Behgam *et al. BMC Neurology* (2025) 25:101
https://doi.org/10.1186/s12883-025-04092-w

BMC Neurology

RESEARCH **Open Access**

Impact of general population stigmatization toward marriage in patients diagnosed with multiple sclerosis: a cross-sectional study

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Abstract

Background Multiple Sclerosis (MS) is a long-term condition affecting the central nervous system that typically manifests in young adults. Stigma poses significant psychosocial challenges for patients with MS, negatively impacting their personal and social lives. However, limited research has examined how MS-related stigmatization influences marriage. This study focused on unmarried individuals aged 20–40 years in Iran to determine the prevalence of societal stigma and their willingness to marry someone with MS.

Methods A researcher-designed questionnaire was used to collect data from 343 unmarried individuals in a cross-sectional study. In-person interviews were conducted to assess participants' overall understanding of MS and their views on marrying someone with the condition. The questionnaire measured sociodemographic variables and the degree of stigmatization toward MS by including concerns related to marriage with MS patients and their families.

Results Data were collected from 343 participants (53% female), with a mean age of 25.96 ± 6.05 years. Overall, 77.6% expressed reluctance to marry someone diagnosed with MS—primarily due to concerns about physical disabilities. Additionally, 47.2% were hesitant if a potential spouse's parent had MS, while 46.6% and 28.4% reported similar reservations regarding siblings and second-degree relatives, respectively. Participants employed in healthcare fields demonstrated significantly lower levels of stigma ($p = 0.031$). Younger individuals tended to hold more stigmatizing views ($p = 0.04$), and significant variations were also observed across different ethnic groups ($p < 0.001$).

Conclusions This study contributes to a more nuanced understanding of the social consequences of MS by providing valuable insights that can inform the development of strategies aimed at mitigating societal stigma. By enhancing awareness and promoting supportive interventions, it is possible to cultivate an inclusive environment that not only improves the quality of life for those affected by MS but also reduces stigma across various social contexts, including interpersonal relationships and marital dynamics.

Keywords Multiple sclerosis, Stigma, Marriage

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Background

Multiple sclerosis (MS) is a progressive, inflammatory, demyelinating disorder of the central nervous system (CNS). It is recognized as the second most common cause of neurological disability among young adults after trauma [1]. MS symptoms typically appear between the ages of 20 and 50 [1]. Because MS often emerges during a period when individuals are establishing their careers and families, its chronic and unpredictable nature, combined with visible physical disabilities, can lead to profound psychosocial consequences [2, 3]. Among these, social stigma represents a major challenge that may significantly diminish the quality of life for those affected by MS [4].

Goffman (1963) first addressed the concept of stigma in MS, linking it to ignorance, judgment, and negative public attitudes toward patients with the condition [5]. Stigma may manifest as perceived stigma (feelings of being unfairly judged or blamed), leading to withdrawal from social settings and discrimination in employment. Internalized stigma, shaped by an individual's sense of difference, can contribute to emotional distress, a distorted self-image, low self-confidence, depression, anxiety, and related psychosocial problems—including isolation, unemployment, missed educational opportunities, and reduced access to social services [6, 7].

Although extensive research has examined stigma in other chronic conditions such as epilepsy, schizophrenia, HIV, disabilities, obesity, and diabetes [8, 9, 10, 11, 12, 13], evidence regarding the stigma experienced by individuals with MS remains relatively limited. Most existing studies on MS-related stigma have focused on patients' perceptions, revealing that many individuals encounter a range of stigmatizing attitudes and behaviours within their social circles [1, 2, 3, 14, 15, 16, 17, 18, 19]. Additional research has examined the stigma experienced by caregivers of individuals with neurological or psychological disorders, showing that caregivers may also face discrimination related to their supportive roles [20, 21]. However, specific data on how MS-related stigma influences the marital lives of patients and the experiences of their caregivers remain scarce [22, 23, 24]. Given that MS often begins in early adulthood, a stage associated with the pursuit of long-term relationships or marriage, understanding how stigma shapes these decisions is critical. To date, no study has specifically examined how general population stigmatization affects the willingness to marry individuals with MS.

