Original Article

Translation, Cross-Cultural Adaptation and Assessment of Psychometric Properties of Nepalese Version of Skindex-16

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Abstract

Introduction: Assessment of the quality of life is an important aspect of managing skin diseases. The tools to measure the health related quality of life are still scarce in our country. We have planned to add one useful and widely used tool in the local language. The main objective of this study was to translate English version of skindex-16 in Nepali language and evaluate its psychometric properties.

Methods: Standard protocol was followed to translate the English version of Skindex-16 into Nepali language after due permission from the Mapi Trust. The translated version was completed by the patients in the out-patient unit of dermatology department, which was subjected to statistical validation. Some participants completed the same questionnaire in seven to ten days gap. Cronbach's, Intra-Class correlation, Pearson's correlation and factor analysis were performed for validation of newly translated Skindex-16 version.

Results: In total 190 people were enrolled in this study, 92 (48.4%) were males. One hundred and nineteen of the total participants had inflammatory conditions, 8 had facial pigmentation and remaining 63 had a solitary non-inflammatory skin lesions. Overall Cronbach's was 0.91, for items related to symptoms it was 0.74, for emotions .91 and for functioning .86. The mean inter-item correlation coefficient was 0.403, the Intra-class correlation coefficient was 0.918 and the Pearson's correlation coefficient 0.929 (P value <.001). The Principal component analysis derived three factors and the items loaded on these factors satisfactorily.

Conclusion: The Nepali version of Skindex-16 is a well translated and validated tool to measure the health related quality of life in skin diseases.

Keywords: Nepal, quality of life, skindex, validity

Introduction

Quality of Life (QoL) is an important aspect in management of chronic skin diseases.[1] Many generic and disease specific tools, though widely used, are still not available in Nepali language. One of the most widely accepted patients reported QoL tool is Skindex-16.[2] Originally containing 62 items, later reduced to 29 items and later to a single page 16 item questionnaire, Skindex 16, is better suited in our setting mainly due to its shorter length. This version of skindex-16 has been translated and validated in other languages as well.[3-6] We planned to translate and validate its psychometric properties in the Nepali language.

Methods

After the permission from the Mapi Research Trust, the official organization with the copyright for Skindex-16 questionnaire (Appendix 1), we proceeded with the translation. Forward translation was completed by two bilingual translators and one of the authors (SP). They produced a consensus translation in Nepali language. This translation was back translated by a single bilingual translator, who did not have any medical background. This back translated version along with the new Nepali translation was sent to be reviewed by the original authors via the Mapi Trust. The final translation was accepted without any disagreement. This version was tested in 10 dermatology patients in our clinic who understood and responded to all the 16 questions. However three respondents found question number 5 as ambiguous and they needed assistance from the dermatology nurse. A forward and a backward translation were carried out for

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Appendix 1: Skindex-16 questionnaire

During the past week, how often have you been bothered by:		Never Bothered ↓			●			Always Bothered ↓
1.	Your skin condition **itching**	☐0	☐1	☐2	☐3	☐4	☐5	☐6
2.	Your skin condition **burning** or **stinging**	☐0	☐1	☐2	☐3	☐4	☐5	☐6
3.	Your skin condition **hurting**	☐0	☐1	☐2	☐3	☐4	☐5	☐6
4.	Your skin condition **being irritated**	☐0	☐1	☐2	☐3	☐4	☐5	☐6
5.	The **persistence / reoccurrence** of your skin condition	☐0	☐1	☐2	☐3	☐4	☐5	☐6
6.	**Worry** about your skin condition (For example: that it will spread, get worse, scar, be unpredictable, etc)	☐0	☐1	☐2	☐3	☐4	☐5	☐6
7.	The **appearance** of your skin condition	☐0	☐1	☐2	☐3	☐4	☐5	☐6
8.	**Frustration** about your skin condition	☐0	☐1	☐2	☐3	☐4	☐5	☐6
9.	**Embarrassment** about your skin condition	☐0	☐1	☐2	☐3	☐4	☐5	☐6
10.	**Being annoyed** about your skin condition	☐0	☐1	☐2	☐3	☐4	☐5	☐6
11.	**Feeling depressed** about your skin condition	☐0	☐1	☐2	☐3	☐4	☐5	☐6
12.	The effects of your skin condition on your **interactions with others** (For example: interactions with family, friends, close relationships, etc)	☐0	☐1	☐2	☐3	☐4	☐5	☐6
13.	The effects of your skin condition on your **desire to be with people**	☐0	☐1	☐2	☐3	☐4	☐5	☐6
14.	Your skin condition making it hard to **show affection**	☐0	☐1	☐2	☐3	☐4	☐5	☐6
15.	The effects of your skin condition on your **daily activities**	☐0	☐1	☐2	☐3	☐4	☐5	☐6
16.	Your skin condition making it hard to **work or do what you enjoy**	☐0	☐1	☐2	☐3	☐4	☐5	☐6

