Original Article

Validation of Farsi Translation of the Ocular Surface Disease Index

Farzad Pakdel[1,2], MD; Mahmood Reza Gohari[3], MD; Anis Sadat Jazayeri[4], MD; Afsaneh Amani[4], MD
Niloofar Pirmarzdashti[4], MD; Hossein Aghaee[1], MD

[1]Department of Ophthalmology, Eye Research Center, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran
[2]Department of Ophthalmic Plastic and Reconstructive Surgery, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran
[3]School of Public Health and Health Studies, University of Waterloo, Ontario, Canada
[4]Eye Research Center, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran

Abstract

Purpose: To develop and validate a Farsi version of Ocular Surface Disease Index (OSDI) for the Iranian population.

Methods: This study was a translation and cross-cultural adaptation and validation of Farsi version of OSDI. Four bilingual (English-Persian) individual including three physicians and one native English teacher were asked to translate the original English OSDI questionnaire in Farsi. Following back and forth translation, integration and pilot check, the translation team came to consensus on translation. Consecutive patients visited in ophthalmology clinic, underwent comprehensive general ophthalmology exam and specific assessments for dry eye including non-anesthetic Schirmer's test, fluorescein tear break-up time, Fluorescein and Rose Bengal staining and Farsi OSDI (F-OSDI). F-OSDI was again rechecked within 2-7 days after the examination.

Results: Forty-four participants were enrolled into study. Thirty-two (72.7%) were male and 12 (27.3%) female. Mean age of participants was 45.5 (SD = ±15.97, range = 18-80) years. Twenty five percent were less than 31 years old and 10% percent older than 65. The cronbach's alpha for the questionnaire was 0.807. Questions number 7, 8 showed excellent, and question12 showed good internal consistency, respectively. There was a significant correlation between all pre measures and post assessments.

Conclusion: The obtained F-OSDI showed acceptable internal consistency and test-retest reliability. This F-OSDI could be used for assessment of dry eye, ocular surface discomfort and quality of life in Iranian and Farsi speaking populations.

Keywords: Ocular Surface Disease Index; Dry Eye Disease; Dysfunctional Tear Syndrome; Transcultural Farsi Translation

Correspondence to:
Farzad Pakdel, MD. Department of Ophthalmology, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran 1336616351, Iran.
E-mail: fapakdel@gmail.com

Access this article online	
Quick Response Code:	**Website:** www.jovr.org
	DOI: 10.4103/jovr.jovr_92_16

INTRODUCTION

The Ocular Surface Disease Index (OSDI) questionnaire is a valid instrument[1] to assess how often patients experience symptoms of ocular surface disturbances,

How to cite this article: Pakdel F, Gohari MR, Jazayeri AS, Amani A, Pirmarzdashti N, Aghaee H. Validation of farsi translation of the ocular surface disease index. J Ophthalmic Vis Res 2017;12;301-4.

including the symptoms of dysfunctional tear syndrome (DTS). Currently, the OSDI is widely used to evaluate symptoms of DTS. It is one of the major criteria for diagnosis of DTS.[2] Furthermore, the OSDI is used to evaluate the severity of disease and effect of treatment targeting the ocular surface. The OSDI is a patient reported measure that generates numerical data. This measure is widely used in diagnosis, assessment of severity, and impact on quality of life of patients with DTS and other ocular surface diseases.[2,3] It has been suggested by International Dry Eye Workshop (DWEDS) as a valuable instrument in ocular surface disease studies.[3]

The OSDI has undergone transcultural adaptation and validation process into the Spanish,[4] Chinese,[5] Portuguese[6] and Turkish[7] languages. We aimed to translate the OSDI into Farsi and validate it to utilize this essential tool for therapeutic and research purposes.

MATERIALS AND METHODS

The OSDI questionnaire included 12 questions in three domains: ocular symptoms, vision related functioning, and environmental triggers. Each patient rated symptoms on a 5-point scale from always (score 4) to never (score 0) for each question concerning different eye issues.

The sum score of the questions in each domain is the score of that domain. The total OSDI score was defined on scale of 0 to 100 translation process as:

$$OSDI = \frac{\text{Sum of scores on domains} \times 25}{\text{\# of answered questions}}$$

According to the OSDI score, patients were classified as normal or with mild, moderate, or severe dry eye disease. The overall OSDI score defines the ocular surface as normal (0-12 points), or as having mild (13-22 points), moderate (23-32 points), or severe (33-100 points) disease.

Translation

A forward–backward procedure was applied to translate the OSDI from English into Persian. The translation and transcultural adaptation process included translation of the original English version (Outcomes Research Group, Allergan, Inc., Irvine, CA, USA) of the OSDI into Farsi by one English teacher and two bilingual ophthalmologists working individually. Then the translations were unified by consensus. The cultural adaptation was done to ensure the translated questionnaire is easy and understandable for patients who are able to communicate in Persian. The translation was distributed to 15 patients and their understanding was determined. Necessary changes were incorporated to make the questionnaire understandable. The Farsi version was then translated into English and one native English teacher was asked to assess the comprehension.

