



RESEARCH ARTICLE

VALIDITY AND RELIABILITY OF ARABIC VERSION OF CERVICAL SPINE BOURNEMOUTH QUESTIONNAIRE FOR NECK PAIN

^{1,*}Hadeer A. Morsi, ²Ahmed E. Elerian, ²Mohamed I. Abdelhay and ³Amir H.Y. Salama

¹Department of Basic Science, Kafrelsheikh University, Egypt

²Department of Basic Science, Cairo University, Egypt

³Faculty of Al-Asun Kafrelsheikh University, Egypt

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ABSTRACT

Background: Neck pain is among the most common chronic pain problems, with a reported prevalence of 22–30%.

Objective: To test the validity and reliability of arabic-language version of cervical spine Bournemouth questionnaire for neck pain patient.

Method: Seventy patients with neck pain were recruited and 115 sheets (test and retest sheets) were filled out and three expert panels (each consists of ten experts) participated in this study, forward translation, development of preliminary initially translated version, backward translation, development of the pre-final version and testing of pre-final version using experts then testing of the final version on patients was done. Clarity index, expert proportion of clearance, index of content validity, expert proportion of relevance, descriptive statistics, missed item index, Cronbach's alpha and Pearson correlation coefficient were used for statistical analysis.

Results: The study showed that scale index of clarity equals 100%, scale-level clarity index universal agreement equals 100%, scale index of content validity equals 100%, scale-level content validity index universal agreement equals 100%, the scale items were filled by 96.52% % in all sheets, the scale needed less than or equal five minutes to answer in about 97.4% all sheets, Cronbach's alpha equals 0.891 and all Pearson correlations between test and retest results were statistically significant.

Conclusion: Arabic-language version of Bournemouth questionnaire is valid and reliable enough to measure cervical pain in neck patient.

INTRODUCTION

Neck pain is the sensation of discomfort in the neck area that can result from disorders of any of the structures in the neck (Fejer and Hartvigsen, 2008). The mechanism of disability caused by neck pain has not yet been illustrated, but it is usually accompanied by a substantial effect on daily life that results in extensive use of healthcare resources (Wolsko *et al.*, 2003). Pain in the neck (cervical pain) may have different origins. It is understood that the term cervical pain does not refer to a disease itself, but rather to a symptom or a manifestation of a painful muscular disorder. Cervical pain usually has multifactorial clinical aspects, since it may involve individual risk factors (either physical or emotional characteristics), or be related to ergonomics and work activities (Viana *et al.*, 2011). Numerous English neck measures of neck pain and functional disability were produced, for example, Neck Disability Index (NDI), the Pain Disability Index (PDI), Northwick Park Neck Pain Questionnaire (NPQ), Copenhagen Neck Functional Disability Scale (CNFDS), Neck Pain and Disability Scale (NPDS), Neck Bournemouth Questionnaire

(NBQ), and Functional Rating Index (FRI) (Ferreira *et al.*, 2010). The BQ is an intriguing assessment instrument for neck pain patients since it is questionnaire in light of the bio psychosocial ailment display. Any clinician or scientist who needs to concisely assess neck pain in a setting that considers the organic, mental and social measurements would incline toward this test to other approved instruments in light of agony and handicap assessment (Martel *et al.*, 2009) dissimilar to NDI that measure just pain and disability (Soklic *et al.*, 2012). This straightforward poll is anything but difficult to finish and can be directed in a facility or in clinical research. And furthermore The measure of content is insignificant. The BQN is a short-shape, multidimensional instrument initially made in English, that has been appeared to be substantial, dependable and responsive for use in the clinical and research settings (Martel *et al.*, 2009). It contains seven things, The seven sub-scales incorporate pain intensity, functional status in daily living and social activities, affective dimensions of anxiety and depression, cognitive aspects of fear-avoidance belief and pain locus of control. The principle quality of this model is that the clinician must consider the natural, mental and social parts of the pathology in order to understand and respond adequately to pain reported by the patient

*Corresponding author: Hadeer A. Morsi,
Department of Basic Science, Kafrelsheikh University, Egypt.

