at a group level, this research revealed that changes in patient physical and/or psychological impact scores between appointments was demonstrated at the individual level. The relationship between changes in impact scores and patient reported change was considered using a health transition question, the relationship between the two scores being examined. Changes in HRQoL were noted by patients using the HTQ which at times correlated with the changes in impact scores. I perceive that these patient-perceived changes are more important than changes in composite scores as they relate to how the patient actually feels. Although the changes noted in HRQoL as determined by the impact scores from one appointment to another did not always correlate with the patient-perceived change, I would propose that the most important aspect to consider is how the patient feels and the value of the assessment to them. Indeed, McGuigan and Hutchinson (2004) describe how the assessment by patients of their own state of well-being, and of the limitations imposed by a condition, is increasingly recognised as a valid part of the assessment of therapeutic interventions.

During an appointment subsequent to the one at which an intervention had been offered, some patients stated that their symptoms had improved. However, these comments did not always correspond to an improvement in HRQoL or improvement in summed impact scores. If only the response to the question that had triggered an intervention was considered, there was often an improvement in that score. These findings are in accordance with the work of Kuspinar, Rodriguez and Mayo (2012)

who conducted a meta-analysis of the effects of clinical interventions on HRQoL in MS. They concluded that the extent to which interventions were able to improve outcomes depends on delivering a potent intervention to those persons who have the ability to benefit. Therefore, interventions targeting specific outcomes will be more effective for those people with the targeted problem e.g. pain, spasticity, incontinence, or memory and attention deficits.

The majority of participants did not appear concerned about the statistical analysis as they felt that they were aware of how any changes in their condition were affecting them. Many patients were more interested in the changes in their responses to questions from T1 to T2, etc. and why that might be, rather than in the fact that their physical and/or psychological impact scores had changed. Some authors maintain that as HRQoL is a multidimensional construct it is meaningless to try and sum the individual items to form a domain score (Fayers and Machin, 2016); the above points illustrate this.

In summary, although there was no evidence for statistically-detected improvement in HRQoL following the implication of interventions at the group level, there was evidence from patients regarding detection of change in HRQoL when comparing questionnaires and response to individual questions as part of the longitudinal aspect of this study, particularly when the HTQ responses were evaluated. The health transition question was considered to be a valuable addition to the MSIS-29v2 by all involved in the project. I would, however, propose that the real significance of this research is that it reveals that patients value the use of the MSIS-29v2 in their appointments to demonstrate the impact of their MS more than whether interventions make a statistically significant difference to their HRQoL. Thus, outpatient appointments are potentially more productive and the care for patients improved which will hopefully contribute to healthcare professionals considering the use of the MSIS-29v2 in daily clinical practice.

7.5 Does Assessment of HRQoL with an Appropriate Measure make a Meaningful Difference to Patients?

This research question is subjective in nature and as such relies on the comments of both patient and staff participants to be answered. Unless assessment of HRQoL is

considered to be of a tangible benefit to patients I would not consider it to have a role in the neurology outpatient setting. The discussion that follows demonstrates the benefit of assessment to patients as described by the participants of this research and is related to literature where possible. No published research was found demonstrating the benefits of assessing the physical and psychological impact of MS for patients during a routine clinic appointment at a hospital.

My results demonstrate that the staff-participants found using the MSIS-29v2 during a clinic appointment beneficial. The work of Hay-Smith, et al. (2016) describes this as an instance of 'dual-role' as I, the researcher and clinician, am recognising that information obtained during the therapeutic relationship is useful as study data. The results also reveal that patients found assessment with the MSIS-29v2 beneficial. Indeed, since data collection ceased, several participants have asked if they had an MSIS-29v2 to complete. One stated that they missed completing the questionnaire. Several other patients attending outpatient appointments entered the consulting room and stated that they had not been given a form to complete. I would suggest that these comments could be interpreted as indicating that the patients found the HRQoL assessment beneficial.

The results from this research revealed that patients felt more confident to articulate issues that had been illuminated by the MSIS-29v2. These were then discussed with the HCPs. These findings are in accordance with the works of Greenhalgh and Meadows (1999), Higginson and Carr (2001), Solari (2005), Santana and Feeny (2009) and Bandari, et al. (2010) who describe how assessing HRQoL using an appropriate instrument can facilitate and enhance patient-physician communication allowing the main concerns of the patient to be focused on (section 3.8.1).

Higginson and Carr (2001) suggest that because measures present clear information on a range of problems it can help patients to communicate their problems. In this current study, many of those interviewed described how completing the MSIS-29v2 had helped them to actually realise the impact of their MS. Considering the questions of the MSIS-29v2 helped patients to reflect on their health and raise issues with clinicians echoing the conclusions of Greenhalgh, et al. (2017). The majority of those interviewed appeared to find this process extremely beneficial. Problems were then discussed as the questions had focused their mind on their condition and its impact, thereby confirming work of Higginson and Carr (2001). Participants stated that

completing the questionnaire was beneficial to them as care was offered in response to the answers given. Consultations were also described as more valuable and productive by patients. Additionally, the use of the MSIS-29v2 made a difference to both the CNS MS; they felt better informed about the range of physical, functional and psychological problems the patients were experiencing. Staff indicated that the measure was useful for monitoring and contributed towards a better understanding of the lives of patients. This information could then be utilised to plan future care for patients.

Many benefits of using the MSIS-29v2 were demonstrated in the findings. It soon became apparent that the MSIS-29v2 provided a very different and extremely valuable insight to the participants' world and the physical and psychological impact of MS; this is supported both anecdotally, by patients in clinic and the healthcare professionals, and also by the interview data. With growing confidence in the use of the measure, issues that required further discussion with patients could be focused on quickly. Discussing subsequent questionnaires was quicker and, comparisons could be made with earlier ones, thereby enabling the effect of any interventions to be considered. Detmar and Aaronson (1998) describe how some physicians found that their efficiency increased when using the HRQoL summary provided to them. I would suggest that rather than HCPs being more efficient, appointments were more effective.

My findings demonstrate that if the questionnaire was discussed each time it was utilised it provides worthwhile benefits in the form of interventions offered. Participants indicated how the MSIS-29v2 provided the health professionals with areas for addressing. Both CNS MS described how completed questionnaires were helpful as they guided the consultation. These findings echo the work of Higginson and Carr (2001) who propose that the potential benefit to patients of using quality of life measures in clinical practice is that their problems are identified and dealt with and that treatment decisions are based on their priorities and preferences. However, they also suggest that evidence for these benefits is lacking because these measures are rarely used in clinical practice. I would propose that this study provides evidence of these benefits.

The findings of my research contradict the work of Santana, et al., (2015) who describe how the data from PROMs was originally used to support treatment recommendations or inform health policy, but there was no direct benefit for the participants providing

the data. Boyce, Browne and Greenhalgh (2014) describe how, as the experience of those using measures increases, the clinical value of using individual patient PROMs in daily practice to identify/monitor symptoms, evaluate treatment outcomes and support shared decision-making has become obvious. My work suggests that these benefits may also apply to those using HRQoL measures. The findings of my research have established a direct value to patients with MS as described by them in the form of an increased awareness and understanding of the impact of their MS following assessment using the MSIS-29v2.

The unique findings of this study indicate that most of those interviewed found an assessment of HRQoL using the MSIS-29v2 beneficial as it helped both patients and healthcare professionals to realise the significance of the impact of MS on the lives of those living with the condition. The results also demonstrated that patients gained an increased awareness of their symptoms and an enhanced ability to discuss issues of importance to them. Communication during consultations between staff and patients was improved and possible interventions were discussed. The assessment was described as helping to guide the consultation. Subsequent assessments provided an overview of any changes in the patient's condition. Additionally, many patients became more active with regards to participating in their care planning. The impact of using the MSIS-29v2 during the consultation was more far-reaching than I had initially expected; the nature of the consultation was changed, and it quickly became evident that in many cases the patient's own perception of the impact of MS was not immediately visible without qualitative interviews. This is what the research added.

In summary, I would conclude that assessment of HRQoL with an appropriate measure, namely the MSIS-29v2, does make a meaningful difference to the majority of patients.

7.6 SUMMARY

'Is there a role for assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice?

When considering whether there is a role for HRQoL I would have to ask who this question is relevant to, people with MS or healthcare professionals. Despite the inconclusive quantitative findings, I conclude that because of the benefits described

by both patients and healthcare professionals there is a role for assessment of HRQoL in routine clinical practice when using an appropriate measure such as the MSIS-29v2. I hope that these beneficial findings encourage others to use the MSIS-29v2 to assess the physical and psychological impact of MS in their daily clinical practice.

Chapter 8

Conclusions and Future Directions

8.1 INTRODUCTION

The words of Cella, et al. (1996) and Baumstarck, et al. (2013) both helped guide my choice of subject for this PrD. Cella, et al. (1996, p.130) noted that 'the assessment of quality of life in longitudinal research will increase our knowledge of the impact of symptoms and the disease process on patient perception of well-being and function.' In 2013, when considering areas for my research I found the paper of Baumstarck, et al. (2013, p.4) which stated that, 'to our knowledge there are no studies that have explored the effect of assessing QoL in MS care management'. The aim of this thesis is to contribute to this gap in knowledge by investigating whether there is a role for the assessment of health-related quality of life in patients with MS in daily clinical practice. Although there is now considerable evidence relating to the impact of MS on HRQoL, there remain unanswered questions concerning whether patients perceive assessment of HRQoL beneficial. The two phases of this work were designed to address some of these unanswered questions with the following specific aims:

- To establish the feasibility of assessment of HRQoL during a routine outpatient appointment
- To determine whether the results of the assessment can inform therapeutic interventions
- To establish whether a change of HRQoL could be detected after the implementation of interventions using the MSIS-29v2
- To establish the views and opinions of patients who had completed the MSIS-29v2 about such assessments and what it means to them.

The following sections conclude the study. The unique contributions to knowledge and practice of the research are discussed. Strengths and limitations of the research are considered. Implications for embedding the research into everyday practice are described and recommendations for further studies given. A reflexive account of conducting research as a practicing clinician is presented. Finally, an overall conclusion is provided.

8.2 CONTRIBUTION TO KNOWLEDGE AND PRACTICE

To my knowledge this is the first study to consider the value to patients of incorporating assessment of health-related quality of life in patients with multiple

sclerosis in routine clinical practice using the MSIS-29v2. In undertaking this research additional knowledge has been added to the growing body of literature surrounding assessment of quality of life in patients with MS. The effect of interventions, suggested at an outpatient appointment, on the physical and psychological impact of MS was established using quantitative analysis. This study provides valuable new information concerning the relationship between changes in the physical and psychological impact of MS and a health transition question when the MSIS-29v2 is used in routine clinical practice. Currently there is no published information with which to compare this aspect. The views and opinions on the assessment of those taking part in the research concerning assessment were established. These are important areas for the healthcare management of people with MS and offer insight into the appropriateness of assessment in routine clinical practice.

The findings of my two-phase study have a number of important implications for both people with MS and healthcare professionals working with MS patients. The results indicate that the introduction of individual HRQoL assessments using the MSIS-29v2 into an outpatient neurology setting is feasible. Patients were able to complete the form quickly and easily. The interviews revealed that patients valued the structure of the MSIS-29v2 which many considered to focus their thoughts, thereby enabling them to provide detailed relevant information on their health and the impact of MS to healthcare professionals. The three healthcare professionals involved determined that the information provided was invaluable for: identifying important issues that might otherwise have been overlooked, for suggesting therapeutic interventions, monitoring the status of the patients over time, and improving patient-clinician communication. Whilst it is important not to overstate findings based on a small sample, these points demonstrate validity of the MSIS-29v2 in the outpatient setting.

This study is original as qualitative methods were used to determine whether the patients believed there to be a benefit to them of using a HRQoL measure in clinic. Although the literature reviewed indicates that HRQoL should be measured by clinicians over time as in phase 1 of this study, I was curious to know whether patients believed there to be a tangible benefit to them. The findings of phase 2 are unique in that they conclusively demonstrated such a benefit. The key finding of this study is that assessment of HRQoL does make a difference to patients who live with the incurable condition of MS and is of value when used in the outpatient setting. This

research demonstrates that the effect of assessing HRQoL in MS care management is profound; patients describe how such an assessment makes them consider the impact of their MS and in many cases empowers them to become more involved in, and take control over, their health care. In this study, healthcare professionals described appointments as more structured and productive.

The in-depth investigation into the patient experience of assessment of HRQoL was key when determining whether such an assessment is of value and whether there is a role for assessment in daily clinical practice. The findings suggest that care has improved as patients have been able to identify issues of concern to them, and then discuss these issues and make decisions using a shared decision-making approach.

