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Validity and Reliability of the Turkish Version of the Questionnaire for the Assessment of Dysphagia in Multiple Sclerosis

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ABSTRACT

Introduction: The aim of this study was to investigate the validity and reliability of the Turkish version of the Questionnaire for the Assessment of DYsphagia in MUltiple Sclerosis (DYMUS) that has been developed for evaluating dysphagia in patients with multiple sclerosis.

Methods: This methodological study was conducted in the neurology clinic and outpatient department of a training hospital between March 15 and September 15, 2015. The study included 117 patients aged 18 years and over who had a definite diagnosis of multiple sclerosis, could communicate in Turkish, and volunteered to be included. Data were collected using a descriptive information form, the DYMUS, and the Eating Assessment Tool (EAT-10). The scale was translated and back translated to determine the language validity, and a specialist was consulted to make sure the content was valid. We used the EAT-10 and Kurtzke's Expanded Disability Status Scale (EDSS) concurrently to test the criterion-related validity. The test–retest procedure was used at 1-week intervals for 37 patients in this study. Descriptive statistics, factor analysis, Kappa analysis, reliability analysis, and correlation analysis were used to analyze the data.

Results: Factor analysis revealed that the scale was bifactorial, and this was consistent with its original form. There were positive and statistically significant relationships between the DYMUS and EAT-10 (r=0.90, p<0.001) and the mean EDSS scores (r=0.49, p<0.001). The internal consistency of the total scale was high (Cronbach's alpha coefficient= 0.91). The Cronbach's alpha coefficients pertaining to dysphagia for solids and liquids were determined to be 0.88 and 0.83, respectively. The total scale and subscales demonstrated a high test–retest reliability (r=0.79–0.95, p<0.001).

Conclusion: In this study, the Turkish version of the DYMUS was found to be a valid and reliable tool for evaluating dysphagia in patients with multiple sclerosis.

Keywords: Dysphagia, validity, reliability, mutiple sclerosis

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INTRODUCTION

Swallowing is a complex function resulting from voluntary and involuntary functions of the oral, pharynx, larynx, esophagus, and respiratory muscles with other structures (1). A swallowing disorder or loss of swallowing ability is called dysphagia; it leads to the development of following lesions in various areas of the cerebral cortex or neuromuscular conduction problems related to swallowing (2). Dysphagia is a life-threatening symptom in patients with multiple sclerosis (MS), and its incidence varies between 33% and 43% (3). Aspiration pneumonia that develops as a consequence of dysphagia is among the most common causes of mortality in patients with MS. The malnutrition and dehydration caused by dysphagia also contribute to the mortality in this patient group (3,4). Detecting dysphagia in the early period with a rapid and easy-to-use screening method can facilitate the prevention of such complications. Therefore, an early diagnosis of dysphagia in the subclinical period is of vital importance in the management of complications (4). The main methods used in the evaluation of swallowing are patient history, physical examination, comprehensive neurological evaluation, videofluoroscopic swallowing evaluation, fiberoptic endoscopic swallowing evaluation, and EMG (5,6).

Non-invasive methods can also be used in the clinical and subclinical diagnosis, evaluation, and follow-up of dysphagia in patients. Methods with few side effects that are easy to use, cost effective, objective, measureable, repeatable, and suitable for advanced neurological disorders are recommended for this purpose (6). A study group comprising an Italian neurology specialist experienced in the field of MS developed the Questionnaire for the Assessment of DYsphagia in MUltiple Sclerosis (DYMUS) containing 10 items in 2008. The preliminary study on 226 patients with MS revealed that the DYMUS is a valid and reliable scale for the early detection of dysphagia with a significant positive correlation between the scale and Kurtzke's Expanded Disability Status Scale (EDSS) score (7). Another study has again evaluated the validity and reliability of the DYMUS in 1734 patients of 13 Italian MS centers (8). The DYMUS is a reliable and easy-to-use tool for evaluating oropharyngeal dysphagia in patients with MS (7,8). There is no valid and reliable measurement tool to evaluate dysphagia specific to patients with MS in our country. Therefore, we aimed to conduct a validity and reliability assessment for the Turkish version of the DYMUS in this study.

