

The frequency of speech impairment and its influencing factors among Iranian patients with multiple sclerosis

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Abstract

Introduction: Multiple sclerosis (MS) is the most frequent demyelinating disease of the central nervous system that makes different symptoms; the most disabling symptom of which is speech impairment that has significant effect on patients' quality of life. The aim of this study was to investigate the frequency of speech impairment and its influential factors among Iranian patients afflicted with MS.

Methods and Materials: The records of 4553 patients registered in Iranian MS Society between 1998 and 2005 were studied and 3165 of them with complete profiles about speech impairments were included. Analyzing the data, SPSS software version 15 was used.

Results: Speech impairment was seen in 37.4% of patients. The frequency of this impairment was higher among male ($P<0.001$), unemployed ($P<0.05$), and with lower educational level patients ($P<0.001$). Also patients with speech impairment had a higher mean age ($P<0.001$). The frequency of patients with speech impairment in relapsing remitting, secondary progressive, and primary progressive MS, in contrast with patients without this impairment was lower, higher, and higher respectively ($P<0.001$). The mean age of onset of patients with speech impairment was higher ($P<0.05$). Speech impairment was more frequent among patients with onset symptoms of motor or balance impairment ($P<0.05$) and less frequent in patients with onset symptoms of sensory impairment ($P<0.001$).

Conclusion: The frequency of speech impairment was higher among Iranian patients compared with previous studies in western countries. The impairment was more frequent among male, unemployed, with lower educational level, and older patients and also among patients who were in progressive forms of MS, with higher mean age of onset and patients with onset symptoms of motor or balance impairment.

Keywords: Multiple sclerosis, Symptoms, Speech impairment, Iran.

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Introduction

Multiple sclerosis (MS) is the most frequent demyelinating disorder of the central nervous system that affects women more than men.⁽¹⁻²⁾ The onset age of disease is usually between 20 and 40⁽³⁾ and considering the clinical course, it includes 3 courses of relapsing remitting (RR), secondary progressive (SP), and primary progressive (PP).⁽³⁻⁴⁾ Patients with MS suffer from disabling symptoms that are different based on the location of demyelinating plaques.⁽⁵⁾

One of the most disabling symptoms of MS is speech impairment that has a significant influence on the patients' quality of life.⁽⁶⁻⁸⁾ Although there are great numbers of patients with MS in Iran, unfortunately no investigation has been done on the frequency and influencing factors of speech impairment among them yet.

So the aim of this study was to investigate the frequency of speech impairment and its influencing factors among Iranian MS patients. The results of this study is hoped to not only show the current status of these patients but it may also be an stimulation for more concentration on the patients and specifying further therapeutic facilities such as speech therapy methods for them.

Patients and Methods

The records of patients registered in Iranian Multiple Sclerosis Society (IMSS), including demographic and clinical information, were used to

obtain the data. The disease of all of the registered patients in IMSS should be diagnosed with clinical and paraclinical findings by at least one neurologist and then be referred to IMSS as the official referring center of MS in Iran. The patients should have their documents of magnetic resonance imaging (MRI), and other diagnostic studies such as visual evoked potential and CSF analysis with themselves in the registration day.

In order to reach the aims of the current study, profiles of 4553 patients who were registered in IMSS between 1998 and 2005 were studied and among them, 3165 patients with complete data on speech impairment status were included in the study and the frequency of speech impairment and its influencing factors were investigated.

The patients' records were used just after ensuring about their consent by checking the availability of their written informed consent forms taken by IMSS.

SPSS software version 15 (SPSS, Chicago, Ill) was used for data analysis and the comparison was made by means of chi-square and Independent-Samples t Tests. P values < 0.05 were considered as significant.

Results

Among 3165 patients, 1051 (33.2%) were male and 2114 (66.8%) were female that represented a female: male ratio of 2: 1. The mean age of patients was 37.4 ± 9.7 years (39.2 ± 9.9 years

among males and 35.6 ± 9.5 among females, $P < 0.001$).

67.1% of patients were married (68.7% of males and 66.3% of females, $P > 0.05$), 28.8% of them were employed (47.4% of males, and 19.5% of

females, $P < 0.001$), and 68.8% of patients had been graduated from high school (61.1% of males, and 68.2% of females, $P < 0.001$). The complete demographic information of patients is brought in table 1.