MATERIALS AND METHODS

This examination is forthcoming investigation that was led on outpatient facilities of workforce of active recuperation kafrelsheikh college and Faculty of Physical Therapy, Cairo University to test and explore validity and reliability of Arabic variant of BQ for neck pain patients. This investigation took after examinations that suggested rules for interpreting, adjusting and approving mental instruments (Borsa *et al.*, 2012) (Sousa and Rojjanasrirat, 2011). Seventy patients with neck pain; referred by physician, able to read and write (not illiterate), didn't have deformity, and no medications were administered. Likewise, three master boards; each comprises of ten specialists (Experience at least ten years or if nothing else ace degree and familiar with English and Arabic) took an interest in this investigation, and every member marked the assent frame.

Forward translation (targeted translation): translation of the primary scale from English into Arabic:

- Two translators participated in forward translation.
- Scale in English was translated to Arabic to produce two Arabic versions of the scale (Ar1 and Ar2).

Development of Arabic version which is initial and preliminary:

- Both versions (Ar1 and Ar2) were compared and merged by the researchers.

Blind back translation (blind revision translation or blind double revision translation) of the preliminary initial arabic version of the scale:

- Two translators participated in backward translation.
- The preliminary initial translated arabic version of the scale was translated to English to produce two back translated English revision versions (En1 and En 2)

Comparison of the two back translated English versions of the scale (En 1 and En 2):

Researchers compared English back translation English revision versions of the scale En 1 with En 2, and also compared both En 1 and En 2 with the original English scale regarding instructions, items, responses format, word meanings, sentence composition, significance and relations, and they found that there were no significant differences between them, so the researchers consider that the preliminary initial translated Arabic version is the prefinal Arabic version of the scale.

Pilot study to test the prefinal Arabic version of the scale:

- The first expert panel (ten experts) were asked to evaluate each word (instructions, items and choices) of the tool for clarity using dichotomous scale (yes or no questions) and if no, provide suggestions to improve its clarity.
- According to the suggestions of the first expert panel, changes had been made to improve the clarity index to the minimum acceptable value (80%) so that it can be given to patient.
- Then the second expert panel reassessed the clarity.
- The third expert panel (ten experts) were asked to rate and evaluate all items of the scale for content equivalence

(relevance) using scale of four grades: 1 means not relevant; 2 means unable to assess relevance; 3 means relevant but needs minor alteration and 4 means very relevant and succinct, then they were asked to give suggestions to improve its relevance, the interpretation of result was as follow: first and second grades were considered not relevant, while third and fourth grades were considered relevant).

- After the prefinal version pass the clarity and relevance test, it is called the final Arabic version of BQ.

Pilot study to test the final Arabic version of the scale was conducted on neck pain patients as follow:

- Patients fill the data collection sheet which was used to collect demographic data (name, age, sex) and BQ. Patients with neck pain completed the sheet again after two days (Torad *et al.*, 2015).

Statistical analysis

SPSS computer program (version 20) was used for data analysis:

- Face validity was tested by clarity index and expert proportion of clearance.
- Content validity was tested by index of content validity (CVI) and expert proportion of relevance.
- 3-Descriptive statistics of patients and sheets were made using mean, median, standard deviation (SD), mode, minimum (min) and maximum (max).
- Feasibility index was calculated using missed item index and time taken to fill the questionnaire.
- Internal consistency reliability was measured using Cronbach's alpha.

Test retest reliability was measured using mean scores and pearson Correlation coefficient.

RESULTS

Item index of clarity was calculated, and it was found that scale index of clarity equals 100% and scale level clarity index UA equals 100% as shown in Table 1.

Table 1. Item index of clarity of the pre-final arabic version of the scale

Item no.	N. of expert agree	N. of expert not agree	Item index of clarity
1.	10	0	100%
2.	10	0	100%
3.	10	0	100%
4.	10	0	100%
5.	10	0	100%
6.	10	0	100%
7.	10	0	100%
8.	10	0	100%
9.	10	0	100%
10.	10	0	100%
11.	10	0	100%
12.	10	0	100%
13.	10	0	100%
14.	10	0	100%
15.	10	0	100%
16.	10	0	100%
17.	10	0	100%
18.	10	0	100%
19.	10	0	100%
Mean index of clarity for all items		100%	

Expert proportion of clearance was calculated and represented in Table. Index of content validity was calculated and it was found that scale index of content validity (S-CVI) equals 100% and scale index of content validity universal agreements (S-CVI/UA) equals 100% as shown in Table 2.