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METHODS

This methodological study comprised 140 patients with MS who had been treated as inpatients at the neurology clinic of a training hospital or had presented at the outpatient department of the clinic between March 15 and September 15, 2015. The sample comprised 117 patients aged 18 years or over who had been diagnosed with MS according to McDonald's criteria (9), could communicate in Turkish, volunteered to participate, and had no cognitive or verbal communication obstacles. Patients who suffered from another idiopathic demyelinating disease that could lead to difficulty in swallowing, stroke, head and neck cancer, Alzheimer's disease, Parkinson's disease, or dementia; had previously undergone major surgery; and were receiving chemotherapy or radiotherapy were not included. The sample size should be more than 5–10 times the scale's number of items to be able to perform factor analysis for assessing the validity and reliability of a scale. The test–retest procedure was used at 1-week intervals for 37 patients in the study.

Permission was obtained from the authors who had developed the Turkish version of the scale from its original English version. The scale was first translated into Turkish by the authors and five bilingual specialists to test for language validity. The scale's Turkish translation was then back translated to English by three specialists who knew both English and Turkish. Following the back translation, the authors and specialists who performed the back translation evaluated the Turkish and English expressions and modified those that were not clear. The scale was then evaluated by a neurology specialist, specialist therapist in the field of dysphagia, and specialist nurse to ensure content validity, and various changes were made according to their suggestion. These specialists then came to a consensus on the final version of the scale. The scale's final form was administered to 10 patients with MS at various educational levels, and the patient's opinions received regarding how easy it was to read and understand the items were recorded. It was found that the patients correctly interpreted the scale items.

Ethical Aspect of the Study

Permission was obtained from the Ethics Committee of the Gülhane Military Medical Academy on February 9, 2015 (No: 1648.4-304). Written informed consent was obtained from the patients before data collection by providing an explanation of the aim.

Data Collection Tools

A descriptive information form, the DYMUS, and the Eating Assessment Tool (EAT-10) were used to collect study data. The data were obtained through face-to-face interviews with the patients and the medical records.

Descriptive Information Form: This form was developed as a result of a literature survey by the authors to determine the sociodemographic and disorder-related characteristics of patients. The Descriptive Information Form included questions on age, sex, educational status, disease duration, MS type, drugs used, whether other chronic diseases were present, and the EDSS score. The EDSS score varied between 0 and 10 with higher scores indicating worse neurological disorder and disability (10). The EDSS score was determined from the medical records in this study.

Questionnaire for the Assessment of DYsphagia in MUltiple Sclerosis (DYMUS): The DYMUS, developed by Bergamaschi et al. (7,8), has been proven to be a beneficial and consistent scale for the evaluation of oropharyngeal dysphagia in patients with MS. The scale includes two subdimensions, i.e., dysphagia for solids (items 1, 3, 4, 5, 7, 8, and 10) and dysphagia for liquids (items 2, 6, and 9). All the items of the scale are coded as "No=0" and "Yes=1," and the total scale score varies between 0 and 10. A "Yes" response to at least one of the DYMUS items indicates dysphagia, whereas a score of 3 or more indicates severe dysphagia. Bergamaschi et al. (7) have reported high internal consistency for the total scale (Cronbach's alpha coefficient=0.88) and dysphagia for solids and liquids subdimensions (Cronbach's alpha coefficient=0.85 and 0.87, respectively).

Eating Assessment Tool (EAT-10): The EAT-10 has been developed by Belafsky et al. (11) in 2008 and is used to evaluation the dysphagia symptom severity and response to treatment. This single-factor scale comprises 10 items, each scored from 0 to 4. The total score varies between 0 and 40. A score of 3 or above is considered abnormal (11). Demir et al. (12) have performed the Turkish validity and reliability study and found a Cronbach's alpha coefficient of 0.90 and 0.91, respectively. The Cronbach's alpha coefficient of the scale in the current study was 0.93.