The questionnaire appears to have altered the style of consultation for some patients from one where the participant was asked questions to one where the participant feels empowered to discuss the impact of their MS. Participants described how they found that the questionnaire guided the consultation and provided prompts for discussion. Issues which participants were not aware were related to MS were highlighted by the questionnaire and discussed, which was felt to be a good thing. The requirement for interventions for symptoms which had not been previously identified but were highlighted by the questionnaire became evident in several cases. Both patients and staff described the consultation as more productive using the questionnaire. The MSIS-29v2 was found to incorporate the patients view of their disability in a structured manner within a consultation. It may be concluded that the process of assessment of HRQoL enabled some participants to become more aware of the impact of their condition and subsequently more active in the management of their MS and care. I would conclude that I came to rely on the HRQoL information from the research participants and found its use beneficial.

MS is a highly variable condition, with many factors affecting HRQoL. Any method of determining these factors can only be considered beneficial to the patient. At times interventions determined from the appointment using the questionnaire were found to maintain or improve HRQoL when impact scores were considered. This study demonstrates the value of the health transition question as a measure of change during outpatient appointments; patients took time to consider the impact of their MS prior to the appointment. Reasons for any change could be considered and related to the responses to the MSIS-29v2. Whether overall HRQoL changed did not appear to be

of major concern to patients. Rather they were more focused on resolving their issues and reducing the impact of MS.

The data resulting from the patients' interviews concerning the assessment of two dimensions of HRQoL leads me to propose the following recommendation for future use of the MSIS-29v2 in routine practice. Rather than using the MSIS-29v2 to measure changes in the physical and psychological impact of HRQoL, I would suggest that, when used in the outpatient setting of an Acute Trust, the value of the MSIS-29v2 rests in its ability to empower patients to consider the impact of their MS in a structured manner. The measure is then a really useful tool which can be used on an individual basis as frequently as that person wishes. The responses to the twenty-nine questions may be considered and used to guide any requirements for therapeutic interventions, both pharmacological and non-pharmacological, using the multi-disciplinary team to offer holistic patient-centred care through shared decision-making. The interview narratives indicated that the majority of those interviewed were not unduly concerned about summary impact scores and changes in them between appointments. Instead, they appeared more interested in how the response to individual questions changed from one appointment to the next. Summary impact scores could still be calculated for those who were interested in how their HRQoL was changing.

My research has explored the effect of assessing QoL in MS care management as suggested by Baumstarck, et al. (2013), the findings indicating that such an assessment should become embedded in everyday clinical practice. The views of patients and staff regarding the MSIS-29v2 point towards the importance of assessment of HRQoL in routine clinical practice. The overall feeling from the participants was that the questionnaire should become part of routine practice. Although there is a pervasive view that there are many barriers to assessing health-related quality of life or dimensions of it during routine outpatient appointments, the findings of this study show that assessment using the MSIS-29v2 is possible, although not entirely without logistical problems. I would suggest that overcoming the barriers to assessment of HRQoL in daily clinical practice is worthwhile as the appointment becomes more productive for both patients and staff; HRQoL is optimised and job satisfaction is increased.

8.3 LIMITATIONS OF THE STUDY

Despite finding support for the primary research question there are some limitations to this work which need to be acknowledged when interpreting the results. Limitations relating to each phase were presented at the end of chapters 5 and 6. They are summarised in this chapter.

Phase 1 was a longitudinal study designed to investigate whether a HRQoL measure can detect change in HRQoL after the implementation of interventions. I expected that the time frame of twelve months would be a long enough time period in which to detect changes. However, the results indicated that there was no statistical difference in HRQoL between time 1 and follow up appointments. One explanation for this may be that the time between appointments, even at 12 months, was not long notice for any change following interventions in such a chronic long-term illness to be detected. Alternatively, response shift and adjustment may have influenced the results. These points highlight the need for research to investigate these relationships further over a longer time period. The size and heterogeneity of the sample also limited my ability to draw conclusions about whether the MSIS-29v2 could detect changes after the implementation of interventions; also, the fact that the interventions were varied and the time gaps between appointments of differing lengths. This highlights the need to undertake research both using a larger sample of patients and over a longer time period.

As the principal researcher, I recruited participants for phase 2 and as such it is possible that a selection bias is present. Those with fatigue or cognitive issues were not invited for interview yet may have provided valuable data. The final limitation is the size of the sample of HCPs for phase 2, as discussed in section 6.4. At the hospital of this research only three healthcare professionals review patients with MS in outpatient clinics. All took part in the research. Replicating this research at a hospital with more HCPs is required to validate the results provided by the healthcare professionals.

8.4 STRENGTHS OF THE STUDY

The major strengths of this study are the mixed methods approach and the longitudinal design. The quantitative strand allowed data about two domains of HRQoL to be

gathered enabling the effect of interventions to be considered, thereby providing baseline information as suggested by Sieber (1973). The quantitative findings informed the choice of participants and interview schedule design for the qualitative study. The qualitative approach supported a more in-depth understanding of the use of a HRQoL measure in routine care than would have been possible using a quantitative method alone; the quantitative results were interpreted, clarified, described, enhanced and validated through the interviews as described by Greene, Caracelli and Graham (1989). This adds to the research making it more than just a validation study of the MSIS-29v2.

Research findings within the current body of literature relating to the how patients perceive assessment of HRQoL with an appropriate HRQoL measure is limited. As such, there is currently a gap within research which this study has now sought to fill. To my knowledge this is the first study investigating MS patient perceptions of the benefit of HRQoL assessment to themselves. Although important to know if the measure was acceptable to both patients and staff, and whether it could be used to inform therapeutic interventions, the views and opinions of the patient interviewees make a unique contribution to knowledge regarding the benefits of using the MSIS-29v2 during outpatient appointments in a hospital setting.

The sample of patients taking part in phase 1, and setting of the research, may also be considered to be strengths of this work. The sample is representative of the wider MS population when figures from other research projects and the literature are considered. The research took place in the 'real-world' at two outpatient departments of an Acute Trust hospital and was conducted by staff who normally care for the MS patients at that Trust. No research staff were involved. Thus, I consider that any recommendations for future practice should be readily transferable to other hospital outpatient settings.

Another strength lies in the impact that using the MSIS-29v2 has had on the consultation style of myself and the other MS nurse involved. Since ceasing to use the MSIS-29v2 I believe that I am considering the impact of symptoms raised by patients during the outpatient appointment and ways that these can be addressed on a more regular basis, thereby taking a more person-centred approach.

8.5 ADOPTION OF THE MSIS-29V2 INTO ROUTINE PRACTICE

Adoption of the MSIS-29v2 into routine practice is essential if people with MS who attend hospital outpatient appointments are to benefit from this research. I am keen for this not just to be a piece of stand-alone research. Ideally, I would like it to contribute to a change in practice and become widely used. Clearly there are many challenges associated with embedding the MSIS-29v2 into everyday practice. Addressing these issues are key to ensuring that this work is not just viewed as a research project.

I would suggest that there are several levels within the health system that will need to be influenced if the use of the MSIS-29v2 is to be routinely used across the NHS in neurology practice. These include NHS England and NICE at policy agenda level where key stakeholders could be approached. The current NICE Guideline for MS (CG186) (2014) states that 'it aims to improve the quality of life for adults with multiple sclerosis by promoting symptom management, comprehensive reviews and effective relapse treatment'. Although the guideline states that people with MS should have a yearly review it does not mention assessment of quality of life. No date is given for the review of this guideline, but I would hope that a recommendation for formalised assessment of HRQoL using the MSIS-29v2 could be included at this time.

Organisations such as the MS Society and MS Trust could be contacted for help and guidance with regards facilitating MS nurses at the various Trusts to adopt the MSIS-29v2. As described previously in this work there are also challenges at the hospital level including the understanding of practitioners about the benefits of including such a measure in their daily practice. MS neurologists, clinical nurse specialists and all those involved in the care of patients at the various NHS Trusts around the country will need to be convinced of the value of using the MSIS-29v2 in their daily clinical practice. These benefits will be portrayed through the presentation of posters at conferences, and published papers and articles in the MS press.

Investigating whether and how other Trusts assess patient health-related quality of life would provide a basis for an implementation strategy for the widespread adoption of the MSIS-29v2 into routine clinical practice at the NHS level. A survey could be conducted using MS clinical nurse specialists identified from the MS Trust database. Data could be collected concerning the number of patients reviewed at each Trust, how often they are reviewed, the number of MS nurses and whether or not HRQoL is

currently assessed. The benefits of using the MSIS-29v2 could then be shared. Examining the outpatient appointment system, ways of distributing the MSIS-29v2 and, discussing and scoring the measure in an appointment could all be discussed by telephone. This could lead to the consolidation of a proposal for managers of neurological departments for making recommendations for the implementation of the MSIS-29v2 thereby potentially improving patient care with minimal additional costs. Also, a poster presentation at the annual MS Trust Conference should potentially lead to interest in assessing the health-related quality of life of patients. Those staff showing interest could be asked to trial using the MSIS-29v2 at their place of work with a view to long term usage.

The various barriers to adoption of HRQoL measures described in this work will also need to be overcome if the MSIS-29v2 is to be used routinely. As indicated in the literature review (Chapter 3) realising the benefits of using the MSIS-29v2 is not sufficient to ensure adoption. Ways of overcoming the many challenges of incorporating such a measure need to be considered and presented to staff. The main barriers I found are related to: ways of introducing patients to the concept of HRQoL assessment and the time this takes; distribution of questionnaires; the additional time required when the MSIS-29v2 is first used in clinic. My research shows that the benefits of using the questionnaire outweigh these barriers. Once confident in the use of the questionnaire patient issues can be focused on quickly.

I would suggest that staff education is essential for successful adoption of the MSIS-29v2 and can contribute to overcoming potential barriers. Education should include informing staff about how to use the measure and score it. Information about the impact of using the measure within in a clinic appointment both in terms of the time aspect and also its effect on the consultation style are also key to the adoption of the MSIS-29v2.

Understanding the benefits of such an assessment should also help to encourage adoption. The practical benefits for people with MS and healthcare professionals of adopting the MSIS-29v2 have been described throughout this work. Prior to using the MSIS-29v2 I did not reflect upon HRQoL during clinic appointments. I suspect that many patients did not either. However, using the MSIS-29v2 during appointments has changed the nature of the consultation. HRQoL is recognised, the consultation is more structured, clinic appointments are more effective and the consultation more holistic.

There is better recognition of issues important to patients and, better job satisfaction for staff as they perceive that they are giving a better service. Other benefits include the realisation and awareness of the overall impact of MS on the everyday life of patients, thereby aiding in the selection of effective treatment regimes that satisfy the treatment goals of the patient. Moreover, many patients become more involved in their care.

How practical using a paper-based HRQoL assessment such as the MSIS-29v2 is within routine clinical practice also requires consideration. At my place of work, patient records are predominately paper-based and thus using a paper questionnaire works well. In areas where paper records are used the paper copy may be filed in the patient notes. It then forms part of the documentation and can be easily reviewed from one appointment to the next. Various methods for distributing the MSIS-29v2 have been discussed, the most feasible for the place where I work being to post the MSIS-29v2 out with the patient's clinic letter. Each place adopting this measure would need to consider their own systems to determine the most appropriate method for themselves.

At Trusts where patient records are electronically-based using an electronic version which could be attached to notes would potentially be preferable for those patients with the necessary computer-based skills and access to a computer, laptop, tablet or phone. The MSIS-29v2 could be put on the hospital internet or emailed to patients for electronic or printed completion prior to appointments. Completed forms could be attached to the patient record. However, it must be recognised that a proportion of patients do not have computers or smart phones so for them a paper-based system would be essential.

The benefits of assessing HRQoL may be demonstrated to patients through discussion during their appointments. Using the health transition question, patient perceived changes in HRQoL following interventions can be recorded. These results may be communicated to patients during their outpatient appointments. Individual question score changes may also be considered and reasons for them debated. The MSIS-29v2 can also be scored and comparisons made from one appointment to another, thereby potentially demonstrating the effectiveness of various treatments. Using the MSIS-29v2 also provides opportunities for auditing one's service; for example, the health-

related quality of life of those with MS and how it changes over time could be examined.

8.6 CHALLENGES FOR FUTURE PRACTICE

An argument for assessment of the impact of two dimensions of HRQoL has been developed throughout this thesis. Assimilation into daily clinical practice is a fundamental requirement if the patients of the NHS Trust of this research are to benefit from the study findings. Ways of integrating such an assessment into routine clinical practice are now considered.