The final questionnaire was administered to adult participants in an ophthalmology clinic who had been referred for dry eye. All patients underwent a comprehensive general ophthalmology examinations and specific assessments for dry eye, including non-anesthetic Schirmer's test, fluorescein tear break-up time (TBUT) fluorescein and rose bengal staining, and reporting using the Oxford scale and Farsi OSDI (F-OSDI). The F-OSDI was rechecked within 2 to 7 days after the examination.

Patient Population

The study enrolled patients who were referred to our clinic for dry eye between March and August 2013. Patients who were unable to fully communicate in Persian or who did not consent to participate were excluded. Patients with conjunctivitis, a history of contact lens use, previous intraocular or ocular surface surgeries, allergies, or eyelid malpositions were also excluded from the study.

The study was reviewed and approved by the IRB of the eye research center. Consent was obtained from the participants.

Reliability and Validity

Test–retest reliability was examined using weighted kappa between two OSDI evaluations performed 1 week apart. As the responses to OSDI questions are ordinal, the weighted kappa reflects the agreement between the two evaluations more accurately than other measurements, such as Pearson's correlation. As the status of patients can change within days, a short interval was employed between the test and retest times to have results comparable. Internal consistency of the questionnaire was assessed by Cronbach's alpha coefficient; an alpha >0.7 was considered acceptable.

RESULTS

Forty-four participants were enrolled in the study; 32 (72.7%) were male and 12 (27.3%) were female. The mean participant age was 45.5 ± 15.97 (range, 18–80) years; the age of 25% of the participants was <31 years and that of 10% of the participants was >65 years. The most frequently listed symptoms were discomfort upon exposure to wind (76.7%) and discomfort in dry weather (76.1%).

The Cronbach's alpha coefficient for the questionnaire was 0.807. Questions number 7, 8 showed excellent, and question12 showed good internal consistency, respectively. There was a significant correlation between all test- and re-test assessments [Table 1]. There was a minor change in the inter-rater coefficient among age groups [Table 2]. Kappa analysis for intra-observer agreement for each question showed

Symptom	Weighted Kappa	*P*
Sensitive to light	0.815	<0.001
Gritty feeling	0.755	<0.001
Pain	0.882	<0.001
Blurred vision	0.582	<0.001
Poor vision	0.581	<0.001
Problems reading	0.775	<0.001
Problems driving	0.958	<0.001
Problems when using a computer	0.944	<0.001
Problems when watching TV	0.827	<0.001
Uncomfortable in windy conditions	0.756	<0.001
Uncomfortable in low humidity	0.742	<0.001
Uncomfortable in air conditioned spaces	0.790	<0.001

OSDI, Ocular Surface Disease Index

Table 2. Inter-rater agreement between patients in two age groups

Question	< 45 year		≥ 45 year	
	Weighted Kappa	*P*	Weighted Kappa	*P*
1	0.798	<0.001	0.819	<0.001
2	0.587	0.011	0.882	<0.001
3	0.824	<0.001	0.901	<0.001
4	0.595	0.012	0.462	0.024
5	0.638	0.005	0.619	0.002
6	0.830	<0.001	0.717	<0.001
7	0.912	<0.001	0.997	<0.001
8	0.884	<0.001	0.981	<0.001
9	0.792	<0.001	0.848	<0.001
10	0.847	<0.001	0.687	0.001
11	0.691	<0.001	0.733	<0.001
12	0.921	<0.001	0.647	0.001

that questions 1 (sensitivity to light), 3 (painful eyes), 7 (driving at night), 8 (working with computers or monitors), and 9 (watching TV) had almost perfect agreement, and questions 2 (gritty sensation), 6 (reading), 10 (windy conditions), 11 (dry places) and 12 (areas with air conditions) had substantial agreement. Questions 4 (blurred vision) and 5 (poor vision) had moderate agreement. Responders aged 45 and older showed higher agreement on questions 1, 2, 3, 7, 8, and 9. According to OSDI values, the frequency of dry eye severity scores among the participants included 11.9% normal, 19.0% mild, 16.7% moderate, and 52.4% severe.

We found few significant correlations between each of the questions and specific dry eye test parameters. TBUT showed a significant correlation with question 10 (windy conditions), fluorescein staining with question 4 (blurry vision), the Schirmer test with question 11 (dry places), and rose Bengal staining with question 1 (sensitivity to light).

