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Arabic translation, content validity and reliability of the Multiple Sclerosis Intimacy and Sexuality Questionnaire-19 (MSISQ-19)

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Abstract

Background The prevalence of sexual dysfunction (SD) in multiple sclerosis (MS) patients is accounted to affect nearly 75% of them with higher rate in men than women. Though most of the patients may desire to discuss confidentially the SD with their physician, but both the physician and the patient usually hesitate to break into this presumed taboo. Assuming that MS affects about 35.9 per 100,000 population, it is clearly a problem of paramount significance not to find, to the best of our knowledge, a specific scale for assessing SD in MS patients who speak Arabic. We aimed to translate the Multiple Sclerosis Intimacy and Sexuality Questionnaire-19 (MSISQ-19) from English into Arabic and then to Validate the Arabic version as a tool to evaluate the SD in MS patients.

Results We included 40 (21 males and 19 females) sexually active married MS patients. Every patient completed the Arabic translation of the MSISQ-19. Validity construction was explored by the Cronbach's alpha coefficient and the exploratory factor analysis. The Arabic version of the scale was evaluated for clarity, relevance, and translation of the content. The SD represents 45.5% in our study (47.6% in males, 43.4% in females).

Conclusion Through screening and diagnosis of SD in MS patients, MSISQ-19 would help both patients and physicians to invade the mystery of this hectic issue. In Arabic populations, Arabic version of MSISQ-19 could be a reliable, reproducible and validated tool for the targeting SD in MS patients.

Keywords MSISQ-19, Arabic version, Sexual dysfunction, Multiple sclerosis

Background

Multiple sclerosis (MS) is a well-known chronic immune mediated central nervous system (CNS) disease that affects particularly adults with age between 20 and 40 years. Unfortunately, it presents by diverse symptoms leading to deleterious physical disabilities and psychiatric sufferings. The quality of life turns to be a misery due to

growing morbidities involving cranial nerves, fecal and / or urinary functions, cerebellar, sensory, motor systems and sexual life [1–7].

Disturbance in the sexual function is highly prevalent in chronic neurologic disorders especially MS. Based on available clinical data, the prevalence of sexual disorders is accounted to affect nearly 75% of MS patients with higher rate in men than women (90% and 70%, respectively) [8–10].

Many forms of sexual dysfunctions (SD) are defined in MS. First, primary SD related, directly, to the neuronal structural injury that occurs in CNS impairing sexual performance and feelings. Secondary SD result from the indirect impact of motor and sensory impairment of MS

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sufferers; whereas, the tertiary sexual form usually results from the dysfunction related to emotional, psychological, cultural or social issues [9, 11, 12].

One of the major conflicts in addressing the issue of this serious hidden problem is the sense of embarrassment for both the patient and the treating physician. Moreover, many communities considered the personal sexual life is a confidential secrete taboo. For all of the previous mentioned causes the early diagnosis and managing such common problem is facing many obstacles [13].

For providing sexual counseling to the patient who may benefit, the first step is to design a valid, reliable, sensitive, and highly specific screening tool to evaluate sexual dysfunctions for those patients [13]. The Multiple Sclerosis Intimacy and Sexuality Questionnaire-19 (MSISQ-19) is one of MS specific, reliable tool that has been created for evaluating the impact of MS symptoms on sexual aspect from multidimensionality [11, 12].

At the time of writing our study and to the best of our knowledge, we did not find scale for assessing SD in multiple sclerosis patients in Arabic speaking countries.

Our aim is translating the MSISQ-19 from English to Arabic and then to Validate the Arabic version as a tool to measure the sexual dysfunction in patients with multiple sclerosis.

Methods

Study locality and duration

This cross-sectional study was carried out on 40 sexually active married MS patients during the period from August 2021 to July 2022 in multiple sclerosis clinics, University Hospitals after obtaining ethical approval from Medical Research Ethical committee, Institutional Review Board (code number: R.21.8.1401).