The societal stigma and misunderstandings surrounding MS can significantly influence the decisions of unmarried individuals considering marriage to someone diagnosed with this condition. The limited research on this topic underscores the urgent need for comprehensive studies. By investigating these issues, we can identify the challenges and concerns that arise, ultimately guiding the development of supportive measures, educational outreach, and advocacy efforts. These initiatives have the potential to reduce stigma and promote greater understanding in both relationships and marital contexts. Therefore, the present study aims to assess societal stigma among unmarried individuals aged 20–40 in Iran who do not have MS and to explore their attitudes toward marrying someone diagnosed with MS. It also seeks to determine the factors influencing these marital decisions, providing valuable insights into how best to address stigma and foster more inclusive social environments.

Methods

Participants

This cross-sectional study was conducted in Iran between March and June 2023 and involved 343 individuals aged 20 to 40. This age range was chosen because it represents a significant portion of the population likely to be considering marriage and starting a family, which are key factors in the context of the study. The numbers were generated using a computerized random generation. Participants were selected using a simple random sampling method from various public venues, including Laleh Park, local city train stations (e.g., Laleh Park station), Tehran University, and Kooy-e-Daneshgah dormitories, to ensure a diverse sample and enhance generalizability. Eligible participants were unmarried, free of an MS diagnosis, and possessed sufficient literacy skills to understand the questionnaire. A total of twenty-six individuals were excluded from the study due to insufficient prior knowledge about the disease, which would have required instruction from the researchers or because they were affected by a neurodegenerative disorder. These exclusion criteria ensured that participants possessed a foundational understanding of multiple sclerosis (MS) and were not directly impacted by a neurodegenerative condition, thereby enhancing the validity of the findings and the reliability of the data collection tool.

Before completing the questionnaire, the study's objectives and the confidentiality of all responses were clearly explained to the participants, who then provided informed consent. No payment or reward was offered. The study adhered to the principles outlined in the Declaration of Helsinki and received approval from the Ethics Committee of Tehran University of Medical Sciences (Ethical Code IR.TUMS.SINAHOSPITAL.REC.1401.127).

Study design

A researcher-developed questionnaire was used to assess stigmatizing attitudes toward MS. The questionnaire consisted of the following components:

1. **Sociodemographic and Background Variables**: This section collected demographic and personal information, including age, gender, place of origin, educational attainment (primary, secondary, or tertiary), occupational status (unemployed, student, employee, self-employed, or homemaker), ethnicity, employment in a medical setting, family history of medical conditions, and prior acquaintance with an individual diagnosed with MS.
2. **Stigmatizing Attitudes Toward Marriage to Individuals with MS**: Participants indicated their views on marrying someone with MS. This section addressed concerns related to fertility and childbearing, the potential effects of physical disability, the financial burdens associated with MS treatment, the risk of passing MS on to offspring, and possible employment instability.
3. **Stigmatizing Attitudes Toward Marrying Someone Whose Parents Have MS**: This section focused on concerns about entering a marriage in which a spouse's parents have MS. Participants were asked to express their worries regarding the potential development of MS in their future spouse or children, as well as issues related to parental disability.
4. **Stigmatizing Attitudes Toward Marrying Someone with First-Degree Relatives Diagnosed with MS:**This part explored whether the presence of MS among a prospective partner's siblings or first-degree relatives influenced the participant's attitude toward marriage. Questions addressed anxieties about an increased risk of MS in the spouse or future children and how this might affect marital decisions.

Before completing the questionnaires, participants received detailed explanations regarding the study's objectives and instructions. Each individual was allowed sufficient time for consideration and could ask questions. To minimize bias and potential errors, the researcher refrained from providing additional information about MS beyond what was necessary. Once all questionnaires were completed, the data were compiled and analyzed.

