

Quality of life, disability level and nutritional status among Multiple sclerosis patients

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ABSTRACT

Background: The most severe form of nervous dysfunction among young individuals is Multiple sclerosis (MS). Symptoms usually appear at (15–40) years of age. MS is identified as an affective disorder in patients for a long time, characterized by current nervous system (NS) injury structure and rising accumulative damage. Recent years have seen a rise in the number of MS. This affects more than two million individuals every year in the world.

Methods: Ethical approval for this study was granted by the Ethics Committee for the Medical Research/University of Mosul. This was a retrospective and a hospital-based study performed. In the latter, MS patients' medical records fulfilling the McDonald diagnostic criteria were analyzed, and both demographics and clinical characteristics were reviewed. We did exclude patients with neuromyelitis optica and isolated transverse myelitis. A retrospective study design was applied in Ibn-Sina Teaching Hospital, City of Mosul, Iraq.

Results: This section summarizes the main findings of this research. Identified 500 patients who fulfilled our criteria for having MS. The crude estimated Prevalence of MS in the Mosul population was thus 50/100,000. The research population's demographic and clinical characteristics were identified and found a positive first or second-degree family history of MS at least 11.4% of Mosul patients.

Conclusion: Based on the assumptions and previous studies that patients with multiple sclerosis in Mosul suffer from milder disease severity than those in western countries, it was surprising that half of the patients suffer from gait disability.

INTRODUCTION

Multiple sclerosis (MS) is the most severe type of neurological disease in young people. (1) Symptoms usually appear at 15–40 years of age (2, 3). Multiple sclerosis occurs when the immune system affects the sheath (myelin) that surrounds nerve fibers and distorts brain-to-body communication. The disease may ultimately cause permanent damage or degradation of the nerve. (4, 5). About 400,000 people, primarily young people, have had MS in the United States. About 10,000 new cases are diagnosed annually. Worldwide, about 2.5 million people have multiple sclerosis. (6) Recent investigations have demonstrated that the disease is often seen as an active population in people aged 20–40. (7) MS is a burden on the patient, caregivers, and the health care system, both economically and with clinical examinations, especially for patients with increased disease activity. The most considerable burden is disability and unemployment. 50% of people with MS become unemployed 3-10 years after diagnosis. (8-10) Several landmark studies observed that MS is most commonly diagnosed in people in their 20s and 30s, although it can develop at any age. (11, 12). Cross-sectional analyses of several studies suggest gender as a risk factor for MS. Females are two times more affected, and some geographic regions have a higher risk. Studies suggest an increased prevalence of MS. (13, 14). An increased number of MS cases have been found on the "far away from the equator," which prompts scientists to believe that vitamin D might be of some assistance to immune system functioning. (15) According to the 2013 MS Atlas, countries in the Middle East and North Africa are in a low to moderate risk region for MS. (16); However, recent studies show a prevalence that varies between high and moderate

in this region and is particularly prevalent in women (17, 18). There are very few published results about MS in Iraq. This work is aimed at further understanding of the problem. We are interested in determining Prevalence of MS is not studied up to now. Furthermore, the study examined the Quality of life, disability level and nutritional status among Multiple sclerosis patients in city of Mosul-Iraq

METHODS

Ethical consideration: This study was approved by the Medical Research Ethics Committee at the University of Mosul. Also, approvals were taken to obtain medical data and enter the health institutions covered by the current study. Researchers were provided with it by the Research Ethics Committee in the Nineveh Health Department in Mosul. Patients' written and verbal consent of the patients was documented.

Study design: A retrospective study design was applied in Ibn-Sina Teaching Hospital, City of Mosul, Iraq. This method is accepted and widely used in such research.

Data collection: An essential component of the research is data collection and analysis. Most data used in the study have been obtained from Medical Records for 500 patients with MS.

Information sheet: general information related to patient such as age, age at diagnosis, gender, educational level, and smoking habits were collected by information sheet that prepared by authors.