Target population and sample size

Eight experts in Neurology and Andrology evaluated the content validity of the Arabic version of MSISQ-19.

A convenience sample of 40 patients fulfilling MS revised McDonald's criteria 2017 [14] were recruited consecutively from the above mentioned clinics for reliability testing with thorough history taking and complete general, neurologic and andrologic examination. Written informed consent was taken from all patients, they were informed of their right withdraw from the study at any time. Personal identity was kept confidential.

Inclusion criteria: married MS males or females for at least 1 year marriage who have MS for at least 1 year with the Expanded Disability Status scale (EDSS) ≤ 8 , while any patient with other neurological, psychiatric, systemic, medication used or andrologic disorders causing SD was excluded from this study.

Study tool: The English version of the Multiple Sclerosis Intimacy and Sexuality Questionnaire-19 (MSISQ-19). It was developed by Sanders et al. [15].

MSISQ-19

The process of the translation and validation of the MSISQ scale included the following:

1) Forward and backward translation:

The scale was translated from the original English language into Arabic language by two independent bilingual translators whose native language is Arabic. One translator, a specialist in sexual medicine, is fluent in English with good knowledge about related terminology. The other was a certified translator. The two translators evaluated each other translated versions then they created an agreed single synthetic Arabic version.

The Arabic version of the scale was translated back into English by two other independent qualified translators unaware of the original English version. The two versions were checked with the original one and any inconsistencies or discrepancies were resolved.

The scale was cross-culturally adapted by a multidisciplinary bilingual expert committee composed of the four translators involved in the forward and back-translations, a methodologist (professor of epidemiology), and a professor of sexual medicine. The committee reviewed the final Arabic and English versions. The necessary modifications were introduced by consensus to assure semantic and conceptual equivalence between the original version and the Arabic one. A consolidated pre-final Arabic version of the scale was agreed upon.

2) Cognitive debriefing:

The pre-final Arabic version of the scale was tested on five patients with MS (not included in the pilot study) who were asked to complete the Arabic version of the scale. After that, cognitive debriefing process was utilized; each participant was interviewed about the meaning of each item and the chosen response. A minor modification was done at this stage and final Arabic version was produced.

3) Content validity.

To estimate the content validity, opinions of eight expert jurors were taken (all are males, five neurologists and three specialized in sexual medicine; three are lecturers, three assistant professors and two professors. Their mean duration of work was 17.25 years with SD of 8.46).

The Arabic version of the scale was evaluated for clarity, relevance, and translation of the content. The experts were asked independently to review each item (clarity and relevance) using three-point ordinal scale (translation), using yes or no. The content validity index (CVI) was calculated at the item level (I-CVI) and scale level (S-CVI). To obtain the CVI at the item level (I-CVI), the

number of experts judging the item as relevant or clear (rating 3) were divided by the total number of experts. The CVI for the entire scale (S-CVI) was assessed using the S-CVI with the average approach, by summing all I-CVI for relevancy divided by the number of items. The CVI for each expert (E-CVI) is number of items scored 3 (relevant or clear)/total number of items [16, 17].

Reliability was assessed in the forms of internal consistency as measured by Cronbach’s α . The final version was applied to 40 patients. Cronbach’s α value of 0.50–0.70 was acceptable, whereas 0.70 or higher shows good homogeneity among the items [18].

Statistical analysis

Data were analyzed with SPSS version 23 (Armonk, NY: IBM Corp.). The content validity indices were calculated at the item level (I-CVI) and scale level (S-CVI).

Spearman’s correlation coefficient (r) was calculated to measure the correlations between different items, domains and total score. Cronbach’s alpha was calculated to measure the internal consistency between items of each domain and the total scale. $P \leq 0.05$ was considered statistically significant.

Results

The content validity indices per items ranged from 0.75 to 1.0 for both relevance and clarity. The total scale content validity indices (S-CVI) were 0.934 and 0.967 for both relevance and clarity, respectively. The CVI per expert ranged from 0.632 to 1.0 for relevance and from 0.842 to 1.0 for clarity (Table 1).