Statistical analysis

All statistical analyses were performed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA). Continuous variables are presented as means ± standard deviations, and categorical variables are reported as frequencies. The Kolmogorov–Smirnov test was used to assess the normality of variable distributions. Comparisons between groups were analyzed using the likelihood ratio chi-square test and independent-sample t-tests. A p-value of < 0.05 was considered statistically significant.

Results

Data were collected from 343 participants; 53% (181) were female, and the mean age was 25.96 ± 6.05 years. The demographic characteristics of the participants are summarized in Table 1.

The findings presented in Table 2 show the main social concerns regarding marriage decisions for individuals with MS or their families. 77.6% of participants expressed reluctance to marry someone diagnosed with MS, primarily due to fears surrounding potential physical disabilities. Furthermore, concerns shifted when considering familial connections to MS; 47.2% were hesitant to marry individuals whose parents had MS, mentioning worries about the possibility of their partner developing the condition in the future. With a similar pattern, 46.6% of participants indicated they would be unwilling to marry someone with siblings diagnosed with MS, while 28.4% expressed similar concerns regarding second-degree relatives.

Table 3 illustrates the relationship between medical occupation and stigma regarding marriage with individuals diagnosed with MS or their families. Participants working in healthcare reported significantly lower levels of stigmatization regarding marriage to individuals with MS compared to those in non-medical fields, with a p-value of 0.031.

Table 4 examines the relationship between ethnicity and stigma regarding marriage with individuals diagnosed with MS or their families. Stigma regarding Spouses affected with MS and Spouse's second-degree relatives affected with MS differed significantly in different ethnic groups (< 0.001 and 0.045, respectively).

Finally, Table 5 explores the relationship between the mean age of participants and their attitudes toward marriage with individuals diagnosed with MS and their families. The analysis reveals that younger participants displayed more stigmatized views compared to older individuals, with a p-value of 0.04.

Discussion

This study represents a pioneering effort to examine societal attitudes toward marrying individuals with MS. Beyond presenting quantitative data on public stigmatization; the study highlights the most significant concerns expressed by participants. The findings indicate that 77.6% of respondents reported reluctance to marry someone with MS. Their concerns primarily centered on the partner's potential physical disability, risks associated with childbearing, particularly the possibility of having children who might develop MS, and practical issues such as treatment expenses, unemployment, and infertility. In addition, 47.2% of participants expressed hesitation to marry a potential spouse whose parent had MS, citing two main concerns: the risk of developing MS in their

Table 1 The characteristics of participants

Characteristics variables			*N*(%*)
Gender		Male	162(47.2)
		Female	181(52.8)
Education		Primary or less	7(2)
		High school diploma	121(35.3)
		Associate degree	10(2.9)
		Bachelor's	103(30)
		Master's	76(22.2)
		PhD or higher	26(7.6)
Occupation		Unemployed	19(5.6)
		Student	169(49.4)
		Employee	81(23.7)
		Freelancer	57(16.6)
		Housewife/husband	11(3.2)
		Military servant	5(1.5)
Healthcare worker		General practitioner	11(3.2)
		Specialist	3(0.9)
		Neurology ward nurse	3(0.9)
		Non- Neurology ward nurse	4(1.2)
		Dentist	4(1.2)
		Pharmacist	7(2)
		Other	18(5.1)
Ethnicity		Turkish(Azeri)	76(22.2)
		Kurdish	15(4.4)
		Lur	21(6.1)
		Fars	188(54.9)
		Balouch	2(0.6)
		Arab	4(1.2)
		Mazani	9(2.6)
		Gilaki	1(2.9)
		Other	3(0.9)
Patient with MS acquaintance	No		244(71.1)
	Yes	Father	1(0.3)
		Mother	2(0.6)
		Brother	1(0.3)
		sister	1(0.3)
		2nd -degree relatives	6(1.7)
		3rd -degree relatives	34(9.9)
		Friends	31(9)
		Others	20(8.7)

partner or future children and the challenges posed by the parent's physical disability. Furthermore, 46.6% stated that they would not consider marriage if a prospective spouse's siblings had MS, and 28.2% reported similar reluctance regarding second-degree relatives with MS. The primary factor influencing these decisions appears to be anxiety about the future risk of MS affecting both the spouse and potential offspring.