Outcome measures: Body Mass Index: BMI is a measure of indicating the nutritional status of adults, formerly known as the quetelet index. The weight of the person is defined as kilograms, divided in meters by the height of the person's square (kg/m²). (19)

Quality of Life:In order to measure health-related quality of life, the "MusiQoL International Quality of Life Questionnaire" (20) was used. The MusiQoL is a patient-focused, multi-dimensional questionnaire comprising 31 items representing nine HRQL dimensions (i.e., living conditions, psychological well-being, daily duties and habits, companionship, social relationships, feeling included, rejection, and familial links). Both sub-scores and the overall index score are linear with a total of 100, with higher values indicating a higher quality of life linked to health.

Disability: Methods of disease steps(20): For disease steps, the patient is classified according to the disease history, neurological examination, as well as the course of MS. The scale consists of eight of the following categories: 0 = Normal: At this stage, the patient performs his activities without restrictions and the disease does not affect his lifestyle.

1 = Mild: The patient at this stage experiences mild signs such as sensory abnormalities, mild bladder weakness, slight lack of coordination, weakness, or fatigue. The gait has no visible anomalies. Relapse and remission of the disease pattern at this stage, and perhaps after a seizure the patient may not fully return to baseline.

2 = Moderate disability: Abnormal gait is the clear feature of the patient at this stage, although they do not need help, and relapse and remission or progressive is the pattern of the disease. The main feature is a clearly abnormal gait.

3 = Early cane: This stage is characterized by the intermittent use of the cane to walk over long distances, but they remain able to walk at least 25 feet without it: the disease pattern at this stage is also relapsing and remission or progressive.

4 = Late cane: At this stage, dependence and support on a stick is inevitable and they cannot walk 25 feet without this support. The disease pattern is relapsing or progressive.

5 = Bilateral support: There must be dual support for walking 25 feet (for example, two crutches). The disease pattern is relapsing, remission or progressive.

6 = In a wheelchair: Patients may be able to take a few steps but not be able to move 25 feet even with dual support and wheelchair use is urgent. Deterioration of hand function or the inability to move independently is evident at this stage.

U = unclassifiable: patients who do not apply to the above classification symptoms are listed under "unclassifiable, for example, significant cognitive or visual impairment, or severe fatigue," physical activity: according to Helou K,et.al(21)"The IPAQ categories briefly represented the following: high active meant vigorous-intensity activity on at least 3 days, or 7 days of walking, or moderate or vigorous activity; moderately active meant 3 or more days of vigorous activity of at least 20 min per day; or 5 or more days of moderate or higher intensity activity or walking of at least 30 min per day; and low active meant no or some activity"

Dietary Habits Questionnaire (DHQ)(22): The Diet History Questionnaire (DHQ) is a freely available food frequency questionnaire (FFQ) for use with adults 19 years of age or older. Researchers, physicians, and educators may use the most recent edition, DHQ III, to measure food

and dietary supplement intakes. DHQ III includes 135 foodstuffs and drinks and 26 supplementary foodstuffs.

Data analysis:Results of the analyses are presented as adjusted odds ratios with 95% confidence intervals. Significance was defined as a probability value of .05.

RESULTS

This section summarizes the main findings of this research. the data analysis shows that the mean age of patients was (64.62 (6.18) with a range (55-88) years old.

Table I Descriptive Statistics: Demographics and clinical N =500)

Years since diagnosis		
Age		45.6 (10.6)
Gender	Male	(21%)
	Female	(79%)
Employment	Employed	(55.3)
	Unemployed	(7.8)
	Student	(10.2)
	Retired	(26.7)
Marital Status	Single	(14.4)
	Married	(85.6)
Educational level	Low	(14)
	Middle	(40)
	High	(46)
comorbidities		(3%)
Disease modifiable Drugs		53
BMI	Obese	(19.2%)
	Overweight	(22.8%)
	Normal	(53.9%)
	Underweight	(4.1%)

Table I Descriptive Statistics: Demographics and clinical N =500)