The mean age of patients was 36.1 years ($SD = \pm 6.87$). 21 patients were males, 30.0% are current smokers, 82.5% has RRMS, 40.0% practice sex once per week, 42.5% were

Table 1 Content validity index per item (I-CVI) and per expert (E-CVI)

Item	I-CVI for relevance	I-CVI for clarity
1. Muscle tightness or spasms in my arms, legs, or body	1.0	1.0
2. Bladder or urinary symptoms	1.0	1.0
3. Bowel symptoms	1.0	0.875
4. Feelings of dependency because of MS	0.875	1.0
5. Tremors or shaking in my hands or body	0.875	0.875
6. Pain, burning, or discomfort in my body	0.875	1.0
7. Feeling that my body is less attractive	0.875	1.0
8. Problems moving my body the way I want during sexual activity	0.875	1.0
9. Feeling less masculine or feminine due to MS	1.0	1.0
10. Problems with concentration, memory, or thinking	0.875	0.875
11. Exacerbation or significant worsening of my MS	1.0	1.0
12. Less feeling or numbness in my genitals	1.0	1.0
13. Fear of being rejected sexually because of MS	0.875	1.0
14. Worries about sexually satisfying my partner	1.0	1.0
15. Feeling less confident about my sexuality due to MS	1.0	1.0
16. Lack of sexual interest or desire	0.875	1.0
17. Less intense or pleasurable orgasms or climaxes	1.0	1.0
18. Takes too long to orgasm or climax	0.75	0.75
19. Inadequate vaginal wetness or lubrication	1.0	1.0
Total scale content validity index (S-CVI)	0.934	0.967
Experts	E-CVI for relevance	E-CVI for clarity
Expert 1	0.947	0.947
Expert 2	0.895	0.947
Expert 3	1.0	1.0
Expert 4	1.0	1.0
Expert 5	1.0	1.0
Expert 6	1.0	1.0
Expert 7	0.632	0.842
Expert 8	1.0	1.0

I-CVI: Item-Content Validity Index; E-CVI: Expert-Content Validity Index; S-CVI: Scale-Content Validity Index

on interferon treatment, 42.5% were obese and the mean duration of disease was 8.68 ± 6.87 years (Table 2).

The mean score of the primary, secondary, tertiary and total scale were $12. \pm 4.77$, 21.2 ± 7.24 , 11.95 ± 4.84 and 45.55 ± 15.16 , respectively, while primary, secondary and tertiary sexual dysfunction (answer by: always, almost always and occasional) were 47.5%, 43% and 46%, respectively (Table 3).

The Cronbach's alpha of primary, secondary and tertiary domains as well as total scale were 0.901, 0.877, 0.933 and 0.946, respectively (Table 4).

The correlation coefficient between the different domains, total score and different items ranged from 0.1 to 0.94 (Table 5).

Discussion

Sexual function is a very complicated process related to the vascular, endocrine and neurological system [19]. Varying forms of sexual dysfunction that can affect the quality of life are common in patients suffering from neurological disorders especially multiple sclerosis disease [20].

Table 2 Socio-demographic and clinical characteristics of patients

	N. (%)	Mean \pm SD	Median (minimum–maximum)
Age (years)		36.1 ± 6.87	34.5 (25.0–52.0)
Sex: male	21 (52.5)		
Female	19 (47.5)		
Current smoker	12 (30.0)		
Coital frequency/week: 1	16 (40.0)		
2	15 (37.5)		
3	9 (22.5)		
MS type: SPMS	7 (17.5)		
RRMS	33 (82.5)		
Medication			
Fingolimod	8 (20.0%)		
Interferon	17 (42.5%)		
Imuran	3 (7.5%)		
Dimethyl fumarate	7 (17.5%)		
Teriflunomide	3 (7.5%)		
Ocrelizumab	2 (5.0%)		
BMI \geq 25	17 (42.5%)	29.43 ± 6.88	28.9 (23.2–37.5)
Marriage duration (years)		9.9 ± 6.13	8.5 (3.0–28.0)
Disease duration (years)		8.68 ± 6.87	6 (2.0–28.0)

N: number; SD: standard deviation; MS: multiple sclerosis; SPMS: secondary progressive multiple sclerosis; RRMS: relapsing remitting multiple sclerosis; BMI: body mass index

The incidence of sexual dysfunction in multiple sclerosis patients is higher when compared with patients suffering from other chronic diseases and healthy populations (73%, 39% and 13%, respectively) [21].