Currently, there is a notable lack of research examining stigma specifically associated with choosing to marry someone with MS or other neurological disorders. Research focusing on epilepsy, a chronic, non-infectious neurological condition with similarities to MS, may offer insights. For example, Riasi et al. showed that stigma associated with epilepsy adversely affects marital status among individuals with epilepsy [27], making them more prone to divorce than their non-stigmatized counterparts. Similarly, Aydemir (2019) found that 27% of the general public expressed reluctance to marry someone with epilepsy [28]. According to Goodall et al., individuals with epilepsy who perceived higher levels of stigma were less inclined to form relationships, consider marriage, pursue education, secure employment, or engage in vocational training [22, 29]. These studies suggest that both internalized and externalized stigma can negatively influence the marital status of individuals with

Table 2 Influential concern regarding marriage decisions among individuals with multiple sclerosis and their families

Concerns	Yes/no		N (%*)			P value
			Female (%)	**Male (%)**	**Total**	
Spouse affected with MS	No		36(19.9)	38(23.6)	74(22.4)	0.405
	Yes	fertility	29(16)	34(21)	63(18.3)	
		Physical disability	110(60.8)	89(54.9)	199(57.8)	
		Treatment cost	36(19.9)	32(19.8)	68(19.8)	
		Affection of children in the future	47(26)	43(26.5)	90(26.2)	
		Work productivity loss and dismissal	43(23.8)	19(11.7)	62(18)	
		other	9(5)	13(8)	22(7.9)	
Spouse's parents affected by MS	No		95(53.1)	86(53.8)	181(52.8)	0.901
	yes	Affection of spouse in the future	50(27.6)	41(25.3)	91(26.5)	
		Affection of children in the future	46(25.4)	37(22.8)	83(24.1)	
		Physical disability of parents	15(8.3)	13(8)	28(8.2)	
		other	7(3.9)	10(6.2)	17(5)	
Spouse's siblings affected by MS	No		96(60)	86(59.7)	182(52.9)	0.961
	Yes	Affection of spouse in the future	38(21)	35(21.6)	73(21.3)	
		Affection of children in the future	39(21.5)	38(25.3)	77(22.4)	
		other	6(3.3)	4(2.5)	10(2.9)	
Spouse's second-degree relatives affected with MS	No		134(83.8)	111(77.1)	245(71.4)	0.142
	yes	Affection of spouse in the future	9(5)	20(12.3)	29(8.2)	
		Affection of children in the future	21(11.6)	16(9.9)	37(11.1)	
		other	2(1.1)	4(2.5)	6(1.7)	

Table 3 The relationship between medical occupation and stigma regarding marriage with individuals with MS

Social stigma domain		Medical occupation (%)	Non-medical occupation (%)	*P* value
Spouse affected with MS	Yes	45(90)	223(76.4)	0.031
	No	5(10)	69(23.6)	
Spouse's parents affected by MS	Yes	27(54)	131(45.3)	0.256
	No	23(46)	158(54.7)	
Spouse's siblings affected by MS	Yes	17(51.5)	105(38.7)	0.158
	No	16(48.5)	166(61.3)	
Spouse's second-degree relatives affected with MS	Yes	8(24.2)	51(18.8)	0.457
	No	25(75.8)	220(81.2)	

Table 4 The relationship between ethnical and cultural differences and stigma regarding marriage with individuals with MS