DISCUSSION

The OSDI was developed and introduced in 1997 by the Outcomes Research Group (Allergan, Inc.).[8] It includes 12 questions that assess three aspects of DTS consisting of symptoms, severity, and changes of function of the individual. It has been shown that this instrument is valid and reliable for measuring the severity of DTS.[1] The OSDI has been suggested as a measurement tool for DTS in both clinical and research fields by the International Dry Eye Workshop.[2,3]

This study demonstrated that F-OSDI had high test-retest reliability and high internal consistency in a Farsi speaking Persian population.

The OSDI questionnaire is currently used extensively for clinical and research purposes to assess ocular surface disorders such as DTS, blepharitis, and allergic and inflammatory conditions. The OSDI was developed to evaluate the symptoms and impact of dry eye.[1,8] It consists of 12 items that assesses symptoms, functional limitations, and environmental factors related to dry eye. Each item has the same five-category Likert-type response option, and each of the three subscales has its own question type. Among other patient reported instruments including McMonnies,[9-11] NEI-VFQ-25,[12,13] and Bandeen-Roche's questionnaire,[14] the OSDI has shown high reliability and validity for DTS.[1]

DTS is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface.[2] OSDI is one essential instrument for evaluation of symptoms as part of diagnostic criteria proposed by the DEWS workshop, 2007.[2]

In this study, participants aged 45 and older generally showed higher kappa in questions regarding eye discomfort and visual function compared to younger participants. This may be explained partly by higher severity of dry eye and more consistent dry eye symptoms in this age group. In addition, the higher prevalence of other vision threatening morbidities could elicit more consistent responses to questions regarding vision problems compared to younger age groups. The content validity of the translated F-OSDI could be examined by parallel administration of the OSDI and diagnosis of DTS based on the criteria proposed by the DEWS workshop, 2007.

The main strengths of this study include the recruitment of dry eye Persian patients, systematic evaluations for dry eye and applying current criteria for diagnosis of dry eye. There are limitations in this

study. The heterogeneous population of patients in terms of different educational and socioeconomic status and different cognitive abilities might have affected the responses.

In conclusion, the F-OSDI demonstrated satisfactory test-retest, and internal consistency, reliability, and validity for evaluation of dry eye symptoms and quality of life in the patients in this study.

Conflicts of Interest

There are no conflicts of interest.

REFERENCES

1. The definition and classification of dry eye disease: Report of the definition and classification subcommittee of the international dry eye workshop (2007). *Ocul Surf* 2007;5:75-92.
2. Research in dry eye: Report of the research subcommittee of the international dry eye workshop. *Ocul Surf* 2007;5:179-193.
3. Beltran F, Betancourt NR, Martinez J, Valdes CS, Babayan A, Ramírez-Assad C, et al. Transcultural validation of ocular surface disease index (osdi) questionnaire for mexican population. *Invest Ophthalmol Vis Sci* 2013;54:6050.
4. Zhao H, Liu Z, Yang W, Xiao X, Chen J, Li Q, Zhong T. Development and assessment of a dry eye questionnaire applicable to the Chinese population. *Zhonghua Yan Ke Za Zhi* 2015;51:647-654.
5. Prigol AM, Tenório MB, Matschinske R, Gehlen ML, Skare T. Translation and validation of ocular surface disease index to Portuguese. *Arq Bras Oftalmol* 2012;75:24-28.
6. Irkec MT, Group TO. Reliability and validity of turkish translation of the ocular surface disease index (osdi) in dry eye syndrome. *IOVS* 2007;48:408.
7. Walt JG, Rowe MM, Stern KL. Evaluating the functional Impact of Dry Eye: The ocular surface disease index. *Drug Information Journal* 1997;31:1436.
8. McMonnies HA. Marginal dry eye diagnosis, in Holly F ed. The preocular tear film in health, disease and contact lens wear: Dry Eye Institute Inc: *Lubbock*; 1986.
9. McMonnies CW, Ho A. Patient history in screening for dry eye conditions. *J Am Optom Assoc* 1987;58:296-301.
10. Gothwal VK, Pesudovs K, Wright TA, McMonnies CW. McMonnies questionnaire: Enhancing screening for dry eye syndromes with Rasch analysis. *Invest Ophthalmol Vis Sci* 2010;51:1401-1407.
11. Nichols KK, Nichols JJ, Mitchell GL. The reliability and validity of McMonnies Dry Eye Index. *Cornea* 2004;23:365-371.
12. Nichols KK, Mitchell GL, Zadnik K. Performance and repeatability of the NEI-VFQ-25 in patients with dry eye. *Cornea* 2002;21:578-583.
13. Schein OD, Muñoz B, Tielsch JM, Bandeen-Roche K, West S. Prevalence of dry eye among the elderly. *Am J Ophthalmol* 1997;124:723-728.
14. Schein OD, Muñoz B, Tielsch JM, Bandeen-Roche K, West S. Prevalence of dry eye among the elderly. *Am J Ophthalmol* 1997; 124(6): p. 723-728.