If MS patient unable to engage himself in a successful sexual relationship, the whole patient's family dynamics can be obviously influenced. Sexual satisfaction requires well trust, acceptance and good communication. For that reason, sexual dysfunction should not be dealt with as a single somatic dysfunction and it should be viewed in its emotional and cognitive spheres [20].

Previous studies exhibited that the sexual counseling is very essential. Furthermore, conversations about SD and educational materials in MS patients seemed to be helpful in providing adequate care [22, 23].

The effective treatment of any sexual dysfunction in MS patients begins with data provided to patients without negligence of other factors such as the etiology of the disease, sexual experience, age of the patient, duration of marriage, disease duration, and type of therapy [20].

Starting successful therapy begins when the physician displays concern about the quality of the patients' sexual life with paying attention to other consideration in mind such as diabetes, hypertension, incontinence, drug adverse effects and psychiatric disturbances [24].

For example, depression is highly prevalent in patients with MS. Depressive episodes as a result of feeling of dependence can lead to decreased sexual drive with fear of being sexually rejected from the partner, feeling of being less attractive, fear of abandonment and isolation [25].

In this context, exploration of sexually behavior-related areas is very essential: response to sexual stimulation, hygiene aspects, motor difficulties, fecal and urinary incontinence, libido, fertility prospects for sex life, and communication with partners. All considered the aspect that have been discussed in our study.

Our results revealed that majority of our patients were suffering from relapsing remitting MS (82.5%). All of them were receiving disease-modifying therapy with mean disease duration 8.68 years, 9.9 years mean marriage duration and 42.5% were obese. Additionally, the study revealed 40% of our patients were practicing sexual intimacy once per week, 37.5% twice/week and only 22.5% 3 times/week.

To determine the effect of MS manifestation on satisfactions, sexual function and quality of life, the MSISQ-19 was developed [15]. Despite of the high prevalence of sexual dysfunction in MS it should be noted that the Arabic patients may view this problem as taboo and try to conceal their sexual sufferings. This in mind and to the best of our knowledge,

Table 3 Distribution and mean score of items, domains and total score of the MSISQ-19 scale