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS Inc.; Chicago, IL, USA) 16.0 statistical package software was used for data analysis. Descriptive statistics (number-percentage, mean, standard deviation, median, and minimum–maximum values) were used to define the study data. The confirmatory factor analysis technique was used for factor analysis of the scale, and the Spearman's correlation coefficient was used for assessing the scale validity. The internal consistency was evaluated by the correlation of the Cronbach's alpha coefficient and total item score with the Pearson's correlation coefficient. The relationship between the DYMUS and EAT-10 was evaluated using Kappa consistency analysis. The confidence interval for statistical analyses was accepted as 95% ($p<0.05$).

RESULTS

The sociodemographic and clinical characteristics of the patients are presented in Table 1. The mean age of the patients was 36.6±10.1 years. Females comprised 67.5%, of which 77.4% were primary and secondary school graduates. The mean EDSS score was 2.1±2.4. The MS was of the recurring–remitting type in 81.2%, it had a duration of longer than 60 months in 47.0%, and MS medication was used by 89.2% (Table 1).

Table 2 shows the factor loads and variance values based on the Turkish version of the DYMUS. The results show that the scale is bifactorial; this is consistent with its original form. Items 1, 3, 4, 5, 7, 8, and 10 of the scale are for the dysphagia for solids and items 2, 6, and 9 are for the dysphagia for liquids subdimension. Factor 1 explains 54.8% and factor 2 10.2% of the total variance with the two factors explaining 65.0% of the total variance.

We checked the relationship between the EAT-10 and mean EDS scores to evaluate the measure-dependent validity of the Turkish version of the DYMUS. The analysis revealed a strong positive and statistically significant relationship between the DYMUS and mean EAT-10 scores ($r=0.81–0.90$, $p<0.001$) (Table 3). We found that the DYMUS and mean EAT-10 scores were correlated (Kappa=0.83). There was a moderate positive and statistically significant relationship between the DYMUS and mean EDSS scores ($r=0.49$, $p<0.001$).

We found high internal consistency for the DYMUS total scale (Cronbach's alpha coefficient=0.91). The Cronbach's alpha coefficient was 0.89 for the dysphagia for solids and 0.83 for the dysphagia for liquids subdimension. Table 4 reveals the corrected total item correlations and the Cronbach's alpha coefficients for the Turkish version of the DYMUS when the item is deleted. The total item correlation was higher for item 1 ($r=0.76$) and lower for items 8 and 10 ($r=0.60$) of the scale.

Table 5 shows the DYMUS test–retest correlations according to the results of the repeated interviews with patients. The total scale and mean

subdimension scores of the study had a strong positive and statistically significant relationship (r=0.79–0.95, p<0.001).

The sensitivity of the DYMUS was 96.4% and specificity was 87.1% when the response to at least one scale item was "Yes" in the study. The total DYMUS score was 1 or more in 45.3% of the patients. The mean total DYMUS score was 2.61±3.22, whereas the mean subdimension scores were 1.70±2.25 for dysphagia for solids and 0.90±1.12 for dysphagia for liquids (Table 3). Table 4 shows the distribution of the responses to the scale items. Patients most frequently complained of difficulty in swallowing liquids (35.9%), cough after swallowing liquids (32.5%), and difficulty in swallowing solids (31.6%). They least complained of weight loss in the last 6 months (13.7%).

DISCUSSION

We evaluated the validity and reliability of the Turkish version of the DYMUS in this study. It is essential for dysphagia to be detected early in highrisk populations (13). DYMUS is a subjective measurement tool used to evaluate dysphagia at an early stage in patients with MS (7,8). The use of measurement tools in different populations requires that they have similar validity and reliability (14).

Specialists validated the face and content validity of the Turkish version of the DYMUS in this study. Explanatory factor analysis in our study revealed that the DYMUS comprised two factors (dysphagia for solids and liquids) and that the factor structure was consistent with the original form of the scale (7,8). The measurement validity is determined on the basis of the strength of the relationship between the scale and the measurement tool it is compared with (15). We used the EAT-10 simultaneously to test the measurement validity of the DYMUS in this study. We found a positive and significant relationship between the DYMUS and mean EAT-10 scores. Bergamaschi et al. (7) used the mean EDSS score as the criterion to determine the measurement validity of the DYMUS. Similar to our study, they reported a positive and significant relationship between the DYMUS and mean EDSS scores.