Table 2. Item index of content validity of the pre-final arabic version of the scale

Item no.	N. of expert agree	N. of expert not agree	Item index of clarity
1.	10	0	100%
2.	10	0	100%
3.	10	0	100%
4.	10	0	100%
5.	10	0	100%
6.	10	0	100%
7.	10	0	100%
Mean CVI of all items		100%	

Table 3. Descriptive statistics of patient general characteristics

Item Number	1 st occasion (n=70)		2 nd occasion (n=45)	
	Mean	±SD	Mean	±SD
1	5.90	2.247	5.93	2.136
2	5.75	2.553	5.98	2.472
3	4.75	3.031	5.49	2.959
4	6.99	2.399	6.89	2.405
5	6.61	2.591	6.58	2.398
6	5.79	2.853	5.82	2.415
7	5.16	3.313	5.33	3.155
Total score	40.61	14.707	42.02	14.229

Table 4. Pearson correlations coefficient

Item No.	R value	Correlation strength	P-value
1	0.920	Very strong	statistically significant
2	0.956	Very strong	statistically significant
3	0.960	Very strong	statistically significant
4	0.965	Very strong	statistically significant
5	0.940	Very strong	statistically significant
6	0.938	Very strong	statistically significant
7	0.980	Very strong	statistically significant
Total score	0.972	Very strong	statistically significant

Table 5. Internal consistency reliability with cronbach's

Item Number	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
1	0.877	0.891
2	0.865	
3	0.873	
4	0.876	
5	0.881	
6	0.863	
7	0.887	

DISCUSSION

The present investigation was intended to test the legitimacy and unwavering quality of the arabic-dialect form of the BQ to gauge the agony and incapacity in neck patients. The arabic adaptation of BQ is legitimate as scale file of lucidity measures up to 100%, scale-level clearness file UA rises to 100%, S-CVI parallels 100% and S-CVI/UA approaches 100%.The aftereffects of the present investigation came in concurrence with an examination that expressed that to judge a scale for astounding substance legitimacy, it would be made out of things with I-CVI that meet the accompanying criteria: I-CVI of 1.00 with three to five specialists and a base I-CVI of .78 for 6 to 10 specialists and it would have S-CVI/Ave of .90 or