Domain/item	Never (1)	Almost never (2)	Occasional (3)	Almost always (4)	Always (5)	Mean ± SD
Primary						12. ± 4.77
Item 12	13 (32.5)	12 (30.0)	12 (30.0)	3 (7.5)	0	2.13 ± 0.97
Item 16	11 (27.5)	13 (32.5)	11 (27.5)	4 (10.0)	1 (2.5)	2.28 ± 1.06
Item17	8 (20.0)	13 (32.5)	15 (37.5)	4 (10.0)	0	2.38 ± 0.93
Item18	7 (17.5)	11 (27.5)	10 (25.0)	8 (20.0)	4 (10.0)	2.78 ± 1.25
Item19	8 (20.0)	9 (22.5)	11 (27.5)	5 (12.5)	7 (17.5)	3.85 ± 1.37
Secondary						21.2 ± 7.24
Item1	12 (30.0)	11 (27.5)	10 (25.0)	5 (12.5)	2 (5.0)	2.34 ± 1.19
Item2	15 (37.5)	9 (22.5)	9 (22.5)	7 (17.5)	0	2.2 ± 1.14
Item3	20 (25.0)	18 (45.0)	2 (5.0)	0	0	1.55 ± 0.6
Item4	10 (25.0)	15 (37.5)	9 (22.5)	4 (10.0)	2 (5.0)	2.33 ± 1.12
Item5	10 (25.0)	14 (35.0)	9 (22.5)	5 (12.5)	2 (5.0)	2.38 ± 1.15
Item6	7 (17.5)	14 (35.0)	11 (27.5)	6 (15.0)	2 (5.0)	2.55 ± 1.11
Item8	13 (32.5)	10 (25.0)	10 (25.0)	4 (10.0)	3 (7.5)	2.35 ± 1.25
Item10	5 (12.5)	11 (27.5)	9 (22.5)	10 (25.0)	5 (12.5)	3.0 ± 1.25
Item11	10 (25.0)	12 (30.0)	8 (20.0)	7 (17.5)	3 (7.5)	2.53 ± 1.26
Tertiary						11.95 ± 4.84
Item7	10 (25.0)	8 (20.0)	14 (35.0)	7 (17.5)	1 (2.5)	2.53 ± 1.13
Item9	14 (35.0)	12 (30.0)	10 (25.0)	4 (10.0)	0	2.1 ± 1.01
Item13	9 (22.5)	14 (35.0)	10 (25.0)	7 (17.5)	0	2.38 ± 1.03
Item14	9 (22.5)	8 (20.0)	15 (37.5)	5 (12.5)	3 (7.5)	2.63 ± 1.2
Item15	10 (25.0)	14 (35.0)	10 (25.0)	5 (12.5)	1 (2.5)	2.33 ± 1.07
Total scale						45.55 ± 15.16

DD standard deviation

Table 4 Cronbach's alpha of total scale and its domains

	Cronbach's alpha
Primary	0.901
Secondary	0.877
Tertiary	0.933
Total scale	0.946

a valid, specific reproducible and reliable Arabic scale to evaluate SD in MS patients is lacking in Arabic communities.

Clearly, there was a persistent need to culturally adapting and validating multiple sclerosis-specific sexuality assessing tool such as the MSISQ-19. Our suggested Arabic scale was translated from the original English language into Arabic language by two independent bilingual translators whose native language is Arabic. The Arabic version of the scale was translated back into English by two other independent qualified translators unaware of the original English version (forward and backward translation).

The MSISQ-19 Arabic version reliability was proven by Cronbach's alpha that exhibit high internal

consistency for the total scale ($\alpha=0.946$), for the primary ($\alpha=0.901$), secondary ($\alpha=0.877$), and tertiary ($\alpha=0.933$) subscales. Our results confirmed construct validity for the primary, secondary, and tertiary SD, in accordance with the original validation study [15].

Our result revealed that primary, secondary and tertiary sexual dysfunction (patients answered by: always, almost always and occasional) were 47.5%, 43% and 46%, respectively.

Limitation of our study: The small sample size influenced the proposed cultural, educational, behavioral and social diversity that may be required to expand the coverage of our scale in different rural and urban areas.

Conclusion

The MSISQ-19 Arabic version is a reliable, reproducible and validated tool for the Arabic population. Moreover, it is easy to be clinically applicable and can be applied in the day-to-day care in multiple sclerosis outpatient's clinics. The use of MSISQ-19 Arabic version is a promising supportive tool in initial approach for sexuality assessment during regular follow-up visits. Definitely, this will pave an illuminated track to guide