The total internal consistency of the Turkish version of the DYMUS has been shown to be high (Cronbach's alpha coefficient=0.91). It has been reported that an internal consistency coefficient over 0.60 is acceptable for scales (15). Bergamaschi et al. (7,8) have similarly reported a high internal consistency coefficient for the scale (Cronbach's alpha=0.88 and 0.91). Bergamaschi et al. (7) have reported better internal consistency of the DYMUS for patients with mild clinical disorder. The sample in our study was similar to that of Bergamaschi et al. (7). Better internal consistency of the DYMUS in patients with mild clinical disorder provides an opportunity to use preventive interventions. The internal consistency for the Portuguese version of the scale was reported to be 0.72 (16). The Cronbach's coefficient was 0.88 for the dysphagia for solids subdimension and 0.83 for the dysphagia for liquids subdimension in our study. Bergamaschi et al. (7,8) have reported Cronbach's alpha coefficients of 0.85 and 0.89 for dysphagia for solids and 0.87 and 0.86 for dysphagia for liquids. Sales et al. (16) have reported a Cronbach's alpha coefficient of 0.65 for dysphagia for solids and 0.67 for dysphagia for liquids using the Portuguese version of the DYMUS. Our results also support these results. We found a high test–retest consistency of the Turkish version of the DYMUS in this study. The test–retest consistency was not evaluated when the original form was developed (7,8).

When a "Yes" response was provided for at least one of the items in the Turkish version of the DYMUS, the screening method showed quite high sensitivity (96.4%) and specificity (87.1%) for the risk of dysphagia. In other words, a "Yes" response for at least one item in the Turkish version of the DYMUS indicates that the patient is at a risk of dysphagia. Our results are consistent with those of Bergamaschi et al. (7,8).

Table 1. Sociodemographic and clinical characteristics of patients (n=117)

Variables		Values
Age		
Mean±SD		36. 6±10. 1
Min.–Max.		19-61
Sex, n (%)	Female	79 (67.5)
	Male	38 (32.)
EDSS		
Mean±SD		2. 1±2.4
Min.–Max.		0-8
Education status, n (%)	Illiterate	3(2.6)
	Primary and secondary school	32 (77.4)
	High school	28 (23.9)
	University and above	54 (46.2)
MS subtype, n (%)		
	Relapsing pemitting	95 (81.2)
	Primary progressive	8 (6.8)
	Secondary progressive	11 (9.4)
	Relapsing progressive	2 (1.7)
	Undefined	1 (0.9)
Disease duration (month), n (%)	0-6	10 (8.5)
	7-12	11 (9.4)
	13-60	37 (31.6)
	> 60	55 (47.0)
	Unknown	4 (3.4)
Medicine use for MS, n (%)	Yes	97 (82.9)
	No	20 (17.1)

SD: standard deviation; MS: multiple sclerosis; EDSS: Kurtzke's Expanded Disability Status Scale

Table 2. Factor loadings and variance values for the Turkish version of the DYMUS (n=117)

No	Item	Factor 1 Dysphagia for solids	Factor 2 Dysphagia for liquids
4	Food sticking	0.78	
7	Needs several swallowing actions to swallow solids	0.78	
1	Difficulty swallowing solids	0.78	
3	Globus sensation	0.74	
8	Cuts food small pieces to swallow	0.66	
5	Coughing after ingestion of solids	0.65	
10	Weight loss	0.56	
2	Difficulty swallowing liquids		0.87
6	Coughing after ingestion of liquids		0.84
9	Takes many sips to drink		0.73
Eigenvalue		5.48	1.02
Variance (%)		54.8	10.2

DYMUS: Questionnaire for the Assessment of DYsphagia in MUltiple Sclerosis

Table 3. The relationships between the Turkish version of the DYMUS and EAT-10 (n=117)