Table 1. Demographic characteristics of patients

CHARACTERISTIC	MALE	FEMALE	TOTAL	P VALUE
Gender (%)	1051 (33.2)	2114 (66.8)	3165 (100)	
Mean age (years)	39.2 ± 9.9	36.5 ± 9.5	37.4 ± 9.7	< 0.001
Marital status (%)				0.1
Single	31.3	33.7	32.9	
Married	68.7	66.3	67.1	
High school graduation (%)				< 0.001
Yes	61.1	68.2	65.8	
No	38.9	31.8	34.2	
Employment (%)				< 0.001
Employed	47.4	19.5	28.8	
Unemployed	52.6	80.5	71.2	

Considering the clinical course, 71.4% of patients were in RR course, 21.9% in SP course, and 6.7% in PP course of MS. There were some differences between the two genders noting the clinical course: 62.7% of male patients were in RR course and 31% in SP course, while the frequency of female patients in RR and SP courses was 75.7% and 17.4% respectively ($P < 0.001$).

The most frequent first presentations of MS among patients were sensory (35.1%), visual (29.9%), motor (22.7%), and balance (10.5%) impairments. Although sensory impairment was the most frequent first

presentation among both genders, motor impairment was the second most frequent first presentation among males, while among females, visual impairment was ranked as the second most frequent first presentation ($P < 0.001$). The mean age of onset of MS was 27.1 ± 8.7 years (28.5 ± 9.2 among males, and 27.1 ± 8.7 years among females, $P < 0.001$).

The most frequent symptoms in these patients were sensory (82.3%), balance (79.5%), lower extremities motor (67.8%), visual (61.7%), and upper extremities motor (57.4%) impairments. The clinical information of patients is summarized in table 2.

Table 2. Clinical characteristics of patients

CHARACTERISTIC	MALE	FEMALE	TOTAL	P VALUE
Clinical course (%)				< 0.001
RR	62.7	75.7	71.4	
SP	31	17.4	21.9	
PP	6.3	6.9	6.7	
Mean age of onset (years)	28.5 ± 9.2	26.5 ± 8.3	27.1 ± 8.7	< 0.001
First presentation (%)				< 0.001
Sensory	33.4	36	35.1	
Visual	24.6	32.6	29.9	
Motor	26.8	20.7	22.7	
Balance	13.3	9.2	10.5	
Symptoms (%)				
Sensory	82.8	82.1	82.3	0.6
Balance	84.2	77.2	79.5	< 0.001
Lower extremities motor	82.1	74.1	76.8	< 0.001
Visual	66.7	59.2	61.7	< 0.001
Upper extremities motor	64	54.2	57.4	< 0.001
Speech impairment	45	33.6	37.4	< 0.001

RR = Relapsing remitting, SP = Secondary progressive, PP = Primary progressive

The frequency of speech impairment among studied patients was 37.4%. The impairment was significantly more frequent in male patients ($P < 0.001$).

The frequency of speech impairment was not significantly related to marital status of patients, but it was significantly more frequent among patients who were not graduated from high school ($P < 0.001$), and unemployed patients ($P < 0.05$). Furthermore the mean age of patients with speech impairment (38.7 ± 9.5 years) was significantly higher than patient without this impairment (36.6 ± 9.8 years, $P < 0.001$).

Patients with speech impairment were in more progressive courses of MS. The number of these patients in RR, SP, and PP courses of MS was lower, higher, and higher respectively than

patients without this impairment ($P < 0.001$). The mean age of onset in patients with speech impairment (27.6 ± 8.9 years) was significantly higher than patients without this impairment (26.9 ± 8.6 years, $P < 0.05$). In addition, among the patients whose disease was presented with motor or balance impairments, speech impairment was seen more ($P < 0.05$) and on the other hand, in patients with first presentation of sensory impairment, the frequency of speech impairment was less ($P < 0.001$).

Considering the frequent symptoms of patients, there were significant correlations between these symptoms and speech impairment ($P < 0.05$), but these correlations were not that much powerful.

The frequency of influencing factors on speech impairment is brought in table3.

