

A Correlation Study on Health Related Quality of Life and Coping Strategy among Multiple Sclerosis Patients

Hoda Ahmed Hussein¹ and Zienab Mohamed Ibrahim²

¹Medical Surgical Nursing Department. ²Psychiatric Mental Health Nursing Department. Faculty of Nursing. Modern University for Technology and Information. Egypt.

hoda_hussein@ymail.com

Abstract: Background: Multiple Sclerosis (MS) is a relatively common neurological disorder in which various impairments and disabilities impact strongly on health related quality of life and coping strategy. This study aimed to describe the correlation on health related quality of life and coping strategy among multiple sclerosis patients. A descriptive correlation design was used for conducting this study. This study was conducted at the Neurology out patient's clinic at Nasser institute for research and treatment. A convenience sample was consisted of 60 patients, aged from 20 to 50 years. The patients included in the study fulfilled the following criteria: Multiple sclerosis diagnoses with no complain of other disease who visited the neurology outpatient clinic at Nasser institute for research and treatment. Four tools were used to achieve the objective of the study: 1-Patients' socio-demographic characteristic, 2-Multiple Sclerosis Quality of Life -54 (MSQOL-54), 3- Coping Orientation for Problem Experiences Scale (COPE), 4- Profile of Mood States (POMS). The result of the present study shows significant correlation between physical health problems and health related quality of life, also shows highly significant correlation between COPE subscale, mood statuses and multiple sclerosis disease. It was concluded that the majority of multiple sclerosis patients had health related quality of life and satisfactory coping. There is a significant relationship between the health related quality of life and coping strategies of multiple sclerosis patients. It was recommended that health team member should be well-informed about multiple sclerosis, available treatments and rehabilitation.

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Key word: Multiple sclerosis, health related quality of life, coping strategies

1. Introduction

Multiple Sclerosis (MS) disease is one of the most common progressive autoimmune diseases affecting central nervous system of brain and spinal cord. It mainly affects people aged from 20-40, and it is the most important cause of neurologic disabilities at the beginning to the middle of adulthood and several known and unknown factors are effective in causing it (Kalb, 2015). MS like other chronic diseases severely affects health and quality of life of people and causes several physical, psychological and social problems. It affects individuals' life and causes a wide range of sensory, visual, speech, cognitive, fatigue, genitourinary, chronic pains, which all have negative effects on all different aspects of quality of personal and social life of the patients. Moreover, this disease may accompany some psychiatric conditions related to mood, behavior and personality disorders, or may be seen with depression, hypomania and anxiety due to the course of the disease or the side effects of the treatment (Esparza et al., 2015).

Goverover et al. (2015), explained that multiple sclerosis affects the brain and spinal cord and the general condition of the central nervous system (CNS). In this disorder the myelin sheath (the

protective coating around nerve cells) is damaged and thus the speed of nerve signal decreases or stops. The nerve damage is caused by inflammation that occurs when the body's own immune cells attack the nervous system. It can happen in any area of the brain, optic nerve and spinal cord. Causes of multiple sclerosis are not yet fully understood and researchers continue to search for answers. Multiple Sclerosis is thought to be acquired through the complex interaction of genetic and environmental factors. Environmental influences are thought to include low levels of ultraviolet radiation and vitamin D, viruses, and non infectious agents such as smoking and psychological stress (Goodin et al., 2014).

According to Aysel et al., (2014), symptoms vary greatly from person to person, and may vary over time in the same person. Periods of active MS symptoms lasting more than 24 hours are called exacerbations. The disease ranges from very mild and stable to intermittent to steadily progressive. At the time of diagnosis, most people have relapsing remitting MS with attacks that last days to weeks followed by periods of partial or total remission. The periods between relapses may last months to years. Some people with MS experience a progressive disease

course with steadily worsening symptoms. The disease may worsen steadily from the onset primary progressive MS or may become progressive after a relapsing remitting course secondary progressive. The most common signs and symptoms are fatigue, muscle weakness, changes in sensation, ataxia, and changes in balance, gait difficulties, memory difficulties, cognitive impairment and difficulties in problem solving, pain, loss of function or sensitivity in the limbs, dizziness and loss of balance, loss of bowel or bladder control, sexual dysfunction and a variety of emotional changes. These disabling symptoms pose multiple challenges for both physical and psychological well being, and have a negative impact on a patient's quality of life.