Have you answered every item? **Yes ☐ No ☐**

this item. The resulting translation led to the same result (Appendix 2). After the translation was complete, the validation of this instrument was planned and carried out. As there were 16 items to be tested we planned to enroll more than 160 subjects, as 1:10 ratio of item and subjects are acceptable for the validity assessment of these instruments.[7] The enrolment started after the Institution Review Committee of our institute provided the clearance.

Patients with at least high school education, who consented to be involved, were included. All of them were briefly explained by the authors about the importance of this tool. Mostly patients with inflammatory acne, inflammatory dermatoses like atopic eczema, lichen planus and psoriasis and non-inflammatory solitary skin lesions like melanocytic nevus, lipoma and non-inflamed sebaceous cyst were asked to complete the questionnaire. Patients who needed lab tests or further evaluation within 10 days were asked to complete the same questionnaire twice. It was made sure to ask the participants only if there was a gap of at least 7 days between two visits. Forty one participants agreed to complete the questionnaire second time between 7 and 10 days, which is acceptable gap for retest.[8] Patients with known psychiatric illness were excluded as far as possible.

Reliability of the instrument was measured by determining the internal consistency -reliability, intra-class correlation (ICC) and Pearson's correlation tests. Construct validity was determined by testing the hypothesis that the inflammatory skin diseases and facial pigmentation have higher Skindex-16 scores than non-inflammatory skin diseases. Further assessment was performed by factor analysis. We assumed that the Nepali version also identifies the three underlying factors of the original skindex-16 questionnaire, representing symptoms, emotions and functioning. All variables were expressed in frequencies, continuous and interval variables were expressed in mean and standard deviation and compared with the t-test. Test retest reliability was determined by ICC and Pearson's correlation test. For all two-tailed tests α was set at 5%. For factor analysis principal component analysis was carried out. All statistical tests were performed with the Statistical Package for Social sciences (SPSS) v 25.

Appendix 2: Nepalese version of Skindex-16 questionnaire

चर्मरोग सर्वेक्षण

यो सर्वेक्षण, गएको हप्तामा तपाई को छाला सम्बन्धी हुन गएको सबै भन्दा ठूलो समस्या सँग सम्बन्धित रहेको छ ।

गएको हप्ता, तपाईले कत्तिको समस्या भेल्नु भयो :	कहिले समस्या परेन						सधै समस्या परिरहन्थ्यो
१. तपाईको छालाको समस्या चिलाएर	☐0	☐1	☐2	☐3	☐4	☐5	☐6
२. तपाईको छालाको समस्याले पोल्ने वा घोच्ने भएर	☐0	☐1	☐2	☐3	☐4	☐5	☐6
३. तपाईको छालाको समस्या दुखेर	☐0	☐1	☐2	☐3	☐4	☐5	☐6
४. तपाईको छालाको समस्यामा डाहा भएर	☐0	☐1	☐2	☐3	☐4	☐5	☐6
५. तपाईको छालाको समस्या निरन्तर/बारम्बार देखा परेर	☐0	☐1	☐2	☐3	☐4	☐5	☐6
६. तपाईको छालाको समस्याले चिन्तित बनाएर (उदाहरण का लागि : फैलिने, धेरै खराब हुने, खत बस्ने तथा अप्रत्याशित समस्या देखा पर्ने आदि हन्छ कि भनेर)	☐0	☐1	☐2	☐3	☐4	☐5	☐6
७. तपाईको छालाको समस्याको स्वरुपले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
८. तपाईको छालाको समस्याको निराशाले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
९.तपाईको छालाको समस्याको लज्जाले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
१०. तपाईको छालाको समस्याको दिक्दारीले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
११. तपाईको छालाको समस्यालाई लिएर उदास हुनु परेकाले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
१२. अरुसँगको अन्तर्क्रियामा तपाईको छालाको समस्याले प्रभाव पारेकाले (उदाहरण का लागि : तपाईको परिवार, साथीहरु, नजिकका नातेदार आदि सँगको अन्तर्क्रिया)	☐0	☐1	☐2	☐3	☐4	☐5	☐6
१३. व्यक्तिहरुसँग नजिकिने इच्छामा तपाईको छालाको समस्याले प्रभाव पारेकाले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
१४. तपाईको छालाको समस्याले प्रेम अभिव्यक्त गर्न गाह्रो परेकाले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
१५. तपाईको छालाको समस्याले तपाईको दैनिक कृयाकलापमा असर पारेकाले	☐0	☐1	☐2	☐3	☐4	☐5	☐6
१६. तपाईको छालाको समस्याले काम वा तपाईलाई मजा आउने कुनै कुरा गर्न अप्ठेरो पारेकाले	☐0	☐1	☐2	☐3	☐4	☐5	☐6

