SPER Publications and Solutions Pvt. Ltd.

Original Article

Learning difficulties facing individuals with Multiple Sclerosis: pharmacy students' experience

Elham Alshammari[1]*, Ahlam Alshammari[2], Turkeah Alenzy[1], Bayan Alkthiri[1], Lama Albattniji[1], Samia Alenizi[1]

[1] Department of Pharmacy Practice, Faculty of Pharmacy, Princess Nourah Bint Abdulrahman University, Riyadh, Saudi Arabia. [2] Medical Service Authority, Military Medical Complex, Kuwait.

Correspondence: Elham Alshammari; Department of Pharmacy Practice, Faculty of Pharmacy, Princess Nourah Bint Abdulrahman University, Riyadh, Saudi Arabia. Email: ejalshammari @ pnu.edu.sa

ABSTRACT

Learning performance among patients with multiple sclerosis is one of the growing areas of research interest. The present study used the MSQOL-54 measure to examine data obtained from college students studying pharmacy. The collected data were meant to increase pharmacy students' awareness of the learning difficulties experienced by MS patients. The data consisted of 2nd- to 6th-year students of the college. The findings showed that the study year had no significant relationship with the knowledge level, $X^2 = 12.69$, $p > 0.05$. However, the year of study had a significant relationship with awareness about learning difficulties, $X^2 = 17.61$, $p < 0.05$. In total, 52.83% of students in the 2nd year of study were not aware of the learning difficulties of MS patients and 51.72% of the third-year students were aware of the learning difficulties. The percentage increased to 85.71% among the 4th-year students. After 4th-year, the percentage of students who were aware of learning difficulties seemed to decrease (82% in the 5th-year and 68% in the 6th-year students). These findings showed that students tend to forget what they have learned. Further studies need to be carried out to examine strategies for enhancing the information of students regarding the MS students.

Keywords: Multiple sclerosis, learning performance, memory disorders, cognitive function

Introduction

Multiple sclerosis refers to a lasting inflammatory illness of the central nervous system (CNS). The disease often leads to demyelination and neurodegeneration among young adults. [1] Anyone affected by this condition can experience impacts in their brain and spinal cord, along with many other challenges including vision, consciousness, movement of the leg or arm, or balance. [2] Multiple sclerosis affects more than 10,000 people in Saudi Arabia (KSA) and 2.3 million people worldwide. [3] Women are two or three times more likely to develop the signs and symptoms of MS than men. [2] Many doctors experience challenges in the diagnosis of MS since there is no single test that can confidently diagnose the disease.

Basically, patients experience a first neurologic occasion reminiscent of multiple sclerosis known as a clinically isolated syndrome (CIS). This condition lasts for about 24 hours and manifests as either a solitary injury or more than one sore in the focal sensory system. MS can occur in four forms: relapsing-remitting MS (RRMS), secondary-progressive MS (SPMS), primary-progressive MS (PPMS), and progressive-relapsing MS (PRMS). RRMS is the most common type of sclerosis and affects approximately 85% of all patients. Affected individuals experience transient relapses, especially after the appearance of a new reaction. A majority of those with RRMS eventually develop SPMS, which involves an intensification of the signs and symptoms of multiple sclerosis. PPMS is not quite common and has been reported in only about 10% of those suffering from MS. PRMS is also rare and occurs only among 5% of MS patients. [4]

Access this article online	
Website: www.japer.in	**E-ISSN:** 2249-3379

How to cite this article: Elham Alshammari, Ahlam Alshammari, Turkeah Alenzy, Bayan Alkthiri, Lama Albattniji, Samia Alenizi. Learning difficulties facing individuals with Multiple Sclerosis: pharmacy students' experience. J Adv Pharm Edu Res 2019;9(4):96-99.
Source of Support: Nil, Conflict of Interest: None declared.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

The clinical signs and symptoms of MS vary and may develop to involve tactile, motor, visual, and brainstem pathways. The clinical symptoms of the disease depend on the size and extent of the injury. The clinical signs may include aphasia, deafness, balance problems, ataxia, or visual issues. [5] MS can also damage to the CNS, resulting in the symptoms of tremor, intestinal and urinary tract issues, feeling tired, learning and memory problems, and spasms. Despite these symptoms, it is still difficult to diagnose MS. Hence, precise identification of the condition depends on medical history, neurological assessments, and blood test investigations. [6]