Baumstarck et al. (2015), reported that although the disease may not be cured or prevented at this time, treatments are available to reduce severity and delay progression. MS is not contagious and does not shorten the life expectancy of those who are diagnosed with the disease. The most dangerous complication relating to MS is usually infection, which may occur when someone has had MS for a long time and is not as strong or physically active as an individual without the disease. Infection may often be successfully treated if recognized early.

The term quality of life is defined in different ways, but most often it is understood as the general satisfaction of life and the feeling of welfare that concerns the physical, mental, emotional and social aspects of functioning. It has a subjective character. The concept of health-related quality of life was indicated that health status significantly affect the life and human functioning, thereby the quality of life (**Kargarfard et al., 2014**).

Also, **Burks, et al. (2013)**, reported that health related quality of Life (HRQoL) is more specific and is based on health dimensions which can be measured. This ability to measure HRQoL in individuals over time brings important benefits. Quantifying HRQoL in different populations can identify subgroups with poor physical or mental health and can assist with interventions that may improve their health. Assessment of HRQoL is increasingly important for clinical research, clinical practice, and the decision making process in health policy. MS leads to major changes in people's lifestyle and requires effective strategies for coping with stress to continue the normal life. In any chronic disease coping is known to be an important mediator of psychological well-being.

Lazarus & Folkman (1984), defined coping as the overall cognitive and behavioral efforts to master, reduce or tolerate inside or outside demands which threaten or surpass personal resources. Two general coping strategies have been distinguished, problem focused coping (PFC) and emotional focused coping

(EFC). The problem focused coping includes efforts to do something active to alleviate stressful circumstances, whereas the emotional focused coping includes efforts to regulate the emotional consequences of stressful events, denials, seeking emotional social support, turning to religion or resignation are some examples.

According to **Akpınar & Gunduz (2014)**, coping strategies play an important role in orientation to challenge conditions. Coping is defined as resisting against the events or factors that cause stress for the individuals and the cognitive, emotional and behavioral reactions of the individuals in an attempt to endure these circumstances. Thus, coping strategies and the degree of stressor experienced are closely associated. For example, effective coping strategies protect the individuals from cognitive, environmental and biological factors that cause anxiety. They are unique for each individual and may vary depending on various factors such as age, gender, cultural aspects and disease characteristics.

Arnett et al. (2015), clarified that, it is also important to be aware of the coping strategies in addition to receiving medical treatment in order to have better life experiences because in patients with MS similar to other chronic diseases, the failure in psychological, physical and social functions lead the individual to develop certain coping strategies in order to minimize or cope with the adverse outcomes of the disorder within the context of his/her culture. However, mood characteristics play particularly an important role among the factors that may affect coping strategies in patients with MS.

Significance of the study

Multiple sclerosis is one of the most common causes of non-traumatic disability in young adults and approximately 5 million people around the world are estimated to be affected. Women are more likely to develop the disease than men (female: male ratio approximately 2-3:1), MS usually first appears between the ages of 20 and 50, with an average age of about 30 years. It rarely develops before age 15 or after age 60. (**Kantarci & Wingerchuk, 2015**). Also, **Lezzoni, (2015)**, mentioned that multiple sclerosis has affected about 400 thousand people in America and over 5 million all over the world. The progress of the disease is unpredictable, the etiology is unclear, there is currently no cure and only symptomatic relief for people with the disorder is available. Studies indicate that approximately 10% of people with MS have MS in their families at a higher rate than would be expected by chance. The likelihood of developing MS in the general population in the absence of its presence in a close family member is 1:1000 or 0.1%.

A family history of the disease may put some people at risk for MS, although the risk for someone

inheriting all the genetic factors associated with MS is only about 2 - 4%. Some researchers indicates that family members who have MS tend to develop the disease at around the same age. However, family history does not predict whether one family member will experience the same disease severity as another family member. Multiple sclerosis is not a fatal disease. Except in rare cases of severe disease, most people with multiple sclerosis have a normal or near-normal life span and usually die from the same conditions (heart disease or cancer, for example) that affect the general population. Still, MS symptoms can negatively affect quality of life. Suicide rates among patients with MS are higher than average (*Calabresi, 2015*).