Social stigma domain		Turkish(%)	Kurdish(%)	Lur(%)	Fars(%)	Balouch(%)	Arab(%)	Mazani(%)	Gilaki(%)	Other(%)	*P* value
Spouse affected with MS	Yes	44(57.9)	13(86.7)	15(71.4)	153(83.6)	1(50%)	2(50)	9(100)	25(100)	3(100)	< 0.001
	No	32(42.1)	2(13.3)	6(28.6)	30(16.4)	1(50)	2(50)	0	0	0	
Spouse's parents affected by MS	Yes	27(35.5)	9(60)	7(33.3)	92(51.1)	0	1(25)	6(66.7)	11(44)	2(66.7)	0.139
	No	49(64.5)	6(40)	14(66.7)	88(48.9)	2(100)	3(75)	3(33.3)	14(56)	1(33.3)	
Spouse's siblings affected by MS	Yes	24(32.9)	6(46.2)	6(30)	68(43.3)	0	1(25)	4(50)	9(40.9)	3(100)	0276
	No	49(67.1)	7(53.8)	7(53.8)	89(56.7)	2(100)	3(75)	4(50)	13(59.1)	0	
Spouse's second-degree relatives affected with MS	Yes	12(16.4)	3(23.1)	2(10)	34(21.7)	0	1(25)	1(12.5)	3(13.6)	3(100)	0.045
	No	61(83.6)	0	18(90)	123(78.3)	2(100)	3(75)	7(87.5)	19(86.4)	0	

neurological conditions, leading to avoidance of marriage or higher divorce rates [27, 30].

Previous literature on marriage and MS often focuses on the perspectives of individuals already diagnosed with MS, many of whom experience fear and anxiety related to marital challenges or the prospect of marriage [25]. For instance, Abolhassani et al. identified marriage-related issues as a key challenge for patients with MS [25]. A study by Alghatani et al. in Saudi Arabia, a context culturally and religiously similar to Iran found that about half of individuals with MS hesitate to date due to concerns that potential partners may not be receptive to a relationship with someone who has the condition [26]. Many individuals feel avoided because of their diagnosis,

Table 5 The relationship between mean age of participants and stigma regarding marriage with individuals with MS

Social stigma domain		Mean age (SD)	*P* value
Spouse affected with MS	Yes	26.28(6.082)	0.057
	No	24.77(5.886)	
Spouse's parents affected by MS	Yes	25.98(6.131)	0.910
	No	25.90(6.030)	
Spouse's siblings affected by MS	Yes	25.98(6.131)	0.427
	No	25.90(6.030)	
Spouse's second-degree relatives affected with MS	Yes	26.72(6.827)	0.385

and single parents, in particular, worry about their suitability as spouses while managing MS [26].

Earlier research on the impact of an MS diagnosis has often focused on its effects on existing marriages, considering factors such as age at onset, marriage duration, having children, education level, physical ability, and employment status [2, 3, 26, 31, 32, 33]. In a large study by Pfleger et al. involving 2,538 patients, results showed that after five years of an MS diagnosis, the probability of remaining in a relationship was similar to that of a control group; however, after 24 years, the probability of staying in a relationship was 33% for the patient group versus 53% for the controls, indicating a substantial divergence over time. Interestingly, an increased risk of separation was observed primarily among men and couples without children [23]. It should be noted that this study's cohort began between 1980 and 1989, and relationship dynamics, including divorce rates, may vary across generations and cultural contexts. Additionally, the term "relationship" in that research encompassed not only marital unions but also informal partnerships lasting at least one year prior to the MS diagnosis, relationships that might be more prone to dissolution than formal marriages. More recent data from Landfeldt et al. examined the long-term consequences of MS on divorce risk in a sample of 3,988 patients compared to 15,992 individuals from the general Swedish population. Their findings revealed that while the risk of divorce among women did not differ significantly, men faced a 21% higher risk of divorce [24]. Similarly, Morales-Gonzalez's study of 371 Spanish patients reported a 31% incidence of divorce and separation after 10 years [34].