Difficulties with distribution of questionnaires were encountered as previously described (section 5.3) during the research period. A major challenge centres around how to ensure patients receive the MSIS-29v2 for completion prior to their appointment. An acceptable method for distributing the MSIS-29v2 needs to be determined. If the MSIS-29v2 is given for completion during a clinic appointment valuable consultation time will be used up. Questionnaires and an information sheet could be offered to patients at the end of their appointment for completion prior to their next appointment. Following discussion with the other HCPs of this research it was decided that the most feasible way was to post out an information sheet describing the MSIS-29v2 and the MSIS-29v2 with the clinic letter that is sent to each patient after their appointment. The information sheet would provide patients with information allowing them to choose whether to complete a questionnaire or not. This latter option appears the most practical in terms of efficient use of time, the patient completing the questionnaire immediately prior to their subsequent appointment. This decision aligns with the work of Lysandropoulos and Havrdova (2015) who suggest that the concept of patients completing forms between clinic visits seems practical in terms of efficient use of time and, can facilitate patient recall if clinical visits are infrequent thus improving the quality of the information. Having the MSIS-29v2 available for patients to complete either immediately before their appointment or to take home for completion, possibly with the help of a significant other, will improve accessibility for all. Unfortunately, assessment will still not be an option for those who are more physically disabled, or who suffer moderate to severe cognitive impairment and who attend alone. Questionnaires could also be placed in the MS information rack in the outpatient waiting area for patients to pick up. It may be possible in the future

to put the MSIS-29v2 on the hospital internet so that patients can access and complete it from home if they so desire.

Another challenge is the additional time required when using the measure with patients for the first time as part of their clinic appointment. I hope that in the near future assessment of HRQoL using the MSIS-29v2 will become embedded in the clinical practice of the team at the Acute Trust where this research is taking place, becoming an integral and valuable part of the consultation for those patients with MS who wish to use it.

8.7 RECOMMENDATIONS FOR FUTURE RESEARCH

Although the assessment of two dimensions of HRQoL was found to be feasible in the routine outpatient setting, the findings of the current research only provide limited support for the MSIS-29v2 as a useful measure for predicting changes in HRQoL following interventions, either pharmacological or non-pharmacological. What is now required is the replication of the present research over a longer time period, with a larger sample size and ideally patients and staff from multiple hospital sites. This would help to determine whether the issues identified in the current study are a result of a limitation in the sample size and/or the time frame of the research design. Also, any further study should include more HCPs using the questionnaire with patients and interviews of these staff to assess acceptability and feasibility of assessment of HRQoL.

Another area which requires further research relates to the use of the MSIS-29v2 by proxies and the validity of such measurements.

8.8 DISSEMINATION OF FINDINGS

Having gained such positive results regarding the assessment of HRQoL for both patients and staff from this research I am keen to disseminate them widely. The audience of relevance is wide, comprising service users, i.e. people with MS; healthcare professionals including neurologists and clinical nurse specialists; charities such as the MS Society and MS Trust who are involved in the care of those with MS; and researchers. This group of people have differing priorities, needs and requirements, and therefore information needs to be conveyed accordingly.

I plan to publish in academic journals, patient publications and liaise with the MS Society and MS Trust to increase access to the findings. Publishing in several journals with differing target audiences will potentially result in a wider adoption of the MSIS-29v2. Thus, I am currently considering journals such as: British Journal of Neuroscience Nursing; International Journal of MS Care; Multiple Sclerosis Journal - Experimental, Translational and Clinical; Applied Research in Quality of Life; Journal of Mixed Methods Research, and; AMRC Open Research.

A final report of the research will be submitted to the MS Society. I shall also be writing an article for the two local MS Society Group newsletters. During the consent process participants were asked if they wished to receive a copy of the results of the study. A summary document will be produced for these participants. Following discussion with the MS Trust I have been asked to produce an article for their publication for health professionals, MS in Practice. I also plan to investigate whether an article can be submitted to the NHS Quality Improvement website:

https://improvement.nhs.uk/improvement-hub/quality-improvement/

Subject to acceptance I will produce a poster for ECTRIMS (European Committee for Treatment and Research in Multiple Sclerosis) conference in September 2019 and also the MS Trust conference in November 2019. These will enable networking at a UK and global level. The results will be further disseminated as my name will be recognised in the online and printed programme of ECTRIMS as well as in the congress mobile App and Online Library. Having a poster accepted for ECTRIMS also provides an opportunity for publication as all accepted abstracts are published in the Multiple Sclerosis Journal Online. Attending both ECTRIMS and the MS Trust conference would allow me to share my research thereby contributing to more healthcare professionals being aware of the benefits of using the MSIS-29v2 in the routine clinical setting which could potentially contribute to improved care for individuals with MS all around the globe.

8.9 REFLEXIVITY

Reflexivity is an issue which must be taken into consideration in the present research. Finlay (2002) defined reflexivity as thoughtful conscious self-awareness. Within the context of research, reflexivity seeks to understand the possible effects of the

researcher's behaviour or knowledge on the process of conducting research. As discussed earlier I am a clinical nurse specialist for MS service, the principal researcher and the sole interviewer for Phase 2. Thus, I would consider myself to be an insider-researcher and also a clinician-researcher which is defined as an individual who conducts research and provides direct patient care (Yanos and Ziedonis, 2006).

My clinical background has enabled me to get to the heart of the issues raised; indeed, it was this clinical knowledge that inspired the undertaking of this PrD study. The level of knowledge I have about MS and the access to patients all facilitated this work. Also, I could understand the tensions described in the literature in relation to assessment of HRQoL and relate them to this work. The symbolic interactionist perspective of the research design ensured that the participants and I had a shared understanding of the language spoken, in that we were both 'on the same page'. This may have been problematic for a researcher who had no prior knowledge of how life is affected by living with multiple sclerosis. However, there are also tensions arising from my professional expertise; it may have led me to make assumptions about participants experiences or have inhibited participants discussing negative aspects of care.

The dilemma of performing dual roles– that of researcher and clinician came to the fore during both phases of the research. In the first phase during clinics I had to switch from being a researcher for those patients who were participating in the research to clinical nurse specialist for those who were not. I soon found that the style of consultation for both client groups altered, one being directly influenced by the use of the MSIS-29v2 and the other by the 'carry-over' effect of the beneficial aspects of the MSIS-29v2 such as probing more deeply into the lives of the patients and how MS was impacting on them. It is my opinion that my clinical knowledge had a positive influence on the data collection process in this case, rather than adversely affecting it. Undoubtedly the presence of the myself would have impacted upon the discussions of the MSIS-29v2 in phase 1 and the interviews of phase 2. Breuer, et al. (2002) argues any 'close range' technique for gathering data or information is likely to be subject to possible influences. The relationship myself and the other healthcare professionals have developed with patients over time would also have undoubtably affected how some of the patients responded when discussing the MSIS-29v2.

As a consequence of being a clinician-researcher using the MSIS-29v2 I am now much more aware of the impact that MS is having on the lives of people with MS. My

empathy has increased, and I find the consultation is more focused on how MS impacts on patients. The structure created as a consequence of using the MSIS-29v2 has helped me maintain different habits and practice. Indeed, through being an insider-researcher I believe I am able to make a difference in the work place.

Finally, I acknowledge that as an insider-research and clinician-researcher, I found that I could not adopt a wholly non-clinical research identity, reflecting the main finding of the work of Hay-Smith, et al. (2016). Unquestionably, as a nurse the phase of Hay-Smith, et al. (2016) '*Once a clinician, always a clinician'* resonates very strongly with me.

8.10 Overall Conclusion

The key finding of this two-phase study is that assessment of HRQoL does make a difference to patients who live with the incurable condition of MS which is known to reduce HRQoL in many domains. This research adds to the body of literature concerning the issues in measuring HRQoL demonstrating that assessment of HRQoL is of value to people with MS when used in the outpatient setting. Although the evidence for statistically-detected improvement in HRQoL was minimal, there was evidence from patients regarding detection of change when comparing questionnaires and response to individual changes as part of the longitudinal aspect of this study, particularly when the HTQ responses were evaluated. The health transition question was considered to be a valuable addition to the MSIS-29v2 by all involved in the project.

My research has explored the effect of assessing QoL in MS care management as suggested by Baumstarck, et al. (2013), the findings indicating that such an assessment should become embedded in everyday clinical practice. The findings suggest that care has improved as patients have been able to identify issues of particular concern to them and then discuss these issues and make decisions using a shared decision-making approach. At times HRQoL improved although this does not appear to be of major concern to patients. Rather they appear are more concerned with resolving their issues and reducing the impact of MS.

In response to the question: 'Is there a role for the assessment of health-related quality of life in patients with multiple sclerosis in daily clinical practice?' I would conclude

'yes'. Measurement of HRQoL of patients with MS provides a valuable insight into the overall impact of the condition on the everyday life of the patient, from both the patient and HCP perspective, thereby aiding in selection of effective treatment regimes that satisfy the therapeutic goals of the patient.

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Appendices

Appendix A. HRQoL Measure Evaluation Criteria

Psychometric Property	Ruta, et al. (1994)	Fitzpatrick, et al. (1998)	Higginson and Carr (2001)
Appropriateness	Describes the effect of the condition on those aspects of patients' lives that they consider to be of great importance. Allows patients to rate the extent to which those aspects of life are affected by the condition. Suitable for a wide variety of patients in different settings	Is the content of the instrument appropriate to the questions which the clinical trial is intended to address? (appropriateness)	Are the domains covered relevant? (appropriateness) In what population and setting was it developed and tested, and are these similar to those situations in which it is planned to be used?
Reproducible **Reliable**	Should be reproducible	Does the instrument produce results that are reproducible and internally consistent? (reliability)	Is the measure valid, reliable, responsive, and appropriate?
Validity		Does the instrument measure what it claims to measure? (validity)	What were the assumptions of the assessors when determining validity?
Responsiveness	Would be sensitive to changes in health over	Does the instrument detect changes over	Will it measure differences between patients or over time and at what power? (responsiveness)

Psychometric Property	Ruta, et al. (1994)	Fitzpatrick, et al. (1998)	Higginson and Carr (2001)
	time (responsive), and also allow patients to judge the values of those changes	time that matter to patients? (responsiveness)	
Precision		How precise are the scores of the instrument?	
Interpretability		How interpretable are the scores of the instrument? (interpretability)	
Acceptability **Respondent burden**	Should be brief and simple for patients to complete (acceptability).	Is the instrument acceptable to patients? (acceptability)	Are there floor and ceiling effects-that is, does the measure fail to identify deterioration in patients who already have a poor quality of life (floor effect) or improvement in patients who already have a good quality of life (ceiling effect)? How long does the measure take to complete? (acceptability, respondent burden) Who completes the measure: patients, their family, or a professional? What effect will this have-that is, will they complete it?
Feasibility		Is the instrument easy to administer and process? (feasibility)	Do staff and patients find it easy to use? (feasibility) Who will need to be trained and informed about the measure?

Appendix B. Phase 1- Ethical Approval

NHS
Health Research Authority

NRES Committee London - City & East
Bristol Research Ethics Committee Centre
Whitefriars
Level 3, Block B
Lewins Mead
Bristol
BS1 2NT

07 August 2014

Mrs Helen Nicola Willis
PrD student, Clinical Nurse Specialist Multiple Sclerosis
Mid Essex Hospital Services NHS Trust

Dear Mrs Willis

Study title:	**Assessment of Multiple Sclerosis in Routine Clinical Practice v1**
REC reference:	**14/LO/1178**
IRAS project ID:	**148933**

Thank you for your letter of 25 July 2014, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Mr Rajat Khullar, nrescommittee.london-cityandeast@nhs.net.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

- *The Committee advised that any communications by post should ensure privacy and there should not be a departmental hospital stamp visible on the outside of any mail to maintain patient confidentiality.*

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which can be made available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett . the HRA does not, however, expect exceptions to be made.
Guidance on where to register is provided within IRAS.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Covering letter on headed paper [Cover Letter]		
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Insurance]		11 July 2013
GP/consultant information sheets or letters [GP Information Sheet]	v1	02 May 2014
IRAS Checklist XML [Checklist_25072014]		25 July 2014
Letter from sponsor [Sponsorship]		07 May 2014
Letters of invitation to participant [Participant Information Sheet]	v1	02 May 2014
Other [Participant Socio-demographic data]	v1	02 May 2014
Other [Research proposal]	v2	24 July 2014
Other [Reply for provisional ethical approval]		24 July 2014
Participant consent form [Participant Consent Form]	v1	02 May 2014
Participant information sheet (PIS) [Participant Information Sheet]	v1	02 May 2014
REC Application Form [REC_Form_25072014]		25 July 2014
Research protocol or project proposal [Assessment of Multiple Sclerosis in Routine Clinical Practice]	v2	24 July 2014
Summary CV for Chief Investigator (CI) [CV Helen Willis]		02 May 2014
Summary CV for supervisor (student research) [CV Supervisor]		16 May 2014
Validated questionnaire [MSIS-29v2]	v1	02 May 2014

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol

- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:
http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

14/LO/1178	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

pp Professor Arthur T. Tucker
Chair

Email:nrescommittee.london-cityandeast@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Dr Leslie Gelling*
Mrs Mandy Austin, Mid Essex Hospital Services NHS Trust

From: CityandEast NRESCommittee.London- (HEALTH RESEARCH AUTHORITY)

Sent: 20 August 2014 11:05
To: Helen Willis
Subject: RE: 14 LO 1178

Dear Helen

Thank you for providing the confirmation. This has been noted by the REC. I can confirm that all the conditions of the favourable opinion are now met and the study is fully approved.