Table 3. Influencing factors on the frequency of speech impairment

FACTOR	SPEECH IMPAIRMENT		P VALUE
	Yes	No	
Gender (%)			< 0.001
Male	39.9	29.2	
Female	60.1	70.8	
Mean age (years)	38.7 ± 9.5	36.6 ± 9.8	< 0.001
Marital status (%)			0.8
Single	33	32.8	
Married	67	67.2	
High school graduation (%)			< 0.001
Yes	58.3	70.3	
No	41.7	29.7	
Employment (%)			< 0.05
Employed	26.1	30.5	
Unemployed	73.9	69.5	
Clinical course (%)			< 0.001
RR	62.4	76.6	
SP	29.9	17.3	
PP	7.7	6.1	
Mean age of onset (years)	27.6 ± 8.9	26.9 ± 8.6	< 0.05
First presentation (%)			
Sensory	30.9	37.6	< 0.001
Visual	28.4	30.7	0.1
Motor	25	21.4	< 0.05
Balance	12.9	9.2	< 0.01

RR = Relapsing remitting, SP = Secondary progressive, PP = Primary progressive

Discussion

MS is the most frequent demyelinating disorder of the central nervous system that affects women more than men and the onset age is usually between 20 and 40.⁽¹⁻²⁾

In the current study the gender distribution of the disease with the female: male ratio of 2: 1 was similar to the previous studies in other countries.⁽⁹⁻¹⁰⁾ This ratio was different in previous studies in Iran and varied between 1.2: 1 and 3.5: 1.⁽¹¹⁻¹⁴⁾

The mean age of our patients was 37.4 ± 9.7 years which was similar to the results of a study performed in Iran in 2000,⁽¹⁴⁾ but it is higher than other studies done in Iran.⁽¹¹⁻¹³⁾ In our study the mean age of male patients was significantly higher than females. Other demographic characteristics of patients, such as marital status, educational level, and employment status had not been changed compared to the previous studies in Iran.

In this study the clinical course of MS has been categorized into 3 subgroups

of RR, SP, and PP courses using Poser's criteria³. The frequency of patients in each of these course subgroups is similar to the previous studies in Iran and other countries.^(2,9-14) that frequency of patients in RR course was higher than other courses. There were also significant differences between the two genders considering the clinical course. The frequency of female patients in RR and SP courses was higher than the male ones.

The mean age of onset of patients was about 27 years which was similar to the previous studies¹⁻². This mean age was significantly higher in male patients. The most frequent first presentation of MS in both genders was sensory impairment.

The symptoms of MS have been studied in most of the previous studies, but the interesting finding of our study was the high frequency of balance impairment which was more frequent among patients than motor and visual impairments. It was even the most frequent symptom in male patients. Considering both genders, sensory impairments were the most frequent symptoms followed by balance, lower extremities motor, visual, and upper extremities motor impairments. The frequency of the symptoms was different in previous studies. As an example, the symptoms of MS in a study performed in Hong Kong were motor impairments (68%), sensory impairments (68%), and visual impairments (51%).⁽¹⁵⁾

Speech impairment has been studied in many of previous studies as a disabling

symptom of MS^(6-8,15) with a frequency rate of 0.7% to 3%.^(7-8,15) Speech impairments had been reported by a review article in 2001 as being frequent among patients with MS that need close follow-ups.⁽⁶⁾

In the current study the frequency of speech impairment with a rate of 37.4% was higher than any of the previous studies. In a similar study in 2005, 3.5% of patients had severe speech impairment among whom 15.5% had moderate problems, and 81% were intact.⁽²⁾ The results of our study showed higher frequency of speech impairment in patients with MS, at least among Iranian patients.

Unfortunately influencing or relating factors of speech impairment among patients with MS had not been studied in previous studies.

The results of the current study showed that speech impairment was more frequent among male patients. The impairment was also more frequently seen in patients who had not finished high school, and the unemployed ones. No relation was proved between the marital status and the frequency of speech impairment. The mean age of patients who suffered from speech impairment was significantly higher than intact patients.

The clinical course had also a significant influence on the frequency of speech impairment. The number of patients with speech impairment was more in progressive courses of MS and less in RR course. Based on the results of our study the mean age of onset of patients with speech impairment was

significantly higher than intact patients. Considering the first presentation of MS, the frequency of speech impairment was lower among patients with sensory presentation, and higher among the ones with first presentation of motor or balance impairment. The frequency of speech impairment was significantly correlated with other symptoms of MS among our patients, but these correlations were not so powerful.