Our study also found that increased familiarity with individuals who have MS, coupled with lower educational levels, was more strongly associated with concerns about the risk of future children developing MS. In contrast, higher education levels were linked to greater anxiety regarding a spouse's potential physical disability [35].

Beyond individual experiences, the stigma associated with MS has significant sociological implications. These implications extend to interpersonal relationships, social roles, and community integration, affecting how individuals with MS navigate employment, family life, and community engagement. Misconceptions about MS may reinforce societal barriers that limit access to social support, healthcare services, and equitable opportunities. Recognizing these broader sociological dimensions, our study underscores the need for multifaceted interventions that address both individual and structural factors contributing to stigma.

Limitations of the study

This study is the first empirical investigation to explore how public stigma influences the willingness to marry individuals with MS, addressing an underexamined dimension of MS-related social challenges. However, it has certain limitations. The relatively small sample size and cross-sectional design may limit the generalizability of the findings. Additionally, because this research topic is largely unexplored, no validated questionnaire existed to precisely measure the stigma associated with marrying an individual with MS in the general population; therefore, a researcher-developed instrument was used. Due to the scarcity of data examining the societal implications of marrying individuals with chronic illnesses, direct comparisons between MS-related stigma and stigma related to other conditions are challenging. It remains unclear whether respondents' stigma toward MS is driven primarily by the nature of the illness itself or by its perceived characteristics. Our study aimed to gather data from a broad cross-section of Iranian society using public venues; however, the response rate may not be fully representative. Individuals working or studying in health-related fields may have participated more frequently due to their familiarity with the study's objectives and rapport with the researchers. Moreover, limiting participants to those aged 20–40 may have inadvertently increased the proportion of students and employed individuals in the sample. Future studies should consider larger sample sizes, include control groups representing other illnesses, and use designs that capture a more representative subset of the general population. Given that societal stigmatization, personal perceptions, and marriage-related concerns are culturally dependent and dynamic, examining this phenomenon in diverse regions and cultural contexts is essential. Additionally, assessing stigmatization levels before and after providing educational information on

MS could offer valuable insights into the potential impact of public education on societal attitudes.

Conclusion

The findings of this research have meaningful implications for both healthcare professionals and individuals affected by MS. For healthcare providers; these results emphasize the urgent need for targeted interventions and public awareness campaigns aimed at reducing MS-related stigma, particularly in relation to marriage and intimate partnerships. Recognizing these distinct social challenges is essential to creating more inclusive environments and fostering community understanding. For individuals with MS, awareness of prevalent societal attitudes can serve as a powerful tool, helping them navigate complex decisions about relationships and marriage. By acknowledging societal perceptions that may influence their lives, patients and their support networks can better advocate for emotional resilience, informed decision-making, and accessible support services.

Abbreviations

MS	Multiple Sclerosis
CNS	Central Nervous System

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12883-025-04092-w.

Supplementary Material 1

Acknowledgements

We express our gratitude to the patients and their companions who took part in the study, as well as to the sites and staff of the MS research center for supporting us in conducting the study.

Author contributions

ZE was responsible for design of the work and critically revised the paper. NB and AHS have made contributions to data collection and drafted the initial manuscript. SJ performed data analysis and reviewed the paper. MAS was in charge of designing the study and substantively revised and gave input to the manuscript.

Funding

The author(s) received no financial support for this article's research, authorship, and/or publication. MA Sahraian has received several fundings from Cinnagen, Roche, Novartis before.

Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Prior to completing the questionnaire, the study's objectives were thoroughly communicated to the participants, who then willingly joined the study after providing informed consent. The research adhered to the principles outlined in the Declaration of Helsinki and received approval from the Ethics Committee at Tehran University of Medical Science under the specified Ethical Code IR.TUMS.SINAHOSPITAL.REC.1401.127.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Received: 26 April 2024 / Accepted: 19 February 2025

References

1. Vitturi BK, Rahmani A, Dini G, Montecucco A, Debarbieri N, Bandiera P, et al. Stigma, discrimination and disclosure of the diagnosis of multiple sclerosis in the workplace: a systematic review. Int J Environ Res Public Health. 2022;19(15):9452.
2. Kalantari S, Karbakhsh M, Kamiab Z, Kalantari Z, Sahraian MA. Perceived social stigma in patients with multiple sclerosis: a study from Iran. Acta Neurol Taiwan. 2018;27(1):1–8.
3. Maurino J, Martínez-Ginés ML, García-Domínguez JM, Solar MD, Carcelén-Gadea M, Ares-Luque A, et al. Workplace difficulties, health-related quality of life, and perception of stigma from the perspective of patients with multiple sclerosis. Multiple Scler Relat Disorders. 2020;41:102046.
4. Aymerich M, Guillamón I, Jovell AJ. Health-related quality of life assessment in people with multiple sclerosis and their family caregivers. A multicenter study in Catalonia (Southern Europe). Patient Prefer Adherence. 2009;311:21.
5. Goffman E. Stigma: notes on the management of spoiled identity. Simon and schuster; 2009.
6. Buljevac M, Majdak M, Leutar Z. The stigma of disability: Croatian experiences. Disabil Rehabil. 2012;34(9):725–32.
7. Grothe L, Grothe M, Wingert J, Schomerus G, Speerforck S. Stigma in multiple sclerosis: the important role of sense of coherence and its relation to quality of life. Int J Behav Med. 2022:1–7.
8. Bandstra NF, Camfield CS, Camfield PR. Stigma of epilepsy. Can J Neurol Sci. 2008;35(4):436–40.
9. Aydemir N, Özkara Ç, Ünsal P, Canbeyli R. A comparative study of health related quality of life, psychological well-being, impact of illness and stigma in epilepsy and migraine. Seizure. 2011;20(9):679–85.
10. Schulze B, Angermeyer MC. Subjective experiences of stigma. A focus group study of schizophrenic patients, their relatives and mental health professionals. Soc Sci Med. 2003;56(2):299–312.
11. Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: psychometric assessment of the HIV stigma scale¶. Res Nurs Health. 2001;24(6):518–29.
12. Alegria Drury CA, Louis M. Exploring the association between body weight, stigma of obesity, and health care avoidance. J Am Acad Nurse Pract. 2002;14(12):554–61.
13. Tak-Ying Shiu A, Kwan JJY-M, Wong RY-M. Social stigma as a barrier to diabetes self-management: implications for multi-level interventions. J Clin Nurs (Wiley-Blackwell). 2003;12(1).
14. Broersma F, Oeseburg B, Dijkstra J, Wynia K. The impact of self-perceived limitations, stigma and sense of coherence on quality of life in multiple sclerosis patients: results of a cross-sectional study. Clin Rehabil. 2018;32(4):536–45.
15. Pérez-Miralles F, Prefasi D, García-Merino A, Ara JR, Izquierdo G, Meca-Lallana V, et al. Perception of stigma in patients with primary progressive multiple sclerosis. Multiple Scler Journal–Experimental Translational Clin. 2019;5(2):2055217319852717.
16. Anagnostouli M, Katsavos S, Artemiadis A, Zacharis M, Argyrou P, Theotoka I, et al. Determinants of stigma in a cohort of Hellenic patients suffering from multiple sclerosis: a cross-sectional study. BMC Neurol. 2016;16:1–10.
17. Cadden MH, Arnett PA, Tyry TM, Cook JE. Judgment hurts: the psychological consequences of experiencing stigma in multiple sclerosis. Soc Sci Med. 2018;208:158–64.
18. Pérez-Miralles F, Prefasi D, García-Merino A, Ara JR, Izquierdo G, Meca-Lallana V, et al. Short-term data on disease activity, cognition, mood, stigma and employment outcomes in a cohort of patients with primary progressive multiple sclerosis (UPPMS study). Multiple Scler Relat Disorders. 2021;50:102860.
19. Barta T, Kiropoulos L. The mediating role of stigma, internalized shame, and autonomous motivation in the relationship between depression, anxiety, and