Outcomes measures		
MSQOL	"Physical Health Composite"	Mean (SD) 57.0(7.2)
	"Mental health composite."	Mean (SD) 62.6(6.1)
Diet (DHQ total)		Mean (SD) 77.2(9.9)
Current smoker	Yes	(11.7%)
Vitamin D supplementation	Low	(79.6%)
	High	(20.4%)
Exercise (IPAQ)	Low	(41.3%)
	Moderate	(31.7%)
	High	(27.0%)
	None	(36.7%)
Omega 3 supplementation	Flaxseed only	(9.3%)
	Fish oil only	(36.0%)
	Both	(18.0%)
Medication	Never or less than once a week	(69.9%)
	Once a week or more	(30.1%)
"Disability Scale"	Normal	(55%)
	Gait/cane	(12)
	Early cane	(10)
	Late cane	(7%)
	Bilateral support	(4%)
	Wheelchair	(8%)
	Bedridden	(4%)

Men constitute most patients with a ratio of 3:1. the duration of the disease since diagnosis was (24.82 (10.02). Comparison of the clinical patterns and disability according to sex shows that men are more than women in relation to

the presence of family history. Early-onset of MS (≤ 16 years); the women have two times percentage more men in the occurrence of disease. Relapsing-remitting symptoms were the most common among women and men, (68.8 %), (64.6%) respectively followed by the Clinically isolated syndrome (15.3%) in Women and (12.6%) in Men.

Table 3: Comparison of the clinical patterns and disability according to sex

Variables	Male (%)	Female (%)	P
Relapsing- remitting	(64.6)	(68.8)	0.122
Primary progressive	(4.1)	(2.4)	0.178
Secondary progressive	(11.8)	(10.9)	0.811
Relapsing- progressive	(6.9)	(2.6)	0.003**
Clinically isolated syndrome	(12.6)	(15.3)	0.245

Table (4): Mean time to progression based on Patient Determined Disease Steps (PDDS) scale severity.

Time to onset to moderated disability	Number of people	Years after onset	Early cane	Moderate disability
0-3	44	0-4	0	0.93
4-6	14	5-9	4.79	4.79-7.83
7-9	6	10-14	9.44	7.83
10-14	6	15-19	10.86	11.66-15.40
>15	5	20-29	15.66	18.80
		<30	24.40	20.40

DISCUSSION

The results were directly compared with the previously reported findings on the gulf nations. The estimated prevalence in Iraq was lower than that reported in studies conducted in Kuwait(23) (104.88 / 100,000 persons), Qatar(24) (64.57 / 100, 000), UAE (57.09 / 100,000) and Iran(25-27) (54.51 / 100,000). Furthermore, when compared to other western areas, Mosul's Prevalence is considered low. The percentage was found to be between 98.4 and 106.6 in central Italy(28), 102.6 in Columbia(29), 100,000 to 170.9 in France(30), 180 in Italy(28), and 179.9 in Canada(13). There may be a variety of explanations for the disparity in prevalence rates, including genetic variation, some environmental factors, ethnicity's influence, and other differences in methodology used in the various studies. The results are similar in other research internationally. The risk was suggested to be linked to gender. The female-to-male ratio was 2:1 in our sample. The sex ratio was 1.84:1, and 1.14:1 was cited by R. Alroughani et al. (32) and Hamdy et al. (33), respectively. At the time of disease onset, the average age was 27.8 years; The pooled estimate across the Middle East and North Africa (MENA) area as a whole was 28.5 years (27.61–29.48 years) Limb weakness with pyramidal signs were the most common presentation in our MS patients (71.2%), followed by sensory and visual symptoms (60.4% and 42.5%, respectively). This is in full agreement with reports from other Arab countries where the percentages range from 22 to 84% for motor weakness, 5 to 50% for sensory features, and 19 to 62% for visual problems.(31) and also with another study from Iran.(32) However, other Arab studies have noted the predominance of visual impairment accompanied by motor and sensory symptoms, i.e. the optico-spinal form of MS. one study from Lebanon showed a predominance of