higher. The prescribed principles may require two rounds of master audit if the underlying evaluation rejects the device and recommends the requirement for considerable thing changes (Polit and Beck, 2006). Additionally, this came in concurrence with an examination that expressed that S-CVI of 0.90 or above is an incentive underneath it we can't pass judgment on the instrument to have content legitimacy, and things that don't accomplish that esteem are modified, re-composed and re-assessed (Waltz *et al.*, 2005). The arabic variant of BQ has a decent inner consistency and great test retest unwavering quality as Cronbach's alpha equivalents 0.891) and all Pearson Correlation Coefficient for Test re-test dependability of Arabic form of BQ: (thing 1: 0.920, thing 2: 0.956, thing 3: 0.960, thing 4: 0.965, thing 5: 0.940, thing 6: 0.938, thing 7: 0.980, add up to score: 0.972)), so as per insights analysts α in the vicinity of 0.7 and 0.9 is alluded as great inward consistency, likewise Pearson connection coefficient is alluded as adequate test retest unwavering quality. These outcomes came in concurrence with an investigation that led to test the dependability and legitimacy of the French variant of BQ, the French full BQ that incorporates seven autonomous inquiries, each speaking to an alternate measurement of the agony encounter. This approval consider was performed on 68 subjects (mean age 41 years of age) who took an interest in a randomized controlled trial in regards to the effectiveness of manual treatment for neck pain patients, (Martel *et al.*, 2009), The BQc's psychometric properties give high inner consistency more than three organizations. Cronbach's alpha was 0.87, 0.91, 0.92, test-retest unwavering quality (ICC = 0.65), The aftereffects of this examination exhibit that the psychometric properties of the BQ's French interpretation are adequately satisfactory, accordingly allowing its utilization with neck pain patients. Likewise these outcomes came in concurrence with comparable outcomes acquired by Soklic *et al.* (2012) who directed an examination to adjust the BQ to the German dialect and to assess the psychometric properties of the German adaptation of the BQ in patients with neck pain, German interpretation and back interpretation into English of the BQN was done autonomously by four people and supervised by a specialist advisory group. Face legitimacy of the German BQN was tried on 30 neck pain patients in a solitary chiropractic hone. Test-retest dependability was assessed on 31 medicinal understudies and chiropractors when an address. The German BQN was then evaluated on 102 first time neck pain patients at two chiropractic hones for inward consistency, outer develop legitimacy, outside longitudinal build legitimacy and affectability to change contrasted with the German adaptations of the Neck Disability Index (NDI) and the Neck Pain and Disability Scale (NPAD). Face legitimacy testing lead to minor changes to the German BQN. The Intraclass Correlation Coefficient for the test-retest unwavering quality was 0.99. The interior consistency was solid for each of the 7 things of the BQN with Cronbach α 's of .79 and .80 for the pre and post-treatment add up to scores. Outer develop legitimacy and outside longitudinal build legitimacy utilizing Pearson's connection coefficient demonstrated factually critical relationships for every one of the 7 sizes of the BQN with alternate polls. The German BQN indicated more noteworthy responsiveness contrasted with alternate polls for all scales Soklic *et al.* (2012). Additionally the aftereffects of the present investigation came in concurrence with Kamonseki (2017) that interpret the Neck Bournemouth Questionnaire to Brazilian Portuguese, diversely adjust, and to check its legitimacy and its unwavering quality. The advancement of the Brazilian adaptation of Neck Bournemouth Questionnaire (Brazil-NBQ)

depended on the rule proposed by Guillemín. The connected procedure comprised of interpretation, back-interpretation, board of trustees audit and pre-test. Sixty-one volunteers introducing neck pain took part in this investigation. Thirty-five of them partook amid pre-testing stage to confirm the instrument cognizance, and the rest of the 26 participated amid psychometric examination. Psychometric assessment included interrater and intrarater unwavering quality and develop legitimacy (connection among Brazil-NBQ, SF-36, Numerical rating score and Neck Disability Index), the NBQ demonstrated an intrarater ICC of 0.96 and interrater ICC of 0.87. Build legitimacy investigation indicated direct connections with SF-36 and solid relationship with Numerical rating score and Neck Disability Index. When considering making another apparatus for evaluation dependability and legitimacy studies ought to be led for this device to start with, and it is difficult. Likewise while interpreting an evaluation instrument from any dialect to another; unwavering quality and legitimacy studies ought to be led to guarantee that the deciphered adaptations is appropriate for the focused on populace and furthermore it's anything but a simple procedure as it appears; it needs tolerance and long-lasting. Legitimacy and dependability of interpreted devices were made more than a few investigations not one. The primary investigation is intended to make an interpretation of the device to the focused on dialect at that point test the deciphered rendition for face and substance legitimacy at that point test the unwavering quality, it was led on monolingual populace. The second investigation was intended to test the full the psychometrics of the deciphered apparatus with bilingual members. The third investigation is led to test the full psychometric properties of the deciphered device on monolingual populace, taking note of that the second examination isn't important to be made (Borsa *et al.*, 2012) (Sousa and Rojjanasrirat, 2011). This investigation is thought to be the main examination in the legitimacy and dependability investigations of the Arabic dialect adaptation of BQ. The last form is viewed as the base for the following examination that will be directed to set up the full psychometric properties (build and rule legitimacy) of arabic-dialect rendition of BQ.

Conclusion

The results obtained from the current study and the discussion that follows it can lead to drawing that Arabic-Language version of BQ is valid and reliable enough to assess patient with cervical pain

Recommendations

The results of this study indicated a need to consider the following recommendations:

- Further studies should be conducted to establish the preliminary psychometrics of the arabic-language version of BQ with bilingual participants.

- Further studies should be conducted to establish the full psychometric properties (construct and criterion validity) of arabic-language version of BQ in a sample of the target population of interest.

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