		Mean±SD	Median	Min.–Max.	EAT-10*
DYMUS	Dysphagia for solids	1.70±2.25	0.00	0.00-7.00	r=0.81, p<0.001
	Dysphagia for liquids	0.90±1.12	0.00	0.00-3.00	r=0.82, p<0.001
	Total score	2.61±3.22	1.00	0.00-10.00	r=0.90, p<0.001
EAT-10		4.79±6.48	1.00	0.00-32.00	

SD: standard deviation; DYMUS: Questionnaire for the Assessment of DYsphagia in MUltiple Sclerosis; EAT-10: Eating Assesment Tool-10; *r=Spearman's corelation coefficient

Table 4. The distribution of the answers given by the patients for the Turkish version of the DYMUS, corrected total item corelations and Cronbach's alpha values if item is deleted (n=117)

No	Item	Yes (n, %)	No (n, %)	Corrected total item correlations	Cronbach's alpha values if item is deleted
1	Difficulty swallowing solids	37 (31.6)	80 (68.4)	0.76	0.89
2	Difficulty swallowing liquids	42 (35.9)	75 (64.1)	0.67	0.90
3	Globus sensation	34 (29.1)	83 (71.9)	0.67	0.90
4	Food sticking	31 (26.5)	86 (74.5)	0.63	0.90
5	Coughing after ingestion of solids	22 (22.2)	95 (78.8)	0.74	0.89
6	Coughing after ingestion of liquids	38 (32.5)	79 (67.5)	0.69	0.90
7	Needs several swallowing actions to swallow solids	28 (23.9)	89 (72.1)	0.67	0.90
8	Cuts food small pieces to swallow	26 (22.2)	91 (78.8)	0.60	0.90
9	Takes many sips to drink	26 (22.2)	91 (78.8)	0.66	0.90
10	Weight loss	16 (13.7)	101 (87.3)	0.60	0.90

DYMUS: Questionnaire for the Assessment of DYsphagia in MUltiple Sclerosis

Table 5. Test–retest correlations for the Turkish version of the DYMUS (n=37)

	Test–retest correlation	
DYMUS	**r***	**p**
Dysphagia for solids	0.79	<0.001
Dysphagia for liquids	0.95	<0.001
Total score	0.90	<0.001

DYMUS: Questionnaire for the Assessment of DYsphagia in MUltiple Sclerosis; *r=Pearson's corelation coefficient

The early diagnosis of dysphagia at the subclinical stage in patients with MS is critical for the management of complications (13). We found that 45.3% of the patients in this study had a total DYMUS score of 1 or over. Sales et al. (16) found a rate of 58% in patients with MS in their study where they used the same scale. Bergamaschi et al. (7,8) reported the dysphagia rate in patients with MS to be 35% and 31.5% using the DYMUS. Poorjavad et al. (4) used another screening test and found dysphagia in 31.7% of patients with MS. Weisner et al. (6) reported dysphagia in 75% of patients with MS even when there was no clinical sign on videofluoroscopic evaluation. The rate of dysphagia in MS varies in the relevant literature and more extensive studies are needed.

In conclusion, we found that the Turkish version of the DYMUS was a valid, reliable, and easy-to-use tool that could be employed in the evaluation of dysphagia in patients with MS. Therefore, we suggest that healthcare staff should use this tool to determine patients at risk of dysphagia and direct them to more advanced diagnostic tests. This will facilitate the prevention of dysphagia-related complications in patients with MS, such as malnutrition, dehydration, and aspiration. We also recommend that healthcare staff be extra careful when diagnosing dysphagia in patients who are not positive for any of the DYMUS items other than the subjective criterion of weight loss.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Gulhane Military Medical Academy (1648.4-304).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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Author Contributions: Concept – EGT, BK, ŞD; Design – EGT, BK; Supervision – BK, ŞD; Resources – EGT, AÇ; Materials – EGT, AÇ; Data Collection and/or Processing – EGT, AÇ, BK; Analysis and/or Interpretation – EGT, BK, ND, CA; Literature Search – EGT, BK, ND; Writing Manuscript – BK, EGT; Critical Review – EGT, BK, ND, CA, AÇ, ŞD.