के तपाई ले प्रत्येक बुँदाको उत्तर दिनु भयो ? छ ☐ छैन ☐

Results

One hundred and ninety subjects were enrolled in this study. Among them 92 (48.4%) were males, 98 (51.6%) were females. Mean age of the study population was 27.18 (±10.5) years. Most of the participants were students (55.8%), followed by employers and housewives. Sixty of these patients were having acne vulgaris, 39 had other inflammatory conditions and 8 had facial pigmentation. Remaining 63 had a solitary non-inflammatory skin lesions.

The reliability test was performed with Cronbach's α.[9] Overall Cronbach's α was 0.91, for items related to symptoms it was 0.74, for emotions 0.91 and for functioning 0.86, which were all acceptable. The mean inter-item correlation coefficient was 0.403, and in the two-way mixed effect model, the Intra-class correlation coefficient was 0.918 (95% CI 0.900 - 0.934). Forty-one participants had completed the questionnaire two times within three to seven days. The correlation analysis of their mean total scores showed excellent correlation between the scores, Pearson's correlation coefficient 0.929 (P value <0.001).

Table 1. Principle component analysis, Total variance explained. Only components with eigen values more than 1 are shown.

	Initial eigen values			Rotation sums of squared loading		
Component	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	7.315	45.718	45.718	4.673	29.203	29.203
2	1.842	11.510	57.228	3.254	20.337	49.540
3	1.341	8.380	65.608	2.571	16.068	65.608

Table 2. Rotated component matrix, with the loading of the three components on the items (coefficients less than 0.4 were suppressed)

Items	Component		
	1	2	3
Q1			0.680
Q2			0.854
Q3			0.734
Q4			0.616
Q5	0.630		
Q6	0.734		
Q7	0.750		
Q8	0.842		
Q9	0.741		
Q10	0.839		
Q11	0.756	0.413	
Q12		0.683	
Q13		0.771	
Q14		0.808	
Q15		0.682	
Q16	0.405	0.668	

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 5 iterations.

Factor analysis was performed with Principal component analysis with Verimax rotation. Kaiser-Meyer-Olkin measure of sample adequacy was 0.892. The Bartlett's test of Sphericity was significant (P<.001, χ^2 1845.79). Three factors had eigen values of more than 1, and cumulatively they explained 65.60% of variance (Table 1). The loading of the items in these three factors was as shown in Table 2. The items supposed to represent the symptomatology, emotional aspects and the functional aspects loaded separately. However item number 11 and 16 had cross loading in two components. The inflammatory dermatoses had significantly higher score compared to the isolated non inflammatory skin lesion (t-score 8.55, P value <0.001)

Table 3. Mean scores between the inflammatory, including facial pigmentation and non-inflammatory dermatoses.

Diagnosis	f	%	Mean ±SD	t score	p-value
Inflammatory/ Pigmentory					
1. Acne	80	42.1	40.54±20.00	8.55	<0.001
2. Other inflammatory	39	20.5			
3. Face pigmentation	8	4.2			
Non inflammatory	63	33.2	16.22±14.82		

Discussion

Measuring the quality of life along with the clinical severity of the disease has become an important aspect of management. Many generic and disease specific tools to measure the Qol in dermatological condition have been developed and used all over the world.[9] The first such generic tool was devised by Finlay et al in 1994 in the form of Dermatology Life Quality Index (DLQI).[10] The DLQI was translated in Nepali language by Dr. Sudha Agrawal and is downloadable from *https://www.cardiff.ac.uk/medicine/resources/quality-of-life-questionnaires/dermatology-life-quality-index*. After DLQI, no generic dermatology Qol tool has been translated or developed in local language. This endeavor was to fill the gap, and provide a complete yet short tool which enabled clinicians and researchers to assess the various aspects of Qol of the patient.