Best Wishes

Raj

Raj Khullar | REC Manager
London City & East REC
London South East REC
Health Research Authority

From: Helen Willis
Sent: 19 August 2014 22:08
To: CityandEast NRESCommittee.London- (HEALTH RESEARCH AUTHORITY)
Subject: RE: 14 LO 1178

Dear Raj,

Ref 14/LO/1178

With regards the condition attached to the favourable opinion of the 7th August 2014,for project number 148933, I would like to confirm that there will be no departmental hospital stamp visible on the outside of any mail, thus maintaining patient confidentiality.

Kind regards

Helen Willis

Dear Mrs Willis

Please find attached favourable opinion with conditions letter for the above study.

Regards

Raj

Raj Khullar | REC Manager
London City & East REC
London South East REC
Health Research Authority

Mid Essex Hospital Services NHS
NHS Trust

TRUST APPROVAL LETTER

Helen Willis
MS CNS
Broomfield Hospital

Research and Development Department
Broomfield Hospital
West Wing 2
Court Road
Broomfield
Chelmsford
Essex CM1 7ET

19th August 2014

Dear Helen

Re: R&D1008
Assessment of Multiple Sclerosis in routine clinical practice

We are writing on behalf of Mid Essex Hospital Services NHS Trust (MEHT) to advise that the above study was given R&D approval. The following documents were reviewed by the R&D Department:

Description	Version	Date
R&D Form		14th April 2014
Proposal	2	2nd May 2014
Ethics approval		7th August 2014
CV Helen Willis		14th April 2014
GCP Helen Willis		31st March 2014
Insurance		11th July 2013
Sponsorship (Anglia Ruskin University)		7th May 2014
GP Information Sheet	1	2nd May 2014
GP Introduction Sheet	1	2nd May 2014
Patient Information Sheet	1	2nd May 2014
Patient Consent Form	1	2nd May 2014
Patient Socio Demographic	1	2nd May 2014
Patient Invitation letter	1	2nd May 2014
MS Impact Scale	1	2nd May 2014

You will need to ensure that as patients are recruited the instructions detailed on the bottom of the Consent Form are adhered to. The patient should sign the Consent Form, with a copy returned to the patient. A further copy should be placed in the patients' notes and the original placed in the Site File.

Approval for this study is granted on the understanding that you will abide by the requirements of the Research Governance Framework issued by the Department of Health and all other relevant legislation. It is your responsibility to ensure that this project is conducted in accordance with the agreed protocol and that all storage and transfer of data complies with the Data Protection Act 1998. We would be grateful if you would ensure

compliance with these instructions and the Trust R&D Operational Policy, which can be found on the Intranet.

For trials involving patients you need to be aware of Trust R&D Policy and the importance of placing a copy of the signed consent form and associated Patient Information Sheet in the patient's main NHS hospital notes. This is to ensure that other clinicians are informed about the patient's participation in the research project, together with documenting any details in the patient's main NHS hospital notes regarding specific research visits, treatments or interventions what are undertaken.

Once the study is underway you will need to keep us informed of its progress. You will be required to complete a Project Annual Status Form issued by the MEHT R&D Department. Additionally, you should be aware that you might be required to participate in the audit of compliance to the Research Governance Framework, which is undertaken in a proportion of the projects each year. Finally when your project has reached completion you will be expected to complete an R&D Project Closure Form.

You will also need to inform the MEHT R&D Department if there are any changes to personnel, the protocol or any other documentation involved in the study. If the Principal Investigator (PI) retires, leaves the Trust or abdicates responsibility for this trial there must be a clear handover to the new PI which much be communicated in writing to the R&D Department. Additionally any adverse events should be reported to the MEHT R&D Department and also via the MEHT electronic Datix system.

Furthermore, please note that any individual or members of a team intending to conduct research within MEHT, in accordance with Trust Policy and Department of Health Research Governance Framework, must have undertaken Good Clinical Practice (GCP) training. This has to be undertaken every two years.

You are reminded that failure to comply with any of the specifics detailed within this formal R&D approval letter could result in withdrawal of R&D approval. If you have any queries about any of the arrangements for this study please contact Mandy Austin, R&D Coordinator on Ext 5136, who will be happy to assist you.

This letter has been sent via email, with a read receipt requested. This will act as acceptance to the conditions outlined above, unless the R&D Department is informed of any issues with this amendment within 48 hours of receipt of this document.

We wish you every success with the project.

Yours sincerely

Tracey Camburn
R&D Director

28 AUG 2014

Mid Essex Hospital Services NHS Trust
Broomfield Hospital
Broomfield Court, 1st Floor, Court Road
Chelmsford. CM1 7ET

Tracey Camburn
R&D Co Director

Cc **Christian Barnett, Clinical Trials Support Manager**
Lyndsay Johnson, Clinical Trial Administrator
Laween Al-Atroshi, Chief Research Officer

Appendix C. Phase 1- Participant Introduction Letter

Date

Name
Address
Address
Address
Address
Address

Contact details:
Researcher: Helen Willis,
Supervisor: Dr. Sarah Burch

Dear

I am currently studying for a professional doctorate (PrD) at Anglia Ruskin University and would like to invite you to take part in my research. Before you make any decisions please read the enclosed participant information sheet. I have included a copy of the questionnaire I will be using and also a consent form. If you have any questions about the research please do not hesitate to contact either myself or my supervisor as above.

If, after you have read the information sheet, you decide that you would like to take part in the research please return the signed consent form in the enclosed pre-paid envelope by (*date to be added when NHS ethics approved*).

Many thanks for your consideration.

Kind regards

Helen Willis, B.Sc.(Hons.), M.Sc., Principal Researcher and Clinical Nurse Specialist
Multiple Sclerosis

Version 1, 2nd May 2014

Appendix D. Phase 1-Participant Information Sheet

Contact details:
Researcher: Helen Willis,
Supervisor: Dr. Sarah Burch

Participant Information Sheet

Assessment of Multiple Sclerosis in Routine Clinical Practice

Part 1

Introduction

I am Helen Willis, a clinical nurse specialist for multiple sclerosis at Broomfield Hospital, Chelmsford. I am studying for a professional doctorate (PrD) at Anglia Ruskin University. I work with Julie Webster, also a clinical nurse specialist for multiple sclerosis, and consultant neurologists Dr. Zoukos, Dr Sveinbjornsdottir, and Dr. Dasari. I'd like to invite you to take part in my research study. Joining the study is entirely up to you and before you decide I would like you to understand why the research is being carried out and what it would involve for you. Please do not hesitate to contact me, or my supervisor, with any concerns or questions you have about the study, either by telephone or email as above.

What is the purpose of the study?

Multiple sclerosis is a condition which is known to affect the quality of life of both patients and their families. It would appear that no studies have explored the effect of assessing quality of life in multiple sclerosis care management. This research looks at how using a simple questionnaire to guide care may contribute to a change in quality of life for patients with multiple sclerosis.

Why have I been invited?

All patients with multiple sclerosis attending the neurology outpatient departments at Broomfield Hospital, Chelmsford and St. Peter's Hospital, Maldon in the last 12 months are invited to take part in this research. Approximately 600 patients will be invited to take part.

Do I have to take part?

It is up to you to decide to join the study. I will describe the study in this information sheet. If you agree to take part, you will be asked to sign a consent form (enclosed).

You are free to withdraw at any time, without giving a reason. This will not affect the standard of care you receive. Should you wish to withdraw from the research at any time, please do not hesitate to contact me, Helen Willis or my supervisor, Dr. Sarah Burch, either by telephone or email.

What will happen to me if I take part and what will I have to do?

I will be using a questionnaire called the Multiple Sclerosis Impact Scale version 2 (MSIS-29v2) to look at the impact of multiple sclerosis on health related quality of life (example enclosed). The questionnaire will be given to you in the waiting room at the hospital for you to complete prior to your outpatient appointment. The questionnaire will take no more than 5 to 10 minutes to complete. If you agree to participate please could you try and arrive 10 minutes prior to your appointment to give yourself time to complete the questionnaire. Should you need help to complete the questionnaire a relative, friend or carer may assist you. Both Julie Webster and I will be giving out the questionnaires. The answers you give will be discussed during your appointment and may enable different treatments to be considered with you. A record will be made of the any treatments commenced. You will be given the questionnaire again at each subsequent appointment to see if any treatment you received has led to a change in your quality of life and to assist in the consideration of any further treatments. You will be asked if you feel that your quality of life has changed since you were last reviewed.

I will also be collecting demographic information about your sex, age, date of diagnosis, type of MS, and employment and marital status as these factors all affect quality of life.

The research will run for between 12 and 18 months and you will be asked to complete a questionnaire at every outpatient appointment you attend during that period. Hence you may be asked to complete 2, 3 or more questionnaires. As the questionnaire looks at the impact of multiple sclerosis on you, you may find the answers to some of the questions challenging. All the answers will be discussed in your consultation and hopefully things can be suggested to help you with any difficulties or symptoms you are experiencing. Taking part in the research could benefit patients with MS in the future as the questionnaire may raise issues which you might not normally think of discussing in an outpatient appointment but which could result in an improvement in quality of life.

What are the possible disadvantages and risks of taking part?

The questionnaire may raise issues surrounding your multiple sclerosis and its symptoms which you might not normally chose to discuss. Any issues will be discussed in your appointment and appropriate treatments or interventions offered.

What are the possible benefits of taking part?

By taking part in the research you will have the opportunity to have the impact of your MS assessed. Your responses to the questionnaire will be discussed during your outpatient appointment. Issues which you have learnt to live with and so not considered a problem could be highlighted and subsequently discussed. Interventions could be offered which may not

have been considered if the questionnaire had not been used. An improvement in your quality of life may result.

There may also be benefits to the wider community of MS sufferers.

What happens when the research study stops?
Provided that it is feasible to use the questionnaire in routine clinical practice, the questionnaire will be used with all patients during each consultation.

What if there is a problem?
Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in Part 2.

Will my taking part in the study be kept confidential?
Yes. We will follow ethical and legal practice and all information about you will be handled in confidence. The details are included in Part 2.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2

What happens if I don't want to carry on with the study?
You may withdraw from this study at any time. Any information collected up to your withdrawal will still be used.

If you decide you would like to withdraw, please contact myself or my supervisor by phone or email as at the top of this sheet.

You will continue to be reviewed in the outpatient clinics on a regular basis, either by the MS nurses or Dr. Zoukos, Dr Sveinbjornsdottir or Dr. Dasari.

What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to either Helen Willis or Dr. Sarah Burch by phone or email as above who will do their best to answer your questions. If you remain unhappy and wish to complain formally, you can do this by writing to: Complaints & PALS Service, Broomfield Hospital, Chelmsford, Essex, CM1 7ET or by emailing: pals@meht.nhs.uk.

Will my participation in this study be kept confidential?
All information which is collected about you during the course of the research will be kept strictly confidential, and any information which leaves the hospital will have your name and address removed so that you cannot be recognised. All information will be anonymised and you will be given a unique participant identifier. All data will be stored in a locked office. An encrypted memory stick will be used. Only the three neurology consultants and two clinical

nurse specialists for multiple sclerosis will have access to any information you give. The NHS code of confidentiality and Caldecott principles will be adhered to at all times.

Involvement of the General Practitioner (GP)

If you decide to take part in the research, your GP will be informed. Permission to inform your GP is requested through the consent form. The GP will be sent a letter informing him that you are taking part in the study. He will continue to receive a letter following your clinic appointment.

What happens to the results of the research study?