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REFERENCES

1. De Pauw A, Dejaeger E, D'hooghe B, Carton H. Dysphagia in multiple sclerosis. Clin Neurol Neurosur 2002; 104:345-351. [CrossRef]
2. Tassorelli C, Bergamaschi R, Buscone S, Bartolo M, Furnari A, Crivelli P, Alfonsi E, Alberici E, Bertino G, Sandrini G. Dysphagia in multiple sclerosis: from pathogenesis to diagnosis. J Neuro Sci 2008; 29:360-363. [CrossRef]
3. Calcagno P, Ruoppolo G, Grasso M, De Vincentiis M, Paolucci S. Dysphagia in multiple sclerosis–prevalence and prognostic factors. Acta Neurol Scand 2002; 105:40-43. [CrossRef]
4. Poorjavad M, Derakhshandeh F, Etemadifar M, Soleymani B, Minagar A, Maghzi AH. Oropharyngeal dysphagia in multiple sclerosis. Mult Scler 2010; 16:362-365. [CrossRef]

5. Ayanoğlu AE, Öz F. Yutma bozukluklarında tanı. Acıbadem Üniversitesi Sağlık Bilimleri Dergisi 2012; 3:1-6.
6. Wiesner W, Wetzel S, Kappos L, Hoshi M, Witte U, Radue E, Steinbrich W. Swallowing abnormalities in multiple sclerosis: correlation between videofluoroscopy and subjective symptoms. Eur Radiol 2002; 12:789-792. [CrossRef]
7. Bergamaschi R, Crivelli P, Rezzani C, Patti F, Solaro C, Rossi P, Restivo D, Maimone D, Romani A, Bastianello S. The DYMUS questionnaire for the assessment of dysphagia in multiple sclerosis. J Neuro Sci 2008; 269:49-53. [CrossRef]
8. Bergamaschi R, Minguzzi S, Amato MP, Patti F, Bonavita S, Grasso MG, Ghezzi A, Rottoli M, Gasperini C, Maimone D. Validation of the DYMUS questionnaire for the assessment of dysphagia in multiple sclerosis. Funct Neurol 2009; 24:159-162.
9. McDonald WI, Compston A, Edan G, Goodkin D, Hartung HP, Lublin FD, McFarland HF, Paty DW, Polman CH, Reingold SC. Recommended diagnostic criteria for multiple sclerosis: guidelines from the International Panel on the diagnosis of multiple sclerosis. Ann Neurol 2001; 50:121-127. [CrossRef]
10. Kurtzke JF. Rating neurologic impairment in multiple sclerosis an expanded disability status scale (EDSS). Neurology 1983; 33:1444-1452. [CrossRef]
11. Belafsky PC, Mouadeb DA, Rees CJ, Pryor JC, Postma GN, Allen J, Leonard RJ. Validity and reliability of the Eating Assessment Tool (EAT-10). Ann Otol Rhinol Laryngol 2008; 117:919-924. [CrossRef]
12. Demir N, Arslan SS, İnal Ö, Karaduman AA. Reliability and validity of the Turkish Eating Assessment Tool (T-EAT-10). Dysphagia 2016 Jul 12. [Epub ahead of print] [CrossRef]
13. Terre-Boliart R, Orient-Lopez F, Guevara-Espinosa D, Ramon-Rona S, Bernabeu- Guitart M, Clave-Civit P. Oropharyngeal dysphagia in patients with multiple sclerosis. Rev Neurol 2003; 39:707-710.
14. Sencan H. Reliability and validity in social and behavioral measurements (Sosyal ve davranssal ölçümlerde güvenilirlik ve geçerlilik). Ankara: Seckin Yayıncılık; 2005.
15. Kara B. Health beliefs related to salt-restricted diet in patients on hemodialysis: Psychometric evaluation of the Turkish version of the Beliefs About Dietary Compliance Scale. J Trans Nurs 2014; 25:256-264. [CrossRef]
16. Sales DS, Alvarenga RM, Vasconcelos CC, Silva RG, Thuler LC. Translation, cross-cultural adaptation and validation of the Portuguese version of the DYMUS questionnaire for the assessment of dysphagia in multiple sclerosis. Springerplus 2013; 2:332. [CrossRef]