The different types of MS have no remedy. In many cases, health professionals treat the side effects of the disease. For instance, natalizumab (Tysabri) is a treatment used for MS. [7,8] There are other types of medications that are taken through intramuscular/intravenous infusions or orally. Beta interferons may also be used to treat relapses in MS patients. Beta interferons can be infused subcutaneously or intramuscularly and the dosage can vary from daily to once a week. Other medications include glatiramer acetate, fingolimod, and natalizumab. [4]

MS is usually diagnosed between 20 and 50 years of age. This diagnosis can influence one's vocation, instruction, and family life. [9,10] The condition can also affect working, which is why the unemployment rate among people with MS has been documented to be as high as 80%. [11] Various components are believed to affect the ability of individuals with MS to work, including physical disability, increased fatigue, and uneasiness. [10, 11] In addition to the perceived stress among healthy pharmacy students [12,13], past scholarly work has also shown that MS patients experience misery and a reduced level of personal satisfaction. At the moment, early recognition and treatment of this condition is believed to increase the lives of people with MS. [14-28]

MS has also often been associated with neuropsychiatric symptoms. These outcomes can lead to debilitated social comprehension among MS patients.

Considering this background information, the primary objective of the study was to use the MSQOL-54 instrument [29] reported by MS individuals studying in a pharmacy college. The secondary objective was to raise pharmacy students' awareness of learning difficulties in MS patients, especially targeting 2nd to 6th-year Pharm D students.

Materials and Methods

The objective of the study was to identify the knowledge of the 2nd to 6th-year pharmacy students regarding the learning difficulties in MS patients. To meet this objective, the study followed a prospective observational study design. The study was set at the pharmacy college – Princess Nourah bint Abdulrahman University (PNU). Doctor of Pharmacy students of all levels were included in the study. Data were collected from these students between October and December 2019.

The MSQOL-54 research instrument was used to collect the data. The instrument produced 12 subscales, two summary scores, and two additional single-item measures. The subscales included as follows: physical function, pain, physical role limitations, emotional well-being, emotional role limitations, social function, energy, health distress, health perceptions, sexual function, and general quality of life. This tool also provided physical and mental health summary scores. The single-item measures used in the study were changes in health and satisfaction with sexual function.

We also used a Google Forms questionnaire to collect data from Pharm.D. students from various years of study. The questionnaire was used to meet the study's second objective. This tool collected students' knowledge of the basic clinical background and included five questions. Question 1 asked students to mention their year of study and question 2 confirmed their age. In question 3, students were asked to define MS. Question 4 inquired whether the students were aware of learning difficulties experienced by learners with MS. In the last question, students were asked to suggest ways to improve learning and help MS learners.

Results and Discussion

Only one student with MS on the final year of study completed the MSQOL-54 instrument. The scores obtained from the subscales were as follows: physical function (12.75), physical role limitations (0), pain (8.43), emotional role limitations (0), emotional well-being (6.96), health perceptions (11.05), energy (3.36), cognitive function (3), social function (4.99), overall quality of life (11.99), health distress (6), and sexual function (8). The average scores were 50.23 for physical health and 27.95 for mental health. Both single-item measures recorded a 100% score. These numbers according to MSQOL-54 are deemed to be informative for future comparisons with other studies.

With regards to the results of the developed questionnaire, the study participants were 18 to 26 years old, and the mean age was 21.94 years (SD=2.08). The average year of study of the participants was 4.37 (SD=1.66) (Table 1).

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	226	18	26	21.94	2.083
Year of study	226	2	6	4.37	1.658

We calculated the relationship between the year of study and both knowledge of MS and awareness about the associated learning difficulties. Two chi-square tests were conducted to determine the relationships between the study year and the two

variables. The study year had no significant relationship with knowledge level, $X^2 = 12.69$, $p > 0.05$. On the contrary, the year of study had a significant relationship with the awareness of learning difficulties, $X^2 = 17.61$, $p < 0.05$ (Table 2).

Table 2. Chi-square test results

Variable	Chi-square value	Sig.
Knowledge level	12.69	.123
Awareness	17.61	.001

There were considerable differences in awareness. For example, 52.83% of students in the 2nd year of study were unaware of the learning difficulties that MS patients face while 51.72% of the third-year students were aware of the learning difficulties. The number increased to 85.71% among the fourth-year students. After year 4, the percentage of students who were aware of learning difficulties seemed to decrease (82% in year 5 and 68% in year 6). This is a clear indication that students tend to forget what they have learned (Figure 1 and Table 3).