Once the research is completed I will be writing an extensive report (thesis). I will also is produce a short report which will be available to you. You will not be identified in any report or publication. If you wish to receive a copy of the report please could you indicate this on the consent form. I also hope to publish a report of this study and possibly present the results at a conference.

Who is organising and funding the research?

This research is being undertaken as part of a Professional Doctorate by Helen Willis, at Anglia Ruskin University. This research is funded by the Multiple Sclerosis Society in the UK, grant number 970/12. The researchers will receive no financial reward for this research. There are no conflicts of interest to declare.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by the City and East London Research Ethics Committee.

Thank you for reading this sheet. If you would like to take part in my research please could you complete the enclosed consent form and return in the pre-paid envelope included.

YOU MAY KEEP THIS FORM,
AND WILL BE GIVEN A COPY OF YOUR CONSENT FORM AT YOUR NEXT APPOINTMENT

Appendix E. Phase 1 Consent Form

Anglia Ruskin University
Cambridge Chelmsford Peterborough

Mid Essex Hospital Services NHS
NHS Trust

Participant Consent Form

Name of Participant:

Patient Identification Number:

Title of the project: Assessment of Multiple Sclerosis in Routine Clinical Practice

Main investigator: Helen Willis
Main supervisor: Dr. Sarah Burch
Other members of the Research Team: Julie Webster, Dr. I.Zoukos

Please initial all boxes

1. I confirm that I have read and understand the Participant Information Sheet dated 2nd May 2014 (version 1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. I understand what my role will be in this research. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected. ☐
3. I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from Mid Essex Hospitals NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records. ☐
4. I agree to my GP being informed of my particiaption in the study ☐
5. I agree to take part in the above study. ☐
6. I would like to receive a copy of the results of the study. By email/mail (delete as appropriate). Your email address: ☐

Name of participant (print)……Signed……..…Date……

Name of witness (print)……..Signed……..…Date……

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP

Version 1, 2nd May 2014

Appendix F. GP Information Sheet

Anglia Ruskin University
Cambridge Chelmsford Peterborough

Mid Essex Hospital Services NHS
NHS Trust

Contact details:
Researcher: Helen Willis,
Supervisor: Dr. Sarah Burch

GP Information Sheet

I am Helen Willis, a clinical nurse specialist for multiple sclerosis at Broomfield Hospital. I am studying for a professional doctorate (PrD) at Anglia Ruskin University. The title of my research is **Assessment of Multiple Sclerosis in Routine Clinical Practice.**

As you will be aware multiple sclerosis is a condition which is known to affect the quality of life of both patients and their families. My research looks at how using a simple questionnaire to guide care may contribute to a change in quality of life for patients with multiple sclerosis.

All patients with multiple sclerosis who have attended the neurology outpatient departments at Broomfield Hospital, Chelmsford and St. Peter's Hospital, Maldon within the last twelve months were invited to take part in this research.

I will be using a questionnaire, the Multiple Sclerosis Impact Scale version 2 (MSIS-29v2) to look at the impact of multiple sclerosis on health related quality of life. The questionnaire will be given patients in the waiting room at the hospital for completion prior to their outpatient appointment. It takes between 5 and 10 minutes to complete. Participants may be helped to complete the questionnaire by a relative, friend or carer. The answers given will be discussed during their appointment and will enable different treatment options to be considered. A record will be made of the any treatments commenced. The questionnaire will be given out at subsequent appointments to determine if any treatments offered have resulted in a change in quality of life and to assist in the consideration of any further treatments. Patients will be asked if they feel that their quality of life has changed since they were last reviewed. I will also be collecting information about sex, age, date of diagnosis, type of MS, and employment and marital status as these factors all affect quality of life.

I enclose a copy of the questionnaire for your information.

Kind regards

Helen Willis, B.Sc.(Hons.), M.Sc., Principal Researcher and Clinical Nurse Specialist Multiple Sclerosis

Version 1 2nd May 2014

Appendix G. MSIS-29v2

Anglia Ruskin University
Cambridge Chelmsford Peterborough

Mid Essex Hospital Services NHS
NHS Trust

Multiple Sclerosis Impact Scale version 2 (MSIS-29v2)

Participant Identification number:

• Are you still willing to participate in this research (please circle):

Yes	No

• If yes please complete the questionnaire below.

• The following questions ask for your views on the impact of MS on your day-to-day life *during the past 2 weeks*.

• For each statement, please circle the *one* number that *best* describes your situation.

• Please answer *all* questions.

In the *past 2 weeks*, how much has your MS limited your ability to ...	**Not at all**	**A little**	**Moderately**	**Extremely**
1. Do physically demanding tasks?	1	2	3	4
2. Grip things tightly (e.g. turning on taps)?	1	2	3	4
3. Carry things?	1	2	3	4

In the *past 2 weeks*, how much have you been bothered by ...	**Not at all**	**A little**	**Moderately**	**Extremely**
4. Problems with your balance?	1	2	3	4
5. Difficulties moving about indoors?	1	2	3	4
6. Being clumsy?	1	2	3	4
7. Stiffness?	1	2	3	4
8. Heavy arms and/or legs?	1	2	3	4
9. Tremor of your arms or legs?	1	2	3	4
10. Spasms in your limbs?	1	2	3	4
11. Your body not doing what you want it to do?	1	2	3	4
12. Having to depend on others to do things for you?	1	2	3	4

Version 1, 2nd May 2014

In the past 2 weeks, how much have you been bothered by …	Not at all	A little	Moderately	Extremely
13. Limitations in your social and leisure activities at home?	1	2	3	4
14. Being stuck at home more than you would like to be?	1	2	3	4
15. Difficulties using your hands in everyday tasks?	1	2	3	4
16. Having to cut down the amount of time you spent on work or other daily activities?	1	2	3	4
17. Problems using transport (e.g. car, bus, train, taxi, etc.)?	1	2	3	4
18. Taking longer to do things?	1	2	3	4
19. Difficulty doing things spontaneously (e.g. going out on the spur of the moment)?	1	2	3	4
20. Needing to go to the toilet urgently?	1	2	3	4
21. Feeling unwell?	1	2	3	4
22. Problems sleeping?	1	2	3	4
23. Feeling mentally fatigued?	1	2	3	4
24. Worries related to your MS?	1	2	3	4
25. Feeling anxious or tense?	1	2	3	4
26. Feeling irritable, impatient or short-tempered?	1	2	3	4
27. Problems concentrating?	1	2	3	4
28. Lack of confidence?	1	2	3	4
29. Feeling depressed?	1	2	3	4

• Did you require help to complete this questionnaire (please circle):

Yes	No

•.Since you last completed a questionnaire do you think that your quality of life has (please circle):

Significantly Improved	Slightly Improved	No Change	Slightly Deteriorated	Significantly Deteriorated

Please comment:

Version 1, 2nd May 2014

Appendix H. Sociodemographic Data Collection Tool

Anglia Ruskin University
Cambridge Chelmsford Peterborough

Mid Essex Hospital Services NHS
NHS Trust

Assessment of Multiple Sclerosis in Routine Clinical Practice: Socio-Demographic Data

Please complete the following questions.

Patient Identification Number:

Gender:
- ☐ Male
- ☐ Female

Age:

Year of Diagnosis with MS (if known):

Type of MS:
- ☐ Relapsing remitting
- ☐ Secondary progressive
- ☐ Progressive
- ☐ Primary progressive
- ☐ Benign

Employment status:
- ☐ Part-time employment
- ☐ Full-time employment
- ☐ Retired
- ☐ Retired due to ill health
- ☐ Student
- ☐ Housewife
- ☐ Other, please state

Marital status:
- ☐ Single
- ☐ Partner
- ☐ Married
- ☐ Separated or divorced
- ☐ Widowed
- ☐ Dependent children
- ☐ Non-dependent children

Please return completed form to your MS nurse at your appointment.

Thank you,

Helen Willis, B.Sc.(Hons.), M.Sc., Principal Researcher and Clinical Nurse Specialist Multiple Sclerosis

Version 1, 2nd May 2014

Appendix I. Intervention Recording Sheet

Assessment of Quality of Life in Multiple Sclerosis			
Participant number		**Clinic date**	
Intervention			
Reassurance ☐	Refer for Counselling ☐	Referral to Wheelchair Services ☐	
Refer for Hospital Physiotherapy ☐	Refer for Home Physiotherapy☐	Refer to Occupational Therapy- Home ☐	Refer to Occupational Therapy- Social services ☐
Refer to Consultant ☐	Referral for MRI ☐	Referral for VER ☐	Referral for Cognitive assessment ☐
Refer to continence service for: Bladder ☐ Bowels ☐	Reason		Nil ☐
Other:			
Medication commenced for:			
Spasms			
Stiffness			
Heaviness			
Pain			
Other- state			
Other- state			
Other- state			
Other- state			
Medication dose altered	Name	Reason	
Medication stopped	Name	Reason	

Appendix J. Interventions Offered

Appoints attended	**One**	**Two**		**Three**			**Four**				**Five**					
No of participants	72	172		58			18				2					
Intervention	**T1**	**T1**	**T2**	**T1**	**T2**	**T3**	**T1**	**T2**	**T3**	**T4**	**T1**	**T2**	**T3**	**T4**	**T5**	**Total**
Reassurance	37	85	94	26	24	31	7	7	6	8	1	0	0	0	1	327
Refer for counselling	0	5	3	3	1	0	2	0	0	0	0	0	0	0	0	15
Refer to wheelchair services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Refer for hospital physiotherapy	3	9	4	0	4	0	0	0	0	0	0	0	0	0	0	20
Refer for home physiotherapy	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Refer to occupational therapy- home	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Refer to occupational therapy- social services	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	6
Refer to consultant	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Refer for MRI	2	12	12	6	6	3	1	4	1	0	0	1	0	0	0	44

Appoints attended	**One**	**Two**		**Three**			**Four**				**Five**					
No of participants	72	172		58			18				2					
Intervention	**T1**	**T1**	**T2**	**T1**	**T2**	**T3**	**T1**	**T2**	**T3**	**T4**	**T1**	**T2**	**T3**	**T4**	**T5**	**Total**
Refer for visual evoked responses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Refer for cognitive assessment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Refer to continence service for bladder	1	15	5	4	2	2	2	1	0	0	0	0	0	0	0	32
Refer to continence service for bowels	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	4
Steroids	3	7	7	6	4	0	2	1	2	0	0	0	0	0	0	32
Dietician	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Other	15	22	23	12	12	10	4	5	3	0	0	1	0	0	2	109
Medications, started, altered or stopped	17	70	52	33	22	19	14	11	1	6	2	1	2	2	3	255
Total interventions	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	812
Intervention declined	3	6	6	5	1	1	0	1	1	1	0	0	0	0	0	25
Nil	29	59	79	9	20	0	3	1	7	10	0	0	0	1	0	218

Appendix K. Referral Reasons

Bladder and Bowels	
Advised to see GP re prostate as bladder issues	GP asked to prescribe Vesicare.
Suggested decaffeinated drinks	GP for urinalysis
Advised to discuss catheter change with GP surgery	Urinalysis as possible urine infection
Sent off urine sample as possible urine infection	GP- regular urine checks and for regular Movicol to be prescribed
Advised to get urine checked in 10 days for UTI	Referred to GP for long-term antibiotics for recurrent UTI's
MSU at GP	
Dietician	
Advise on weight loss	
GP referrals	
Referred back to GP for recurrent chest problems and feeling unwell. Also depressed	Suggested see GP re L knee pain, ? arthritis.
GP called to arrange an urgent appointment re hip	
Medication	
Discussed oral DMT's	Fampyra trial
Vitamin D3 suggested	Discussed using stress ball for stress ball for stiff hands
Discussed plegridy	Advised to consider medication for stiff heavy legs and poor balance
Mental health	
Advised to peak to GP re depression and mental health issues	Chase up local mental health team review
GP asked to increase antidepressants for low mood	
Mobility issues	
Functional Electrical Stimulation machine chased up	Letter for DVLA
Discussion about mobility scooter or wheelchair use as mobility deteriorating	Letter to wheelchair services to chase up chair
Suggested using a tri-walker	
Other referrals	
Neuropsychometry testing	Surgical appliances for a foot up