brainstem-cerebellar symptoms and another one from Iran a predominance of sensory impairment. Reports from India, Iran, the Middle East, and Iraq show optico-spinal MS to be rarer in these countries than in Eastern Asia and Japan. Over the past decade, the frequency and Prevalence of MS in Mosul have risen significantly as opposed to the general population More noticeable in women than men, was the significant spike in Mosul. In summary, the disease was as it was defined in the literature, with a different clinical picture in this community. Although genetic changes cannot be ruled out, it is likely that environmental influences such as contamination or an overall increase in the population's diet have had an impact on this recent rise in Iraqi cancer cases. Additional research on these potential risk factors can help us understand how MS evolves in various regions of the world. In this study, we elected to utilize the MusiQoL and the SF-36. Although there are other questionnaires that are available in Arabic such as the EQ-5D questionnaire. The Middle East MS Advisory Group recommends routine assessments of quality of life using the MusiQoL and the SF-36 in addition to other supplementary information. More Two thirds of the patients in our study had Physical Health Composite and mild to severe depression. Our findings show that depression has a strong link to quality of life. Not only does the health status of the patient influence quality of life, but other factors affect it as well. The parameters that are considered are for selection of disorders or disease to study include the degree of independence, situation, and state of mind. Quality of life has become increasingly acknowledged in research on multiple sclerosis. Various studies in the literature showed a significant deterioration compared with the healthy population regarding the quality of life in MS patients. The quality of life of those with other long-term conditions like diabetes, congestive heart failure, myocardial infarction, and hypertension, however, is worse as compared to MS. Other than its physical symptoms, multiple sclerosis affects patients in various ways. These include the state of psychological issues, pain, vitality, sexual dysfunction, tiredness, financial problems, job problems, and the perceptions towards MS within their communities. The patient's job status and social functioning are typically affected by depression and loss of cognitive function. Patients with MS reported these two symptoms as significant determinants of their quality of life, and some patients feel they are more important than their physical limitations. Depression can be linked to pathologic changes in the central nervous system, especially in the left frontal and temporal lobes.

Disability: Disease steps methods were adopted in this study to determine the degree of disability. To our knowledge, this study is the first in Mosul to rely on that method. Based on the assumptions and previous studies that patients with multiple sclerosis in Mosul suffer from milder disease severity than those in western countries, it was surprising that half of the patients suffer from gait disability. Furthermore, the current survey had one of Mosul's highest sample sizes for an MS patient outcome study (500 patients). the age at the onset didn't found any relationship with the degree of disability (mild-moderate) as well as those with lateral support/wheelchair/bedridden. The results are consistent with a previous study that concluded

that the patient's age has a greater influence than the initial course of the disease on the diagnosis of MS. The average time between the onset of MS symptoms and the start of reciprocal therapy was 4.5 years. However, in younger patients (those under the age of 29), the onset of the first symptom took an average of 6.2 years. Several studies (33-35) have shown that older patients with the first symptoms of MS have less disability and progress at a slower rate than younger patients. As a result, younger people with milder symptoms may have their medication delayed before their disability worsens. According to a Canadian report, it can take longer for younger patients to be referred to and diagnosed than it does for older patients. The results of the current study highlighted the importance of starting treatment as soon as possible, as the data concluded that the initiation of treatment was delayed in patients with severe symptoms, either patients receiving unilateral assistance or dual support / wheelchair / usually bedridden severity levels. They tend to initiate treatment to prevent a recurrence of the walking impairment.

Diet: Due to the dearth of research, not all these dietary factors can be accurately connected to MS. Conclusions are usually only informed by a small number of subjects and questionnaires. Even in the main population studies, the results aren't entirely accurate. To our knowledge, there is no scientific evidence to suggest for such as FAs but using VAs and having an intact fats intake has been shown to be insufficient beneficial evidence exists for the use of carotenoids and polyphenols from plant sources in patients (1). Bioactive molecules may have anti-inflammatory properties due to their antioxidant activity (49). And, however, there is enough evidence to indicate that vitamin D deficiency is a factor in the development of MS (36, 37). Furthermore, serum vitamin B12 was inversely correlated with the effect of the ODS scores. Methionine synthase is important for DNA and RNA synthesis. As a result, B12 deficiency can lead to elevated homocysteine. Further research is needed to discern whether vitamin B12 supplementation worsens the disease. Nutritional intervention cannot fully cure MS, but it can improve the physical and inflammatory conditions in patients with the disease. The findings that certain dietary components affect the degree of inflammation may imply effective intervention as a potential treatment for MS. As an immunomodulating drug and as well as disease-modifying the connection between Vitamin B12, folate, and folic acid and myelin should also be examined.

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