The majority of patients with MS do not become severely disabled. Twenty years after diagnosis, about two-thirds of people with MS remain ambulatory and do not need a wheelchair, although many of them may use a cane or crutches for walking assistance. Some patients use an electric scooter or wheelchair to help cope with fatigue or balance problems. The severity of the disease, and how the disease progresses, varies widely from patient to patient and is unpredictable. About 20% of patients remain asymptomatic or become only mildly symptomatic after an initial clinical event. Another 20% experience a rapidly progressive condition. Most patients will have some degree of disease progression (*Kuehn, 2016*).

Aim of the study

This research aims to study correlation between health related quality of life and coping strategy among multiple sclerosis patients.

Research Questions

1-Is there are a significant correlation between health related quality of life and coping strategy among multiple sclerosis patients?

2. Subject and Methods

Research design

A descriptive correlation design was utilized to meet the aim of this study.

Setting

The present study was conducted in the neurology out patient's clinic at Nasser institute for research and treatment.

Subjects

A convenient sample that consisted of 60 patients, aged from 20 to 50 years. The patients included in the study fulfilled the following criteria: Multiple sclerosis diagnoses with no complain of other disease, who visited the neurology outpatient clinic at Nasser institute for research and treatment.

Tools

For data collection a structured interview questionnaire was used through four parts:

The first part: Was used to assess patients' socio-demographic characteristic regarding their age, marital status, educational level, gender, employment and type of multiple sclerosis. It was written in a simple Arabic language.

In addition the studied sample were assessed for physical health problems commonly associated with MS using simple yes and no questions regarding chronic illness, numbness, weakness fatigue, optic nerve inflammation, blurred vision, lack of coordination, dizziness, urinary problems and bowel problems.

The second part: Multiple Sclerosis Quality of Life - 54 (MSQOL-54)

The MSQOL-54 is a multidimensional health-related quality of life measure that combines both generic and MS-specific items into a single instrument, which was developed by *Vickrey, et al. (1995)*, The scale include 54-item instrument generates 12 subscales along with two summary scores, and two additional single-item measures. The subscales are: physical function, role limitations-physical, emotional, pain, emotional well-being, energy, health perceptions, social function, cognitive function, health distress, overall quality of life, and sexual function.

Scoring

Test-retest reliability for these 12 subscales has good intra class correlation coefficients ranging from .66 to .96 according to a study by *Vickrey, et al. (1995)*, whom studied the physical function and role limitations, physical subscales were the ones that best discriminated between MS patients and the normative U.S in ordered to study the validity of the MSQOL-54.

The third part: Coping Orientation for Problem Experiences Scale (COPE):

It is a self-reporting scale consisting of 60 questions and 15 subscales. The scale was developed by *Carver et al. (1989)*. Individuals are asked to indicate what they generally do and feel when they experience a specific or general stressful event. These scales include: positive reinterpretation and growth, mental disengagement, focus on and venting of emotions, use of instrumental social support, active coping, denial, religious coping, humor, behavioral disengagement, restraint, use of, emotional social support, substance use and acceptance.

Scoring

Respondents rate items on a 4-point Likert scale, ranging from 1 "I haven't been doing this at all" to 4 "I've been doing this a lot". Total scores on each of the scales were calculated by summing the appropriate items for each scale. Test-retest reliability for these 15 subscales has good correlation coefficients *Carver et al. (1989)*, reported test-retest reliabilities for the

dispositional form of the COPE ranging from .42 to .89 at 6 weeks, and from .46 to .86 at 8 weeks.

The fourth part: Profile of Mood States (POMS):

Profiles of Mood States assess situational and short-term mood alterations with a rapid and reliable method. The questions of the scale were randomly arranged under 6 different mood states. The mood states are: tension, anxiety, vigor, activity fatigue, inertia, anger, hostility, confusion and bewilderment.