Referred to surgical appliances	Surgical appliances for ankle support
Referred to podiatry for toe orthotic. refer to surgical appliances for ankle support	
Other	
Suggested vibro-plate	Discussed finding a cleaner
Pain clinic	
Pain clinic for back pain	Referred to Royal London pain clinic
Chase up pain clinic referral	
Social services	
REMAP contact details given and social services number for a ramp	Wife advised to call social services re stair lift
Social services chased about wet room	Advised to contact social services for raised toilet seat
Support	
Expert patient programme	Recommended MS-UK
Local MS Society for support	Details given of local MS society branch
Hospice referral for day care- cognitively well and feels under used and redundant	TGN support details
Information given on MS society re exercise group as socially isolated	
Work and benefits	
Advice given about returning to work	Advice given about MSUK and Job Centre
Advice given on benefits	Advised to apply for PIP

Appendix L. Item Non-Response

	Frequency missed						Frequency missed				
Question number	**Appt. 1 (T1)**	**Appt. 2 (T2)**	**Appt. 3 (T3)**	**Appt. 4 (T4)**	**Appt. 5 (T5)**	**Question number**	**Appt. 1 (T1)**	**Appt. 2 (T2)**	**Appt. 3 (T3)**	**Appt. 4 (T4)**	**Appt. 5 (T5)**
1	1	0	0	0	0	**16**	1	0	0	1	0
2	1	0	0	0	0	**17**	3	0	0	0	0
3	1	1	0	0	0	**18**	2	2	0	0	0
4	0	0	0	0	0	**19**	4	0	0	0	0
5	2	1	0	0	0	**20**	3	2	0	0	0
6	2	0	0	0	0	**21**	4	1	1	0	0
7	1	3	0	0	0	**22**	2	1	0	0	0
8	3	2	0	0	0	**23**	8	0	0	0	0
9	1	1	0	0	0	**24**	5	2	0	0	0
10	3	1	0	0	0	**25**	4	0	0	1	0
11	0	2	0	2	0	**26**	3	4	0	0	0
12	0	0	0	0	0	**27**	3	0	0	1	0
13	2	1	0	0	0	**28**	3	0	1	0	0
14	1	1	0	0	0	**29**	4	1	0	0	0
15	2	3	0	0	0	**Total**	69	29	2	5	0

Appendix M. Phase 2- Ethical Approval

NHS
Health Research Authority

NRES Committee London - City & East
Bristol Research Ethics Committee Centre
Whitefriars
Level 3, Block B
Lewins Mead
Bristol
BS1 2NT

27 August 2015

Mrs Helen Nicola Willis
PrD student, Clinical Nurse Specialist Multiple Sclerosis
Mid Essex Hospital Services NHS Trust

Dear Mrs Willis

Study title:	**Assessment of Multiple Sclerosis in Routine Clinical Practice v1**
REC reference:	**14/LO/1178**
Amendment number:	**1**
Amendment date:	**05 August 2015**
IRAS project ID:	**148933**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

The Committee requested for following clarifications and a response was provided for each query -

This is a study for an academic qualification (a professional doctorate). It is to some degree harmless and poses no risk. However you now wishes to add a new component (face to face interviews) to the original proposal.

You explained that you wish to add the face to face interviews as part of a mixed methods study.

A mixed methods approach was selected for this study, thereby enabling both the primary and secondary research questions to be answered. Some research problems are more suited to a mixed method inquiry. These include those where one data source may be insufficient, results need to be explained, exploratory findings need to be generalized, a second method is needed to enhance a primary source, a theoretical stance needs to be employed, and an overall research question can be best addressed with multiple phases or projects.

For this study either a quantitative approach or a qualitative approach, alone, would have been inadequate to develop multiple perspectives and a complete understanding of the different research questions. A quantitative method, where data was collected about the physical and psychological impact of MS on participants, allowed three of the research questions to be answered: 'Is assessment of HRQoL in patients with MS feasible in daily clinical practice?', 'Can the results of HRQoL assessment be used to inform therapeutic interventions?' and 'Can a HRQoL measure detect change in HRQoL after the implementation of interventions?'

However qualitative exploration could potentially enhance the data collected quantitatively and allow the research question, 'Does assessment of HRQoL with an appropriate measure make a meaningful difference to patients?' to be answered. Utilising a qualitative methodology enabled the views and opinions of the study participants to be gathered in a way which quantitative methods are unable to achieve. A qualitative approach was utilised to gather information from a small group of participants about the merits and issues of using the questionnaire for patients. Their feelings about the use of the questionnaire where explored and also whether they felt that assessment of the impact of MS with an appropriate measure made a difference to them. An additional question has been added to the interview schedule, 'Do you think that the assessment of your HRQoL with the questionnaire has a difference to you?' following the comments received from the Ethics committee.

The benefits of using the MSIS-29v2 were thus investigated from a patient perspective; the quantitative data was enhanced by qualitative data.

Furthermore, establishing the views and opinions of those taking part in this research was important to help ensure the relevance and quality of the research.
An explanatory sequential mixed methodology design will be used.

Presumably at least patients and staff will have completed the original study.

You clarified that all of the patients approached will have taken part in the first phase of the study. Only those who have completed at least two questionnaires will be approached to take part in phase 2.

There is only one other member of staff involved in data collection. She has been actively collecting data in clinic since the research data collection commenced in November 2014.

Normally the Committee would ask that if participants (Patients or staff) would be asked if they could be re-contacted. This would be on the original PIS. The current application does not state how patients (and staff) who have already completed the original study would be contacted to ask about this new proposal. Would it be by letter or direct contact, it is not clear. Please clarify.

You explained that as this research has proceeded you have realised that the answers to all of the research questions could not be determined with the original design. Thus the requirement for an additional phase. As you were unaware that you would need to re-contact the patients I did not ask if they would be happy to be contacted in the future. You did ask if they would like to have a copy of the results of the survey.

The patients and member of staff would be contacted by letter. The introductory letters for the patients and staff were enclosed with the original application. You attached all paperwork for the information of the Committee.

The new PISs for patients and staff state that this part of the study is to determine "whether using the questionnaire makes a difference to you and whether it should continue to be used at outpatient appointments." The Committee does not think that you will be in a position to change practice as a result of this study. Such evidence is not in the application. (The PISs also imply that by taking part in the interview, participants could influence whether the questionnaire was used routinely or not.)

You clarified that the questionnaire MSIS-29v2 is used in nurse-led clinics and also in the multi-disciplinary MS clinic (Consultant neurologist and clinical nurse specialist for MS present). If the patients feel that using the MSIS-29v2 makes a difference to them, this change to practice can indeed be implemented as the staff involved able to implement new practice.

Recruitment appears to be on a first come-first served basis and those approached would be made aware of this. This appears to be undertaken using a brief letter and the PIS/ Consent. There is no indication of how the you would contact the Patient after a signed consent had been returned.

You clarified that once a signed consent has been received the patient will be contacted by phone to arrange a convenient date and time for the interview. Confirmation will be given by letter of the date, time and location of the interview.

Recruitment will include the only other nurse using the questionnaire being assessed in the outpatient department. The Committee notes that in the protocol Phase 2 it appears only 1 health care professional will be interviewed.

You clarified that there are only two clinical nurse specialists for Ms at your place of work. Hence, there is only one other member of staff to interview. You accept this limitation but feel that any information obtained is useful.

The interviews are to be audio-taped but it is not clear how they will be stored, transcribed, destroyed etc. Please clarify.

You clarified that the interviews will be recorded using a digital dictation device. This machine is also used for dictating patient letters. The information will be downloaded to the hospital servers where it is stored securely. The information will be stored for 3 years and then automatically deleted. Your secretary will transcribe the interviews at your place of work.

Please also clarify if expenses will be paid for those patients returning to take part in an interview and where would the interviews with patients be held.

You clarified that no expenses will be paid. The interviews will be held in a consulting room at the hospital where the patient normally attends their appointments on a day and time convenient for them as far as is possible.

While the study will not harm anyone, the Committee feels that the implications of adding in semi-structured interviews may not have been well thought through and significant issues are not covered.

You provided a copy of the interview schedule. The questions being asked will allow for the research questions to be addressed.

The Committee agreed that any potential benefits of this additional study have also been over-emphasised in the PIS and should be revised suitably.

You explained that the PIS states -

'*By taking part in the research you will have the opportunity to influence whether the questionnaire becomes a routine part of outpatient appointments after the research has finished*'.

If the patients interviewed do not feel that assessment of HRQoL using the MSIS-29v2 makes a meaningful difference to them the reasons will be analysed and consideration given regarding whether the measure is incorporated into daily practice.

Conversely, if the patients feel that the assessment does make a difference to them, and other results demonstrate that it is feasible to include assessment in the outpatient appointment, the results can be used to inform therapeutic interventions, and the MSIS-29v2 is able to detect a change in HRQoL after the implementation of interventions, then consideration will be given to the inclusion of the MSIS-29v2 in routine outpatient appointments.

The Committee is now satisfied with the responses provided and is happy for this amendment to be give a favourable opinion.

Approved documents

The documents reviewed and approved at the meeting were:

Document	*Version*	*Date*
Interview schedules or topic guides for participants [Phase 2 Interview Schedule for staff]	1	25 May 2015
Interview schedules or topic guides for participants [Phase 2 Interview Schedule Participants final]	1	05 June 2015
Notice of Substantial Amendment (non-CTIMP)	1	05 August 2015
Other [health Professional Information Sheet Q and A Phase 2]	1	05 June 2015
Other [Staff introduction sheet Phase 2 05.06.15]	1	05 June 2015
Other [Patient introduction sheet Phase 2]	1	05 June 2015
Participant consent form [PrD consent form Phase 2 participant 05.06.15]	1	05 June 2015
Participant consent form [PrD Consent form Phase 2 Staff]	1	05 June 2015
Participant information sheet (PIS) [Participant Information Sheet Q and A]	1	05 June 2015
Research protocol or project proposal	3	05 June 2015
CV – Anna Belcham		01 July 2015
Cover Letter – Response to queries by the REC		27 August 2015
Phase 2 Interview Schedule (Participants)	2	25 August 2015

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

14/LO/1178:	**Please quote this number on all correspondence**

Yours sincerely

pp Dr Ayse Baxter
Alternate Vice Chair

E-mail: nrescommittee.london-cityandeast@nhs.net

Enclosures: *List of names and professions of members who took part in the review*

Copy to: *Mrs Mandy Austin, Mid Essex Hospital Services NHS Trust*
Dr. Leslie Gelling

National Institute for Health Research

Clinical Research Network North Thames

Mid Essex Hospital Services NHS

NHS Trust

Trust Approval for Amendment

Research and Development
Ground Floor, West Wing 2
Broomfield Hospital

Date Letter prepared on 22nd September 2015
effective from date of signature

Our Ref R&D1008

Mrs Helen Willis
CNS Multiple Sclerosis
Broomfield Hospital

Dear Helen

Assessment of Multiple Sclerosis in Routine Clinical Practice v1
R&D: 1008

Amendment 1 dated 5th August 2015

- Face to face interviews added
- Patients approached will have participated in the first phase. Only those who have completed at least two questionnaires will be approached.
- No expenses will be paid.

I am pleased to confirm that the following documents have been reviewed and approved by Mid Essex Hospital Services NHS Trust and as in the Trust Approval letter dated 28th August 2014 MEHT has NOT agreed to act as Sponsor;

Description	Version	Date
Ethics approval letter		27th August 2015
CV Anna Belcham		
Phase 2 Interview Schedule for Staff	1	25th May 2015
Phase 2 interview schedule for participants	1	5th June 2015
NOSA		5th August 2015
Health Professional Information Sheet	1	5th June 2015
Staff Introduction Sheet Phase 2	1	5th June 2015
Participant consent form Phase 2	1	5th June 2015
Participant Consent Form Phase 2 Staff	1	5th June 2015
Participant Information sheet	1	5th June 2015
Protocol	3	5th June 2015
Phase 2 Interview Schedule Participants	2	25th August 2015

The approval of amendments is subject to any conditions in the Trust Approval letter dated 28th August 2014.

Yours Sincerely

.....
Tracey Camburn
R&D Co- Director

CC: **Laween Al-Atroshi, Chief Research Officer**
Christian Barnett, Clinical Trials Support Manager

Appendix N. Phase 2- Participant Introduction Letter

Anglia Ruskin University
Cambridge Chelmsford Peterborough

Mid Essex Hospital Services NHS
NHS Trust

Date

Name
Address
Address
Address
Address
Address

Contact details:
Researcher: Helen Willis,
Supervisor: Dr. Sarah Burch

Dear

Re: Assessment of Multiple Sclerosis in Routine Clinical Practice - Phase 2

Thank you for your interest in my research, and for taking part in the first phase of the project by completing several questionnaires about your quality of life with regard to your MS.
I would like to invite you to talk to me about your experience of completing the quality of life questionnaire, MSIS-29v2, and any difference it has made to you.

I will be recording the interview, as this allows me to concentrate on what you are saying.