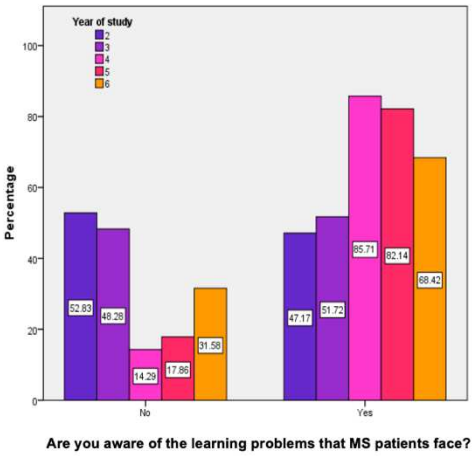

Figure 1. Study year vs Awareness

Table 3. Frequencies (Year of Study vs. Awareness)

Year of study	Are you aware of the learning problems that MS patients face? (Yes=1, No=0)		Total
	No	Yes	
2	28	25	53
3	14	15	29
4	3	18	21
5	5	23	28
6	30	65	95
Total	80	146	226

Top suggestions to improve learning and help MS students included giving them permission for their appointments and letting them take their exams online; organizing an awareness day; recording lectures in case they cannot come to the college, providing them with extra time on exams, and organizing computerized exams among many other options (Table 4).

Table 4. Suggestions for Improvement

Ask if they need anything specific; ask if they have any issues that the college needs to deal with.
Educate students more; simplify the information; add a chapter in college textbooks to teach students; show real-life cases on YouTube or in hospitals; teach more about this disease.
Give them permission for their appointments.
Help them through financial support
Hold an awareness day.
Let them take their exams online, which is easier than giving paper exams.
Provide a wheelchair elevator
Provide easy transport
Provide extra time on exams.
Provide computerized exams so they will not have problems with taking exams; provide financial grants to encourage them to complete their degree
Provide flexible schedules and exams
Provide ID cards
Provide psychological care because they may face depression and other problems
Provide special care for these patients
Provide specific pens and equipment
Record the lectures in case they cannot come to college.
Support them by better understanding the illness.
Visit hospitals to see real patients; hold more case study discussions.

Conclusion

The main aim of the study was to use the MSQOL-54 measure to examine data obtained from pharmacy college students. In achieving this objective, the authors want to increase awareness among pharmacy students concerning the learning difficulties experienced by MS patients. The study findings showed that the year of study did not have a significant relationship with the knowledge level; however, the year of study tended to affect the student's awareness about learning difficulties. The findings also showed that students tend to forget what they have learned. While the study proposed various approaches to help students with multiple sclerosis, further studies are needed to determine the effectiveness of these interventions.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Ethics approval

Institutional review board (IRB Log Number: 19-0164)

Acknowledgment

This research was funded by the Deanship of Scientific Research at Princess Nourah bint Abdulrahman University through the Fast-track Research Funding Program.