Scoring

Subscale scores consist of the scores obtained from the questions of each subscale. The test requires the individual to indicate for each word or statement how they have been feeling in the past week including today. Respondents rate items on a 5-point Likert scale, ranging from 0 "Not at all" to 4 "Extremely". The total POMS score is calculated by subtracting the vigor activity score from the total scores of the other five subscales. High scores in five subscales and a high total score indicate greater mood disturbances. Internal consistency for the Profile of Mood States was reported at 0.63 to 0.96 Cronbach alpha rating.

Validity and reliability of tools

Tools validity: The tool was modified by the researchers and test for its content validity by jury composed of five experts in nursing fields. The required modifications were done.

Tools reliability: The reliability of the tools was estimated using the Cronbach's Coefficient alpha test.

Pilot study: Was carried out on 10 patient to test the feasibility, relevance and applicability of the tools and the necessary modifications were done. It also served in estimating the time needed for filling the tools. According to its results significant modifications were needed in any of the data collection tools, so these subjects were excluded in the actual study sample.

Procedure

Approval to conduct the study: An official letter was sent to the director of Nasser institute for research and treatment to facilitate the research implementation. Once permission was granted to proceed with the proposed study from the institute director and nursing supervisors of neurological out patients, patients were interviewed individually to explain the nature and purpose of the study, voluntary participation and confidentiality were assured.

Period of study: The study was conducted in the period between January 2016 to April 2016.

Ethical Consideration

Approval from hospital administration was obtained from intended hospital and patients. Several strategies were utilized to protect the rights of patients who agreed to participate in this study. At first; an oral verbal consent of the patients and was obtained prior to the administration of the questionnaire. The patients were informed of the purpose of the study, and that

they had the right to refuse to participate. Also the voluntary nature of participation was stressed as well as Subjects were assured about complete confidentiality of the obtained data to get their cooperation. Furthermore, the patients were told that they can refrain from answering any questions and they can terminate at any time. Anonymity of the patients and caregivers was maintained all times.

Table (1): Socio-demographic characteristics of multiple sclerosis patients (No.=60).

Socio-demographic characteristics	Frequency	Percentage
Age		
20<25	9	15
25<30	20	33.3
30<35	17	28.3
35<40	14	23.3
Gender		
Male	21	35
Female	39	65
Residency		
Rural	20	33.3
urban	40	66.7
Education		
Secondary education	5	8.3
Deplume	11	18.3
University education	37	61.7
Postgraduate education	7	11.7
Employment		
Unemployed	21	35.0
Governmental work	19	31.7
Private	11	18.3
Free work	9	15.0
Marital status		
Single	28	46.7
Married	22	36.7
Divorced	8	13.3
Widow	2	3.3
Type of MS		
Relapsing remitting	54	90.0
Secondary progressive	6	10.0

Field work

-An oral verbal consent was taken from all the subjects individually after explaining the objectives and purpose of the study. Subjects were instructed to answer the demographic data, rating scale on QOL and the rating scale on coping strategy.

-The questionnaire was answered on an individual basis in the presence of the researchers. The time needed to answer the questionnaire ranged from thirty minutes to one hour.

- All tools were developed by the researchers after reviewing the national and international related

literature using journals, magazines, periodicals, textbooks, internet and theoretical knowledge of the various aspects concerning the topic of the study.

Statistical analysis

Data were assessed with SPSS windows20.0. Frequency was used for socio- demographic variables, and the results were expressed as mean and standard deviation. Pearson's correlation analysis was used to assess the association between intra-group data. The statistical significance level was accepted as P-value \leq 0.05 Significant.

3. Results

Table (1) indicates that, one third (33.3%) of the studied sample there age range $25 \leq 30$, (65%) of them were female patients, more than three fifth (66.7%) was resident at urban areas, less than three fifth (61.7%) had deplume of education, more than one third of them (35.0%) were not working, and less than half of them(46.7%) were single, as well as the majority (90%) of them had relapsing remitting type of MS.

Table (2): Correlation between physical health problems and type of MS (No.=60).