Table 5 Correlation matrix between items, domains and total score

Item	Correlation coefficient (r)			
	Primary	Secondary	Tertiary	Total scale
1. Muscle tightness or spasms in my arms, legs, or body	0.25	0.63 ^{***}	0.29	0.47 ^{**}
2. Bladder or urinary symptoms	0.38 [*]	0.8 ^{***}	0.4 [*]	0.64 ^{***}
3. Bowel symptoms	0.25	0.53 ^{***}	0.35 [*]	0.45 ^{***}
4. Feelings of dependency because of MS	0.79 ^{***}	0.7 ^{***}	0.85 ^{***}	0.86 ^{***}
5. Tremors or shaking in my hands or body	0.1	0.71 ^{***}	0.22	0.39 [*]
6. Pain, burning, or discomfort in my body	0.07	0.72 ^{***}	0.21	0.39 [*]
7. Feeling that my body is less attractive	0.83 ^{***}	0.64 ^{***}	0.88 ^{***}	0.87 ^{***}
8. Problems moving my body the way I want during sexual activity	0.76 ^{***}	0.64 ^{***}	0.84	0.83 ^{***}
9. Feeling less masculine or feminine due to MS	0.76 ^{***}	0.6 ^{***}	0.87 ^{***}	0.81 ^{***}
10. Problems with concentration, memory, or thinking	0.41 ^{**}	0.75 ^{***}	0.5 ^{***}	0.66 ^{***}
11. Exacerbation or significant worsening of my MS	0.56 ^{***}	0.79 ^{***}	0.66 ^{***}	0.78 ^{***}
12. Less feeling or numbness in my genitals	0.75 ^{***}	0.44 ^{**}	0.67 ^{***}	0.65 ^{***}
13. Fear of being rejected sexually because of MS	0.79 ^{***}	0.61 ^{***}	0.9 ^{***}	0.83 ^{***}
14. Worries about sexually satisfying my partner	0.74 ^{***}	0.59 ^{***}	0.88 ^{***}	0.8 ^{***}
15. Feeling less confident about my sexuality due to MS	0.81 ^{***}	0.56 ^{***}	0.9 ^{***}	0.82 ^{***}
16. Lack of sexual interest or desire	0.87 ^{***}	0.5 ^{***}	0.83 ^{***}	0.8 ^{***}
17. Less intense or pleasurable orgasms or climaxes	0.85 ^{***}	0.44 ^{**}	0.83 ^{***}	0.76 ^{***}
18. Takes too long to orgasm or climax	0.94 ^{***}	0.43 ^{**}	0.81 ^{***}	0.78 ^{***}
19. Inadequate vaginal wetness or lubrication	0.87 ^{***}	0.48 ^{**}	0.69 ^{***}	0.75 ^{***}
Primary		0.53 ^{***}	0.88 ^{***}	0.87 ^{***}
Secondary			0.65 ^{***}	0.85 ^{***}
Tertiary				0.92 ^{***}

r: correlation coefficient; MS: multiple sclerosis

multidimensional management ending in guarantee for satisfactory sexual life in multiple sclerosis patients.

Abbreviations

α	Alpha
CNS	Central nervous system
CVI	Content Validity Index
E-CVI	Expert Content Validity Index
EDSS	Expanded Disability Status scale
I-CVI	Item level Content Validity Index
MS	Multiple sclerosis
MSISQ -19	Multiple Sclerosis Intimacy and Sexuality Questionnaire-19
S-CVI	Scale level Content Validity Index
SD	Sexual dysfunction
SD	Standard deviation
r	Correlation coefficient

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Author contributions

AAAM, SSES, AHEG, HIZ, AAS, MFR and AFI carried out the work. AAM and AFI performed the protocol. AHG did the statistical analysis, AAM, SSS, HIZ, AAS, MFR and AFI were responsible for collecting the scientific data. AAM wrote the initial draft of the manuscript. AAM and SSS did revision of manuscript, AFI was responsible for andrological examination of all patients, share in writing the manuscript. All authors read and approved the final version to be published.

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Availability of data and materials

The data supporting the results of this article are included within the article.

Declarations

Ethics approval and consent to participate

We took permission for the translation, adaptation and applying psychometric testing of the scale from the originators of the scale. We obtained ethical approval from Medical Research Ethical committee, Institutional Review Board, Mansoura Faculty of Medicine, Mansoura University, to conduct our study (code number: R.21.8.1401). All patients gave written informed consent. The procedures followed were in accordance with our protocol. We recruited 40 multiple sclerosis patients (21 males and 19 females) who attended at neurology outpatient clinics of Mansoura and Helwan University Hospitals from August 2021 to July 2022.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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