The translation of English version of Skindex-16 into Nepali language with semantic equivalence and cultural adaptation was a challenge. The homonym words like we used in question number 5, made it difficult for some participants. Though Nepali language is rich in literature and vocabulary, common people do not use specific words to specific conditions, for example frustration and being annoyed had been translated in their proper Nepali equivalent, but some of the respondents had to be explained them in English to make them understand. Perhaps, with the advent in English education, young people tend to understand English better than their native language. But for most of the common people this translation is readily understandable. None of the questions were culturally unacceptable, so all 16 questions were included and a complete Nepali Skindex-16 was made ready to use.

The evaluation of the psychometric properties of the newly developed tool demonstrated a high degree of internal consistency, ICC, Pearson's r and an acceptable inter-item correlation coefficient. The construct validity as assesses by the factor analysis, was comparable to the original Skindex-16 evaluation. Three factors were extracted and when these factors were loaded on different items, three sets of items as described in original paper were separated. However there were two cross-loadings with the coefficients more than 0.4. On closer examination we found that the question number 11 pertaining to depression had functional aspect as well, and question number 16 pertaining to enjoying had emotional aspect as well. This cross-loading of two components may be due to our unique population who when responded in their native language felt depression and enjoyment as emotional aspects of life.

The comparison of the scores between the different skin conditions, age groups, ethnicity and gender was not the objective of the study and were not reported. This Nepali version of the Skindex-16 will be useful for clinicians and the researchers, due to its short length yet complete nature, to measure the QoL and the clinical outcome.

Conclusion

Nepalese Skindex-16 is a well translated and valid tool to be used in clinical and research settings. The diversity of culture, ethnicity and languages in Nepal may limit its use in the whole country, but further studies to validate in different settings are encouraged.

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References

1. Both H, Essink-Bot ML, Busschbach J, Nijsten T. Critical review of generic and dermatology-specific health-related quality of life instruments. J Inv Dermatol. 2007;127(12):2726-39. doi: 10.1038/sj.jid.5701142.
2. Chren MM, Lasek RJ, Sahay AP, Sands LP. Measurement properties of Skindex-16: a brief quality-of-life measure for patients with skin diseases. J Cut Med Surg. 2001;5(2):1105–10. doi: 10.1007/BF02737863.
3. AlGhamdi KM, AlShammari SA. Arabic version of Skindex-16: translation and cultural adaptation, with assessment of reliability and validity. Int J Dermatol. 2007;46(3):247-52. doi: 10.1111/j.1365-4632.2007.03013.x.
4. Essa N, Awad S, Nashaat M. Validation of an Egyptian Arabic version of skindex-16 and quality of life measurement in Egyptian patients with skin disease. Int J Behavl Med. 2018;25(2):243-51. doi: 10.1007/s12529-017-9677-9.
5. Higaki Y, Kawamoto K, Kamo T, Horikawa N, Kawashima M, Chren MM. The Japanese version of Skindex-16: a brief quality-of-life measure for patients with skin diseases. J Dermatol. 2002;29(11):693–98. doi: 10.1111/j.1346-8138.2002.tb00205.x.
6. Cárcano CBM, de Oliveira CZ, Paiva BSR, Paiva CE. The Brazilian version of Skindex-16 is a valid and reliable instrument to assess the health-related quality of life of patients with skin diseases. PloS one. 2018;13(3):e0194492. doi: 10.1371/journal.pone.0194492.
7. Yong AG, Pearce S. A beginner's guide to factor analysis: Focusing on exploratory factor analysis. Tutorials in quantitative methods for psychology 2013;9(2):79-94. doi: 10.20982/tqmp.09.2.p079.
8. Polit DF. Getting serious about test-retest reliability: a critique of retest research and some recommendations. Qual Life Res 2014;23(6):1713-20. doi: 10.1007/s11136-014-0632-9.
9. Taber KS. The use of Cronbach's when developing and reporting research instruments in science education. Res Science Educ 2018;48:1273-96. doi: 10.1007/s11165-016-9602-2.
10. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)--a simple practical measure for routine clinical use. Clin Exp Dermatol 1994;19(3):210-6. doi: 10.1111/j.1365-2230.1994.tb01167.x.

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