Items related physical health problems	Type of MS		r
	Relapsing remitting Mean \pm SD N=54	Secondary progressive Mean \pm SD N=6	
Chronic illness	94.44 \pm 23.121	66.67 \pm 51.640	-.302*
Numbness	12.96 \pm 33.905	33.33 \pm 51.640	.171
Weakness	27.78 \pm 45.211	66.67 \pm 51.640	.251
Fatigue	3.70 \pm 19.063	33.33 \pm 51.640	.356**
Optic Nerve Inflammation	64.81 \pm 48.203	33.33 \pm 51.640	-.194
Blurred Vision	31.48 \pm 46.880	50.00 \pm 54.772	.118
lack of coordination	5.56 \pm 23.121	33.33 \pm 51.640	.302*
Dizziness	92.59 \pm 26.435	66.67 \pm 51.640	-.259*
Urinary Problems	48.15 \pm 50.435	16.67 \pm 40.825	-.190
Bowel Problems	53.70 \pm 50.331	33.33 \pm 51.640	-.122

*. Correlation is significant at the 0.05 level

** . Correlation is highly significant at the 0.01 level

Table (2) shows significant correlation between physical health problems (Chronic illness, lack of coordination & Dizziness) and type of MS where $r = -.302^*$, $.302^*$ $-.259^*$ respectively at $p < 0.05$ level. As

well as highly significant correlation was found between fatigability and type of MS. where $r = .356^{**}$ at $p < 0.01$ level.

Table (3): Correlation between quality of life and type of MS (No.=60).

MSQOL-54	Type of MS		r
	Relapsing remitting Mean \pm SD N=54	Secondary progressive Mean \pm SD N=6	
Physical Health	57.73 \pm 13.870	65.00 \pm 13.784	.169
Role limitations due to physical problems	21.02 \pm 24.674	.00 \pm .000	-.074
Role limitations due to emotional problems	20.45 \pm 25.126	.00 \pm .000	-.214
Health perception	29.09 \pm 17.430	22.50 \pm 8.216	.019
Total pain	40.45 \pm 23.373	26.39 \pm 21.767	-.148
Emotional well being	36.65 \pm 15.133	35.33 \pm 19.169	.104
Energy	22.36 \pm 11.584	32.67 \pm 9.266	0.100
Social function	53.98 \pm 18.805	33.33 \pm 17.480	-.327*
Cognitive function	44.66 \pm 11.930	69.17 \pm 24.376	.443**
Health distress	33.18 \pm 15.815	33.33 \pm 22.949	-.336
Sexual function	63.26 \pm 25.025	41.67 \pm 24.996	-.131
Overall quality of life	52.40 \pm 15.138	50.00 \pm 21.295	-.077

*. Correlation is significant at the 0.05 level; **. Correlation is highly significant at the 0.01 level

Table (3) shows significant correlation in social function and highly significant in Cognitive function in types of MS.

Table (4): Correlation between COPE subscale and type of MS (No.=60).

COPE	Type of MS		r
	relapsing remitting Mean ± SD N=54	Secondary progressive Mean ± SD N=6	
Positive reinterpretation and growth	11.3148±1.47717	8.1667±.75277	
Mental disengagement	9.5185 ±.74582	10.1667±.98319	.249
Focus on and venting of emotions	10.6481±1.01233	11.1667.75277	.157
Use of instrumental social support	10.9444±.52903	11.0000±.01576	.034
Active coping	11.8704±.43638	10.5000±1.22474	-.605**
Denial	7.2222±.74395	6.0000±.63246	-.452**
Religious coping	12.8889±.74395	13.1667±.40825	.117
Humor	8.0556±.59611	8.0000±.63246	-.028
Behavioral disengagement	7.9444±.56357	9.1667±1.47196	.475**
Restraint	7.9444±.59611	8.1667±1.32916	.098
Use of emotional social support	10.8148±.82586	11.000±.63246	.070
Substance abuse	4.4444±.50157	4.5000±.54772	.034
Acceptance	11.0000±.86874	11.0000±.63246	.000
Suppression of competing activities	10.9444±.52903	8.6667±.51640	-.796**
Planning	10.8889±.76889	9.6667±.51640	-.445**

*. Correlation is significant at the 0.05 level

** . Correlation is highly significant at the 0.01 level

Table 4 shows highly significant correlation between COPE subscale (Active coping Denial, Behavioral disengagement, Suppression of competing activities and planning) and type of MS where $r = -.605, .452, .475, -.796$ and $-.445$ respectively at $p < 0.01$ level.