Previous studies about rehabilitation therapies for MS have considered speech therapy and other rehabilitations to be useful and necessary, but none of these studies have specified the exact effectiveness of speech therapy on patients with MS^{2; 5-6, 16-18} which itself represents the need for future more comprehensive studies.

The current study was limited in some ways; despite the big sample size. One of these limitations was the retrospective approach of the study that is somehow coverable considering the sample size. Another limitation was the subjective data of records of IMSS that made the exact clinical findings a little difficult to achieve. Unfortunately evaluating the subtypes of speech impairment was not possible and we could not use EDSS criteria for most of the patients. Despite all of these limitations, the results of this study, as the first experience in this field, may be a clue for future studies.

Concludingly the demographic and clinical characteristics of patients

suffering from MS were almost similar to the patients of other countries. But the frequency of speech impairment was higher than previous findings. In addition according to the results of this study, male gender, older age, lower educational level, unemployment, more progressive forms of disease, older age of onset and the first presentations of motor and balance impairments were more related and correlated with higher frequency of speech impairment and could be considered as the risk factors of developing speech impairment. Considering the mentioned clinical factors and demographic factors at the same time may be a proper diagnostic and rehabilitating clue for patients with speech impairment. The use of speech therapy may also be useful for MS patients suffering from speech impairment, which should be investigated through future comprehensive studies.

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بررسی فراوانی اختلالات تکلم و عوامل مؤثر بر آن در بیماران ایرانی مبتلا به مالتیپل اسکلروزیس

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چکیده

سابقه و هدف: مالتیپل اسکلروزیس (MS) شایعترین اختلال دمیالینه کننده سیستم عصبی مرکزی است که علائم مختلفی را ایجاد می نماید. از ناتوان کننده ترین این علائم، اختلالات تکلم است که بر کیفیت زندگی بیماران تأثیر چشمگیری می گذارد. هدف از این مطالعه بررسی فراوانی اختلالات تکلم و عوامل مؤثر بر آن در بیماران ایرانی مبتلا MS می باشد.

روش بررسی: برای این منظور پرونده ۴۵۵۳ بیمار که در فاصله سالهای ۱۳۷۷ تا ۱۳۸۴ در انجمن MS ایران ثبت شده بود بررسی و ۳۱۶۵ بیمار که در خصوص اختلالات تکلم پرونده کاملی داشتند وارد مطالعه گردیدند. برای انجام تحلیل های آماری این مطالعه از نرم افزار SPSS نسخه ۱۵ استفاده شده است.

یافته ها: اختلالات تکلم در ۳۷/۴٪ از بیماران مشاهده گردید. فراوانی این اختلالات در بیماران مذکر ($P<0.001$)، بیکار ($P<0.05$) و دارای تحصیلات پایینتر از دیپلم دبیرستان ($P<0.001$) بیشتر بود. همچنین بیماران دارای اختلال تکلم میانگین سنی بالاتری داشتند ($P<0.001$). تعداد بیماران دارای اختلال تکلم در فازهای عود و بهبود، پیشرونده ثانویه، و پیشرونده اولیه نسبت به بیماران بدون اختلال تکلم به ترتیب کمتر، بیشتر و بیشتر بود ($P<0.001$). همچنین میانگین سن بروز اولین علامت در بیماران دارای اختلال تکلم بیشتر بود ($P<0.05$). در بیمارانی که بیماری با علائم حرکتی یا تعادلی آغاز شده بود فراوانی اختلالات تکلم بیشتر ($P<0.05$) و در بیماران با علائم اولیه حسی فراوانی اختلالات تکلم کمتر بود ($P<0.001$).

نتیجه گیری: فراوانی اختلالات تکلم در بیماران ایرانی بیشتر از مطالعات قبلی در سایر کشورها بود. این اختلالات در بیماران مذکر، بیکار، دارای تحصیلات پایینتر، و با میانگین سنی بالاتر، و بیمارانی که در فازهای پیشرونده بیماری بودند، سن شروع علائم بالاتری داشتند، و بیماری آنها با علائم حرکتی یا تعادلی آغاز شده بود بیشتر دیده شد.

واژگان کلیدی: مالتیپل اسکلروزیس، علائم، اختلالات تکلم، ایران.