If you have any questions about this phase of the research please do not hesitate to contact either myself or my supervisor as above.

If, after you have read the information sheet, you decide that you would like to be interviewed please return the signed consent form in the enclosed pre-paid envelope by 13th December 2015.

Many thanks for your consideration.

Kind regards

Helen Willis,
B.Sc.(Hons.), M.Sc.,
Principal Researcher and Clinical Nurse Specialist Multiple Sclerosis

Version 1, 5th June 2015

Appendix O. Phase 2- Participant Information Sheet

Contact details:
Researcher: Helen Willis,
Supervisor: Dr. Sarah Burch

Participant Information Sheet

Assessment of Multiple Sclerosis in Routine Clinical Practice – Phase 2

Part 1

Introduction

I am Helen Willis, a clinical nurse specialist for multiple sclerosis at Broomfield Hospital, Chelmsford. As you are aware, I am studying for a professional doctorate (PrD) at Anglia Ruskin University. I'd like to invite you to take part in the second phase of my research study. Joining the study is entirely up to you and before you decide I would like you to understand why the research is being carried out and what it would involve for you. Please do not hesitate to contact me, or my supervisor, with any concerns or questions you have about the study, either by telephone or email as above.

What is the purpose of this part of the study?

Multiple sclerosis is a condition which is known to affect the quality of life of both patients and their families. This first phase of the research looks at whether using a simple questionnaire to guide care may contribute to a change in quality of life for patients with multiple sclerosis.

Although I have been using the questionnaire to help to assess your quality of life, I only have anecdotal evidence to its impact. For the second phase, I hope to determine whether using the questionnaire makes a difference to you and whether it should continue to be used at outpatient appointments.

Why have I been invited?

All patients who have completed two or more questionnaires will be invited to take part in this part of the research.

Do I have to take part?
It is up to you to decide to take part. I will describe the study in this information sheet. If you agree to take part, you will be asked to sign a consent form (enclosed).

You are free to withdraw at any time, without giving a reason. This will not affect the standard of care you receive. Should you wish to withdraw from the research at any time, please do not hesitate to contact me, Helen Willis or my supervisor, Dr Sarah Burch, either by telephone or email.

What will happen to me if I take part and what will I have to do?
I will interview you using a prepared interview schedule. The interview will take place in the outpatient department of Broomfield Hospital, Chelmsford or St. Peter's Hospital, Maldon. The location will depend on where you normally attend your outpatient appointments. You will have the opportunity to talk about your experience of using the questionnaire and how you feel about it. The interview will take between 45 minutes and one hour and will be audio-recorded, to allow me to listen to you properly. The interviews will take place between September 2015 and December 2015.

What are the possible disadvantages and risks of taking part?
It is possible that speaking about your condition may be upsetting and I would stop the interview if you wanted to. Should you wish to, the reasons for your distress will be discussed and appropriate support offered. If appropriate you will be offered counselling by the psychotherapy and counselling department at Broomfield Hospital. Alternatively, it may be possible to arrange counselling through you GP.

What are the possible benefits of taking part?
By taking part in the research you will have the opportunity to influence whether the questionnaire becomes a routine part of outpatient appointments after the research has finished.

What happens when the research study stops?
Provided that it is feasible to use the questionnaire in routine clinical practice, the questionnaire will be used with all patients during each consultation.

What if there is a problem?
Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in Part 2.

Will my taking part in the study be kept confidential?
Yes. We will follow appropriate ethical and legal practice and all information about you will be handled in confidence. The details are included in Part 2.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2

What happens if I don't want to carry on with the study?
You may withdraw from this study at any time. Any information collected up to your withdrawal will still be used.

If you decide you would like to withdraw, please contact myself or my supervisor, by phone or email, as at the top of this sheet.

You will continue to be reviewed in the outpatient clinics on a regular basis, either by the MS nurses or Dr. Zoukos, Dr Sveinbjornsdottir or Dr. Dasari.

What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to either Helen Willis or Dr. Sarah Burch, by phone or email as above, who will do their best to answer your questions. If you remain unhappy and wish to complain formally, you can do this by writing to: PALS & Complaints Service, Broomfield Hospital, Chelmsford, Essex, CM1 7ET or by emailing: pals@meht.nhs.uk.

Will my participation in this study be kept confidential?
All information which is collected about you during the course of the research will be kept strictly confidential, and any information which leaves the hospital will have your name and address removed so that you cannot be recognised. All information will be anonymised and you will be given a unique participant identifier. All data will be stored in a locked office. An encrypted memory stick will be used. Only the three neurology consultants and two clinical nurse specialists for multiple sclerosis will have access to any information you give. The NHS code of confidentiality and Caldecott principles will be adhered to at all times.

Involvement of the General Practitioner (GP)
Your GP is already aware that you are taking part in the research. He will continue to receive a letter following your clinic appointment.

What happens to the results of the research study?
Once the research is completed I will be writing an extensive report (thesis). I will also produce a short report which will be available to you. You will not be identified in any report or publication. If you wish to receive a copy of the report please could you indicate this on the consent form. I also hope to publish a report of this study and possibly present the results at a conference.

Who is organising and funding the research?
This research is being undertaken as part of a Professional Doctorate by Helen Willis, at Anglia Ruskin University. This research is funded by the Multiple Sclerosis Society in the UK, grant number 970/12. The researchers will receive no financial reward for this research. There are no conflicts of interest to declare.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by the City and East London Research Ethics Committee on *date to be added*.

Thank you for reading this sheet. If you would like to take part in my research please could you complete the enclosed consent form and return in the pre-paid envelope included.

YOU MAY KEEP THIS FORM,

AND WILL BE GIVEN A COPY OF YOUR CONSENT FORM AT YOUR NEXT APPOINTMENT

Appendix P. Phase 2- Participant Consent Form

Participant Consent Form

Name of Participant:

Patient Identification Number:

Title of the project: Assessment of Multiple Sclerosis in Routine Clinical Practice – Phase 2

Main investigator: Helen Willis
Main supervisor: Dr. Sarah Burch
Other members of the Research Team: Julie Webster, Dr. I.Zoukos

Please initial all boxes

1. I confirm that I have read and understand the Participant Information Sheet dated 05/06/15 (version 1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. I understand what my role will be in this research. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected. ☐
3. I understand that relevant sections of my medical notes and data collected during the study may be looked at by individuals from Mid Essex Hospitals NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records. ☐
4. I understand that the interview will be audio-recorded. ☐
5. I agree to take part in the above study. ☐
6. I understand that if I become distressed during the interview I am able to stop the interview without any detriment to my future care ☐

Name of participant (print)……Signed……Date……

Name of witness (print)……Signed……Date……

I would/ would not like to receive a report after the conclusion of the study.

My email address is:

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP

Version 1, 5th June 2015

Appendix Q. Phase 2 Participant Interview Schedule

Phase 2 Interview Schedule, Participant

Introduction.

Welcome and thank you for coming today and agreeing to take part in this interview. The aim of this part of the research is to explore if assessing your quality of life during your outpatient appointments using a questionnaire makes a difference to you.

I can confirm that the study has ethical approval from the National Research Ethics Service Committee. Anything you say in this room is confidential and you will not be identified by name in any reports. I have several questions I would like to ask you. I would appreciate it if you will be honest with your answers. As I mentioned in the information sent out to you I will be recording the interview. If at any time you would like to stop the interview please do say as that is ok.

1. Can you tell me about your experience of living with MS?

   What is it like living with MS?
   Has having MS changed the way you think about yourself as a person?
   Do you think that MS has changed the way people see you?

2. Can you tell me about your experience of attending outpatient appointments?
   Probe – how often do you attend; what do you feel you get out of attending?

3. Tell me about your experience of completing the questionnaire

   How did it make you feel?

   Did you go home and think about the form and the answers? How did that make you feel?

4. Did the questionnaire make a difference to your consultation?

   Did the consultation feel different?

Interview Schedule Version 2 25th August 2015, amend italics 30.3.16, amended bold questions 22.04.16

Prompt-Did it give you the opportunity to talk about anything that you hadn't thought about mentioning before?

Prompt At the hospital do you feel that issues which are important to you are covered?
Were they before we introduced the questionnaire?
Are there areas which aren't covered that perhaps there should be questions about
What is it about the tool that you liked?

What didn't you like?

5. Do you think completing questionnaire has had any impact on you or the care that you have received?
Do you feel involved in care decisions?
Did the questionnaire make you feel differently about your MS?

What is the most important part of health for you?/ What do you consider to be the most important aspect of your health?

Who do you judge your quality of life against?

Are there any changes you would like to see made to the way your consultations are managed in the future?

Are there any questions (or topics) I haven't asked you about that you thought I may ask today?

Do you think that the assessment of your HRQoL with the questionnaire has a difference to you? How?

Thank you for coming today. I would like to thank you for giving up your time today. I do appreciate you taking part in this research. Do you have any questions you would like to ask me?

I hope you have a good journey home.

Questions in *italics* were added 30/03/16, questions in **bold** added 22.04.16

Interview Schedule Version 2 25th August 2015, amend italics 30.3.16, amended bold questions 22.04.16

Appendix R. Phase 2- Health Professional Introduction Letter

Anglia Ruskin University
Cambridge Chelmsford Peterborough

Mid Essex Hospital Services NHS
NHS Trust

Date

Name
Address
Address
Address
Address
Address

Contact details:
Researcher: Helen Willis,
Supervisor: Dr. Sarah Burch

Dear

Re: Assessment of Multiple Sclerosis in Routine Clinical Practice - Phase 2

Thank you for your support with the first phase of my PrD. I really do appreciate your ongoing commitment to the research.

I would like to interview you about your experience of using the quality of life questionnaire, MSIS-29v2, in clinic and any difference it has made to you during outpatient appointments.

I will be recording the interview, as this allows me to concentrate on what you are saying.

If you have any questions about this part of the research please do not hesitate to contact either myself or my supervisor as above.

If, after you have read the information sheet, you decide that you are prepared to be interviewed please return the signed consent form in the enclosed pre-paid envelope by 13th December 2015.

Many thanks for your consideration.

Kind regards

Helen Willis,
B.Sc. (Hons.), M.Sc.,
Principal Researcher and Clinical Nurse Specialist Multiple Sclerosis

Version 1, 5th June 2015

Appendix S. Phase 2-Health Professional Information Sheet

Contact details:
Researcher: Helen Willis,
Supervisor: Dr. Sarah Burch

Health Care Professional Information Sheet

Assessment of Multiple Sclerosis in Routine Clinical Practice – Phase 2

Part 1

Introduction

I am Helen Willis, a clinical nurse specialist for multiple sclerosis at Broomfield Hospital, Chelmsford. As you are aware, I am studying for a professional doctorate (PrD) at Anglia Ruskin University. I'd like to invite you to take part in the second phase of my research study. Joining the study is entirely up to you and before you decide I would like you to understand why the research is being carried out and what it would involve for you. Please do not hesitate to contact me, or my supervisor, with any concerns or questions you have about the study, either by telephone or email as above.

What is the purpose of this part of the study?

Multiple sclerosis is a condition which is known to affect the quality of life of both patients and their families. This first phase of the research looks at whether using a simple questionnaire to guide care may contribute to a change in quality of life for patients with multiple sclerosis.

Although we have been using the questionnaire to assess quality of life at outpatient appointments I would like to determine your views on the use of the questionnaire in daily clinical practice. In the second phase, I hope to determine whether using the questionnaire makes a difference to patients and whether it should continue to be used at outpatient appointments.

Why have I been invited?

As a member of staff involved in this research your thoughts are important with regards the feasibility of assessment of health related quality of life in the outpatient setting in the long term. I am interested in your views, thoughts and honest opinion about using the MSIS-29v2.

Do I have to take part?

It is up to you to decide if you wish to take part. The study is described in this information sheet. If you agree to take part, you will be asked to sign a consent form (enclosed).

You are free to withdraw at any time, without giving a reason. Should you wish to withdraw from the research at any time, please do not hesitate to contact me, Helen Willis or my supervisor, Dr Sarah Burch, either by telephone or email.

What will happen to me if I take part and what will I have to do?

I will interview you using a prepared interview schedule. The interview will take place at Broomfield Hospital, Chelmsford. You will have the opportunity to talk about your experience of using the MSIS-29v2 and how you feel about it. The interview will take between 45 minutes and one hour and will be audio-recorded, to allow me to listen to you properly. The interview will take place between December 2015 and February 2015.

What are the possible disadvantages and risks of taking part?