Table (5): Correlation between profile of mood states and type of MS (No.=60).

POMS	Type of MS		r
	relapsing remitting Mean ± SD N=54	Secondary progressive Mean ± SD N=6	
Depression-dejection	25.1667±.79503	28.6667±.51640	.809**
Anger-hostility	16.9259±.60973	16.5000.54772	-.210
Fatigue-inertia	13.0185±.36294	14.1667±.40825	.690**
Confusion-bewilderment	10.0741±.46992	12.0000±1.09545	.729**
Vigor-activity	18.0000±.33646	14.8333±.75277	-.927**
Tension-anxiety	16.0185±.36294	16.0000±.63246	-.014
Total POMS	65.00±.38851	75.1667±.75277	.990**

*. Correlation is significant at the 0.05 level

** . Correlation is highly significant at the 0.01 level

Table (5) reveals highly significant correlation between profile of mood states and type of MS where $r = .990$ at $p < 0.01$ level.

Table (6): Correlation between the health related quality of life and coping strategies among (MS) patients. (No=60).

variables	Correlation (r value)	Level of significance
HRQoL	r= 0.273*	0.035
Coping		

*Correlation is significant at the 0.05 level

Table (6) reveals the significant correlation between value of health related quality of life and coping strategies among (MS) patients where $r = 0.273$ at $p < 0.05$ level.

4. Discussion

The findings of the present study revealed that one third (33.3%) of the studied sample there age ranged $25 \leq 30$ and (65%) of them were female patients. Regarding to the *National Multiple Sclerosis Society. (2015)*, multiple sclerosis is known as a chronic, autoimmune, inflammatory and demyelinating disease. The incidence of MS tends to increase at 20-40 years of age and it is more common (3:1) in women compared to men. Depending on the central nervous system regions involved, patients may experience various symptoms mainly motor, somatosensorial, visual, cognitive and psychiatric disturbances. Moreover, this disease may accompany some psychiatric conditions related to mood, behavior and personality disorders, or may be seen with depression, hypomania and anxiety due to the course of the disease or the side effects of treatment.

Recent studies emphasize the effect of the disease on health related quality of life, *Boehm et al. (2014)*, mentioned that this effect is caused by the cognitive and physiologic factors of MS and psychosocial factors. Some of these factors can be referred to as the problems caused by its unpredictable process, discreteness or limitations of its role, physical pressure, exhaustion, a change in family relations and other social support structures (*Malachy et al., 2014*). The way people cope with stressful events plays a crucial role in the quality of life, life expectancy and their performance.

The present study showed the significant correlation between physical health problems, chronic illness, lack of coordination and dizziness this is in line with *Karine et al. (2013)*, they mentioned that balance problems cause an individual to feel unsteady and have difficulty maintaining his/ her equilibrium and position in space. In MS it can cause difficulty in walking, characterized by unsteadiness and a drunken appearance (ataxia), as well as trunk instability when seated.

According to the researchers finding, it is also important to be aware of coping strategies in addition

to receiving medical treatment in order to have better life experiences for MS disease. Because, in patients with MS, similar to other chronic diseases, the failure in psychological, physical and social functions lead the individual to develop certain coping strategies in order to minimize or fully cope with the adverse outcomes of the disorder within the context of his/her culture and system of values. However, mood characteristics play particularly an important role among the factors that may affect coping strategies in patients with MS.

This is in agreement with *Lode et al. (2015)*, they mentioned that in patients with MS, in addition to the disorder itself, the occupational stress related to working within society, economical and social stress and the additional stressful events may adversely affect the course and nature of the disease. Therefore, coping strategies in MS can be defined as resistance not only against the disease itself but also against the events or factors that cause stress for the individuals. Additionally, mood characteristics are one of the important factors that influence the compliance and response to treatment in chronic conditions. For this reason, mood alterations have a significant effect on the course of the disease. Because MS is a chronic disorder requiring long-term treatment and also, it is highly important to be aware of the mood characteristics that affect the course of the disease and treatment.