psychological help-seeking attitudes in multiple sclerosis. Int J Behav Med. 2023;30(1):133–45.
20. Masoudi R, Khayeri F, Rabiei L, Zarea K. A study of stigma among Iranian family caregivers of patients with multiple sclerosis: A descriptive explorative qualitative study. Appl Nurs Res. 2017;34:1–6.
21. AboJabel H, Argavan E, Hassin-Baer S, Inzelberg R, Werner P. Exploring the perceptions and stigmatizing experiences of Israeli family caregivers of people with Parkinson's disease. J Aging Stud. 2021;56:100910.
22. Goodall J, Salem S, Walker RW, Gray WK, Burton K, Hunter E, et al. Stigma and functional disability in relation to marriage and employment in young people with epilepsy in rural Tanzania. Seizure. 2018;54:27–32.
23. Pfleger CCH, Flachs EM, Koch-Henriksen N. Social consequences of multiple sclerosis. Part 2. Divorce and separation: a historical prospective cohort study. Multiple Scler J. 2010;16(7):878–82.
24. Landfeldt E, Castelo-Branco A, Svedbom A, Löfroth E, Kavaliunas A, Hillert J. The long-term impact of multiple sclerosis on the risk of divorce. Multiple Scler Relat Disorders. 2018;24:145–50.
25. Abolhassani S, Yazdannik A, Taleghani F, Zamani A. Social aspects of multiple sclerosis for Iranian individuals. Disabil Rehabil. 2015;37(4):319–26.
26. Algahtani RM, Zahirah MOA, Alsuni ZI, Alfahmi AS, Alfahmi AS, Kabli NA. Assessment of social stigma among multiple sclerosis patients in Saudi Arabia: A cross-sectional study. Neurosciences J. 2024;29(4):246–51.
27. Riasi H, Rajabpour Sanati A, Ghaemi K. The stigma of epilepsy and its effects on marital status. Springerplus. 2014;3:1–6.
28. Aydemir N. Familiarity with, knowledge of, and attitudes toward epilepsy in Turkey. Epilepsy Behav. 2011;20(2):286–90.
29. Hatherall B, Newell JN, Emmel N, Baral SC, Khan MA. Who will marry a diseased Girl?? Marriage, gender, and tuberculosis stigma in Asia. Qual Health Res. 2019;29(8):1109–19.
30. Agarwal P, Mehndiratta M, Antony A, Kumar N, Dwivedi R, Sharma P, et al. Epilepsy in India: nuptiality behaviour and fertility. Seizure. 2006;15(6):409–15.
31. Spencer LA, Silverman AM, Cook JE. Adapting to multiple sclerosis stigma across the life span. Int J MS Care. 2019;21(5):227–34.
32. Sharifi N, Kohpeima Jahromi V, Zahedi R, Aram S, Ahmadi M. Social stigma and its relationship with quality of life in multiple sclerosis patients. BMC Neurol. 2023;23(1):408.
33. Powell B, Mills R, Tennant A, Young CA, Langdon D. Stigma and health outcomes in multiple sclerosis: a systematic review. BMC Neurol. 2024;24(1):346.
34. Morales-Gonzales J, Benito-León J, Rivera-Navarro J, Mitchell AJ, Group GS. A systematic approach to analyse health-related quality of life in multiple sclerosis: the GEDMA study. Multiple Scler J. 2004;10(1):47–54.
35. Alwafi HA, Meer AM, Shabkah A, Mehdawi FS, El-Haddad H, Bahabri N, et al. Knowledge and attitudes toward HIV/AIDS among the general population of Jeddah, Saudi Arabia. J Infect Public Health. 2018;11(1):80–4.

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