References

1. Cepok S, Rosche B, Grummel V, Vogel F, Zhou D, Sayn J, Sommer N, Hartung HP, Hemmer B. Short-lived plasma blasts are the main B cell effector subset during the course of multiple sclerosis. Brain. 2005 Jul 1;128(7):1667-76.
2. mapleaccess.org.uk. [updated 2018 Dec 20; cited 2019 Nov 27]. Available from: https://www.mapleaccess.org.uk/conditions/multiple-sclerosis/
3. World Multiple Sclerosis (MS) Day. Kingdom of Saudi Arabia; [updated 2019; cited 2019 Nov 27]. Available from: https://www.moh.gov.sa/en/HealthAwareness/healthDay/2018/Pages/HealthDay-2018-05-30.aspx
4. Baruah J, Baruah G. Peripheral Demyelinating Neuropathy (PN) in Multiple Sclerosis (MS)(P06. 136).
5. Selter RC, Hemmer B. Update on immunopathogenesis and immunotherapy in multiple sclerosis. ImmunoTargets and therapy. 2013;2:21-30.
6. Selamu LG, Singhe MS. Mental Health Care and Children Wellbeing in Ethiopia. J Neurol Neurol Disord. 2017;3(1):104.
7. Smith AL, Cohen JA, Hua LH. Therapeutic targets for multiple sclerosis: current treatment goals and future directions. Neurotherapeutics. 2017 Oct 1;14(4):952-60.
8. biogenoptions.com. [updated 2019; cited 2019 Nov 27]. Available from: https://www.biogenoptions.com/en_us/home/treatment-overview/tysabri.html
9. Amato MP, Krupp LB, Charvet LE, Penner I, Till C. Pediatric multiple sclerosis: cognition and mood. Neurology. 2016 Aug 30;87(9 Supplement 2):S82-7.
10. ucsfbenioffchildrens.org. [updated 2019; cited 2019 Nov 30]. Available from: https://www.ucsfbenioffchildrens.org/education/multiple_sclerosis_and_school_concerns/
11. Macías Islas MÁ, Ciampi E. Assessment and impact of cognitive impairment in multiple sclerosis: an overview. Biomedicines. 2019 Mar;7(1):22.
12. Vijayasingham L, Mairami FF. Employment of patients with multiple sclerosis: the influence of psychosocial–structural coping and context. Degenerative neurological and neuromuscular disease. 2018;8:15.
13. Alshammari E. Quality of Group Work Learning: Pharm. D. Students' experience from Saudi Arabia. Int. Res. J. Pharm. 2018;9(12):50-2.
14. Alshammari E. Stress profile and university performance of pharmacy students. International Journal of Research in Pharmaceutical Sciences. 2019 Oct 16;10(4):2647-53.
15. Staff NP, Lucchinetti CF, Keegan BM. Multiple sclerosis with predominant, severe cognitive impairment. Archives of Neurology. 2009 Sep 1;66(9):1139-43.
16. Zarei M, Chandran S, Compston A, Hodges J. Cognitive presentation of multiple sclerosis: evidence for a cortical variant. Journal of Neurology, Neurosurgery & Psychiatry. 2003 Jul 1;74(7):872-7.
17. Schaefer LM, Poettgen J, Fischer A, Gold S, Stellmann JP, Heesen C. Impairment and restrictions in possibly benign multiple sclerosis. Brain and behavior. 2019 Apr;9(4):e01259.
18. İlçin N, Tomruk M, Yeşilyaprak SS, Karadibak D, Savcı S. The relationship between learning styles and academic performance in TURKISH physiotherapy students. BMC medical education. 2018 Dec 1;18(1):291-8.
19. DeLuca J, Leavitt VM, Chiaravalloti N, Wylie G. Memory impairment in multiple sclerosis is due to a core deficit in initial learning. Journal of neurology. 2013 Oct 1;260(10):2491-6.
20. Chiaravalloti ND, DeLuca J. Cognitive impairment in multiple sclerosis. The Lancet Neurology. 2008 Dec 1;7(12):1139-51.
21. Krch D, Sumowski JF, DeLuca J, Chiaravalloti N. Subjective memory in multiple sclerosis is associated with initial-trial learning performance. Journal of the International Neuropsychological Society. 2011 May;17(3):557-61.
22. Shaurya Prakash R, De Leon AA, Klatt M, Malarkey W, Patterson B. Mindfulness disposition and default-mode network connectivity in older adults. Social cognitive and affective neuroscience. 2013 Jan 1;8(1):112-7.
23. Heiskanen S, Meriläinen P, Pietilä AM. Health-related quality of life–testing the reliability of the MSQOL-54 instrument among MS patients. Scandinavian journal of caring sciences. 2007 Jun;21(2):199-206.
24. Chiaravalloti ND, Moore NB, DeLuca J. The efficacy of the modified Story Memory Technique in progressive MS. Multiple Sclerosis Journal. 2019 Feb 11:1352458519826463.
25. Saenz A, Bakchine S, Jonin PY, Ehrle N. Multiple sclerosis and verbal episodic memory: critical review of cognitive processes and their assessment. Revue neurologique. 2015 Sep;171(8-9):624-45.
26. Parada-Fernández P, Oliva-Macias M, Amayra I, López-Paz JF, Lázaro E, Martinez O, Jometón A, Berrocoso S, García de Salazar H, Pérez M. Accuracy and reaction time in recognition of facial emotions in people with multiple sclerosis. Rev Neurol. 2015 Nov 16;61:433-40.
27. Owens EM, Denney DR, Lynch SG. Difficulties in planning among patients with multiple sclerosis: A relative consequence of deficits in information processing speed. Journal of the International Neuropsychological Society. 2013 May;19(5):613-20.
28. Ekmekci O. Pediatric multiple sclerosis and cognition: a review of clinical, neuropsychologic, and neuroradiologic features. Behavioural neurology. 2017;2017.
29. nationalmssociety.org. Multiple sclerosis quality of life – 54 (MSQOL-54). [updated 2019; cited 2019 Nov 27]. Available from: https://www.nationalmssociety.org/For-Professionals/Researchers/Resources-for-Researchers/Clinical-Study-Measures/Multiple-Sclerosis-Quality-of-Life-54-(MSQOL-54).