The findings of the present study revealed that, fatigue, depression, and physical disability are only one aspect of a person's experience with MS, it is well documented that cognitive, emotional, and psychological functions contribute to their health related quality of life. The HRQoL measurements are being considered increasingly important with regard to evaluating disease progression, treatment and the management of care provided to MS patients.

This is in the line with *Compston & Coles (2014)*, pain and fatigue may become a frequent part of the patient day. Physical changes from a disease process may occur and affect patient's appearance. These changes may diminish the patient positive self image. When the patient doesn't feel good about his /herself may prefer isolation and withdraw from friends and social activities. Multiple sclerosis can also influence patient ability to function at work.

Morning stiffness, decreased range of motion and other physical limitations may require the patient to modify the work activities and environment. Decreased work ability can lead to financial difficulties. For the home maker, a specific task may take much longer to be accomplished. The patient may need the help from spouse, a relative, or a home health care provider. As the life changes, also the patient may feel a loss of control and more anxious from the uncertainty of what lies ahead.

Also, *Svetlana et al. (2011)*, reported that for some patients, fatigue is one of the most disabling symptoms that aggravate other symptoms. The severity of fatigue is often increased with the rise of outside temperature and physical effort. The influence of fatigue on the quality of life is apparent. The pathological physiology of fatigue has not been completely explained yet. This could be due to the complexity of the symptom of fatigue itself. In the symptoms of fatigue, the physical and mental components are often differentiated, which is incorporated Depression is also a frequent symptom, ranging from 40%-60% in MS patients. The relation of fatigue and depression has been the subject of numerous studies. While some authors think that fatigue is a manifestation of depression, others have the opposite stand point. Depression may considerably affect the course of disease, therapy and rehabilitation.

Regarding the present study there was highly significant correlation in cognitive function this is in agreement with *Benedict et al. (2013)*, they stated that cognitive function impairment are among the most disturbing side effects of multiple sclerosis (MS), estimated that approximately half of people diagnosed with MS have cognitive deficits, particularly in the areas of processing speed and episodic memory. These deficits affect all areas of life and frequently preclude employment. Because cognitive impairment may occur early in the course of MS, timely assessment of cognitive functioning in clinical settings is critical. However, cognitive impairment in people with MS has been under diagnosed, and more effective assessment methods are needed.

The majority of the multiple sclerosis patients had satisfactory coping. This finding is supported by *Westerhuis et al. (2013)*, who reported that coping focused on stopping unpleasant emotions and thoughts in our sample explained the most variance of all the coping strategies in the mental component of quality of life. One possible explanation why stopping unpleasant emotions and thoughts might be adaptive as a coping strategy in patients with MS is that the patients have very little control over their disease. MS is in most patients a chronic progressive disease and no optimal cure has thus far been found. When patients lose the ability to control the disease and have

to learn how to live with it, this kind of coping can help them to reduce the stress that MS brings and thus improve their mental quality of life.

The results of our investigation revealed significant correlation regarding profile of mood states and types of MS. This is in agreement with *D'alisa et al. (2014)*, they mentioned that multiple sclerosis itself decreases quality of life by interfering with social life and daily activities and by disturbing emotional well being of the patients depression, anxiety and mood disorders have been reported as important factors that affect disease progression. Supporting our findings, there are some reports showing higher rates of depression and anxiety together with more profound loss of emotional control in patients with secondary progressive MS. Our study also demonstrated higher total POMS scores.

Conclusion

The findings of the present study revealed that majority of multiple sclerosis patients had a significant correlation between the health related quality of life and coping strategies. HRQoL is the primary concern of MS patients; an adaptive positive coping strategy may definitely improve HRQoL. Psycho-social interventions were evaluated to help the patient develop adequate coping strategies.

Recommendation

1. The HRQoL and coping of MS patients must be monitored regularly so that adequate therapy can be started to help improve the way these patients cope with their disease.
2. Service delivery must be high quality, as accessible as possible, continuously adapted to the needs of the person with MS, as well flexible, timely and evidence and experience-based.
3. Persons with MS should be referred to a specialist neurological rehabilitation team which should recognize the varying and unique needs and expectations of each person with multiple sclerosis.
4. Health team member should be well-informed about multiple sclerosis and available treatments.
5. Find a support group and individual counseling.

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