It is possible that you may feel inhibited when talking about the use of the questionnaire and feel that you could cause offence. I appreciate it may be hard for you to talk honestly and for me to hear what you have to say. Please do not worry. I am not looking for right or wrong answers. I am interested in your thoughts.

What are the possible benefits of taking part?

By taking part in the research you will have the opportunity to influence whether the questionnaire becomes a routine part of outpatient appointments after the research has finished.

What happens when the research study stops?

Provided that it is found to be feasible to use the questionnaire in routine clinical practice and that it makes a difference to the care patients receive, it may offered to all patients at each consultation. Consultation about this will occur.

What if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. The detailed information on this is given in Part 2.

Will my taking part in the study be kept confidential?

Any information you give in the interview will be kept confidential, although the information you give will be discussed in the thesis and used to inform future practice. Also my secretary will be transcribing the interview tape.

The details are included in Part 2.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

Part 2

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to either Helen Willis or Dr. Sarah Burch by phone or email; we will do our best to answer your questions. If you remain unhappy and wish to complain formally, you can do this by writing to: PALS & Complaints Service, Broomfield Hospital, Chelmsford, Essex, CM1 7ET or by emailing: pals@meht.nhs.uk.

Will my participation in this study be kept confidential?

All information which you give during the course of the interview will be kept strictly confidential. The NHS code of confidentiality and Caldecott principles will be adhered to at all times.

What happens to the results of the research study?

Once the research is completed I will be writing a thesis. You will not be identified in any report or publication. I also hope to publish a report of this study and present the results at conferences.

Who is organising and funding the research?

This research is being undertaken as part of a Professional Doctorate by Helen Willis, at Anglia Ruskin University. This research is funded by the Multiple Sclerosis Society in the UK, grant number 970/12. The researchers will receive no financial reward for this research. There are no conflicts of interest to declare.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by the City and East London Research Ethics Committee in August 2015.

Thank you for reading this sheet. If you would like to take part in my research please could you complete the enclosed consent form and return in the pre-paid envelope included.

YOU MAY KEEP THIS FORM,
AND WILL BE GIVEN A COPY OF YOUR CONSENT FORM AT YOUR INTERVIEW

Appendix T. Phase 2- Health Professional Consent Form

Anglia Ruskin University
Cambridge Chelmsford Peterborough

Mid Essex Hospital Services NHS
NHS Trust

Staff Consent Form, Phase 2

Name of Participant:

Patient Identification Number:

Title of the project: Assessment of Multiple Sclerosis in Routine Clinical Practice

Main investigator: Helen Willis
Main supervisor: Dr. Sarah Burch
Other members of the Research Team: Julie Webster, Dr. I.Zoukos

Please initial all boxes

1. I confirm that I have read and understand the Staff Information Sheet dated 05/06/15 (version 1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. I understand what my role will be in this research. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. ☐
3. I understand that the interview will be audio-recorded. ☐
4. I agree to take part in the above study. ☐
5. I understand that if I become distressed during the interview I am able to stop the interview. ☐

Name of participant (print)……Signed……..Date……

Name of witness (print)……Signed……..Date……

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP

Version 1, 5th June 2015

Appendix U. Phase 2 Healthcare Professional Interview Schedule

Phase 2 Interview Schedule, Health Care Professional

Introduction.

Welcome and thank you for coming today and agreeing to take part in this interview. The aim of this part of the research is to explore your views of assessing patient quality of life using the MSIS-29v2 during routine outpatient appointments.

I can confirm that the study has ethical approval from National Research Ethics Service Committee. Anything you say in this room is confidential and you will not be identified by name in any reports. I have several questions I would like to ask you. I would appreciate it if you will be honest with your answers. As I mentioned in the information sent out to you I will be recording the interview. If at any time you would like to stop the interview please do say as that is ok.

1. Can you tell me about your experience of conducting outpatient appointments prior to using the MSIS-29v2?

2. Can you tell me about your experience of conducting outpatient appointments using the questionnaire
   Probe – what difference do you think it makes

   How does using the questionnaire make you feel?

3. Does using the questionnaire make a difference to your style of consultation?

   Does the consultation feel different?

Interview Schedule Version 1 5th June 2015

Prompt-Did it give you the opportunity to talk about anything that you hadn't thought about discussing/ raising before?

4. Is there anything you like about using the questionnaire??

   What don't you like?

5. Do you think completing the questionnaire has had any impact on the care that you have offered

   Did the questionnaire make you feel differently about outpatient appointments?

Thank you for coming today and thank you for giving up your time. I do appreciate your role in this research. Do you have any questions you would like to ask me?

Appendix V. Reasons for Patient-Participant Selection

Interview number	**Reason selected**	**Appointment types, numbers and sites**	**Treatments/ Interventions offered**	**Impact scores** **Health transition question response**	
Interview 1	DMT- oral Relapse during research period Predicted changes in HRQoL fairly well Ringed between response boxes	Three multi-professional clinic appointments Acute Trust	T1- Nil T2- MRI due to relapse T3- Reassurance	T1 Physical 20.00 T2 Physical 21.67	T1 Psychological 33.00 T2 Psychological 30.00
				Slightly deteriorated	
				T3 Physical 18.33	T3 Psychological 30.00
				No change	
Interview 2	No DMT Gradual deterioration in MS Predicted changes in HRQoL fairly well	Multi-professional clinic appointment, nurse-led appointment, multi-professional clinic appointment Acute Trust	T1-Referral in progress for physiotherapy and wheelchair, Reassurance offered, T2- Reassurance T3- Pain relief changed	T1 Physical 91.67 T2 Physical 95.00	T1 Psychological 48.00 T2 Psychological 56.00
				Slightly deteriorated	
				T3 Physical 93.33	T3 Psychological 63.00
				Slightly deteriorated	

Interview number	**Reason selected**	**Appointment types, numbers and sites**	**Treatments/ Interventions offered**	**Impact scores** **Health transition question response**	
Interview 3	DMT- injectable HTQ response correlates with changes in impact scores	Two multi-professional clinic appointments Acute Trust	T1 and T2 –No treatments offered at either appointment	T1 Physical 23.33. T2 Physical 21.67	T1 Psychological 7.00 T2 Psychological 7.00
				No change	
Interview 4	Started oral DMT during research period as unstable MS HTQ response correlates with changes in impact scores	One nurse-led and the two multi-professional clinic appointments Acute Trust	T1- Steroids given for relapse T2- Offered DMT-Gilenya T3 Reassurance	T1 Physical 100.00 T2 Forms not given as only three weeks between appointments- urgent consultant review	T1 Psychological 96.00 T2 Forms not given as only three weeks between appointments- urgent consultant review
				T3 Physical 86.67	T3 Psychological 85.00
				Slightly improved	
Interview 5	Started oral DMT during research period as relapsing	One nurse-led and then two multi-professional clinic appointments Acute Trust	T1- MRI T2- Steroids and DMT-Gilenya T3- Reassurance and change in neuropathic pain relief regime	T1 Physical 80.00 T2 Physical 78.33	T1 Psychological 96.00 T2 Psychological 93.00
				Stated had slightly deteriorated	
				T3 Physical 23.33	T3 Psychological 22.00
				Significantly improved	

Interview number	**Reason selected**	**Appointment types, numbers and sites**	**Treatments/ Interventions offered**	**Impact scores** **Health transition question response**	
Interview 6	No DMT	Two nurse-led clinic appointments Outlying Hospital and Acute Trust	T1- Reassurance and steroids T2- Neuropathic pain relief commenced for spasms and restless legs. Baclofen stopped as not tolerated	T1 Physical 30.00 T2 Physical 26.67	T1 Psychological 44.00 T2 Psychological 33.00
				Stated had significantly improved. 'Leaving job that caused me a great deal of stress has resulted in improvement in quality of life. New job challenging but not stressful- helping build my confidence and self-esteem. Steroids resulted in overall improvement of symptoms (MS)	
Interview 7	Changed from injectable DMT to infusion as MS unstable	Nurse-led appointment, then two multi-professional clinic appointments Acute Trust	T1- MRI and continence referral. Tysabri commenced, copaxone stopped T2- Reassurance, MRI (DMT-Tysabri monitoring), reduction of neuropathic pain relief T3- MRI (Tysabri monitoring)	T1 Physical 31.67 T2 Physical 23.33	T1 Psychological 63.00 T2 Psychological 30.00
				No change	
				T3 Physical 21.67	T3 Psychological 30.00
				No change	

Interview number	**Reason selected**	**Appointment types, numbers and sites**	**Treatments/ Interventions offered**	**Impact scores** **Health transition question response**	
Interview 8	Infusion DMT Diagnosed in 2014 Selected as newly diagnosed and earlier interviewee thought questionnaire would be 'too scary' for newly diagnosed patients. HTQ response correlates with changes in impact scores	Two multi-professional clinic appointments Acute Trust	T1- Neuropathic pain relief T2- Reassurance, steroids	T1 Physical 55.00 T2 Physical 48.33	T1 Psychological 48.00 T2 Psychological 33.00
				Stated had slightly improved	
Interview 9	Oral DMT HTQ response correlates with changes in impact scores	Two multi-professional clinic appointments, then nurse-led clinic appointment, multi-professional clinic appointment Acute Trust	T1-reassurance, counselling, MRI, continence referral T2- neuropathic pain relief dose increased T3- Reassurance T4- Reassurance	T1 Physical 83.33 T2 Physical 78.33	T1 Psychological 89.00 T2 Psychological 96.00
				Slightly deteriorated	
				T3 Physical 81.67	T3 Psychological 89.00
				Significantly deteriorated	
				T4 Physical 93.33	T4 Psychological 93.00
				Significantly deteriorated	

Interview number	**Reason selected**	**Appointment types, numbers and sites**	**Treatments/ Interventions offered**	**Impact scores** **Health transition question response**	
Interview 10	Injectable DMT Accurately detected change in both impact scores at each appointment	Multi-professional clinic appointment, nurse-led appointment, multi-professional clinic appointment Acute Trust	T1- Steroids given, FES machine chased, reassurance T2-Reassurance T3-Reassurance	T1 Physical 58.33 T2 Physical 55.00	T1 Psychological 48.00 T2 Psychological 33.00
				Slightly improved	
				T3 Physical 46.67	T3 Psychological 22.00
				Slightly improved	
Interview 11	Injectable DMT Stated No change yet scores were worse	Multi-professional clinic appointment, then nurse-led appointment Acute Trust	T1- Reassurance and physiotherapy T2- Considered changing DMT due to increasing efficacy	T1 Physical 46.67 T2 Physical 66.67	T1 Psychological 33.00 T2 Psychological 48.00
				No change	
Interview 12	No DMT HTQ response correlates with changes in impact scores Pain was better with neuropathic pain but not reflected in scores.	Three nurse-led appointments Outlying Hospital	T1- Reassurance and neuropathic pain relief T2- Reassurance and falls prevention T3- Reassurance	T1 Physical 55.00 T2 Physical 61.67	T1 Psychological 15.00 T2 Psychological 19.00
				Slightly deteriorated	
				T3 Physical 53.33	T3 Psychological 22.00
				Slightly deteriorated	

Interview number	**Reason selected**	**Appointment types, numbers and sites**	**Treatments/ Interventions offered**	**Impact scores** **Health transition question response**	
Interview 13	No DMT HTQ response correlates with changes in impact scores- deterioration	Nurse-led appointment, then two multi-professional clinic appointments Acute Trust	T1- Steroids, in relapse T2- Reassurance T3- Medication to help sleep	T1 Physical 46.67 T2 Physical 51.67	T1 Psychological 59.00 T2 Psychological 15.00
				Slightly deteriorated	
				T3 Physical 65.00	T3 Psychological 74.00
				Significantly deteriorated	
Interview 14	Injectable DMT Scores improved but not reflected in participant comments	Two multi-professional clinic appointments Acute Trust	T1- Reassurance, physiotherapy offered T2- nil	T1 Physical 86.67 T2 Physical 63.33	T1 Psychological 89.00 T2 Psychological 41.00
				Stated no change	
Interview 15	Switched for injectable to oral DMT HTQ response correlates with changes in impact scores Missed at least one question on each questionnaire	Nurse-led appointment, then three multi-professional clinic appointments Acute Trust	T1- One neuropathic pain relief medication increased, and another stopped T2- MRI, anti-spasmodic medication commenced T3- Switched DMT (injectable to oral)	T1 Physical 58.33 T2 Physical 66.67	T1 Psychological 67.00 T2 Psychological 67.00
				Slightly deteriorated	
				T3 Physical 30.00	T3 Psychological 37.00
				Significantly improved (new medication had stopped spasms)	
				T4 Physical 68.33	T4 Psychological 44.00
				Slightly deteriorated	