International Journal of Advances in Medicine
Islam MA et al. Int J Adv Med. 2021 Feb;8(2):235-240
http://www.ijmedicine.com
pISSN 2349-3925 | eISSN 2349-3933
DOI: https://dx.doi.org/10.18203/2349-3933.ijam20210076

Original Research Article

Translation of revised WHO international league against rheumatism community oriented program for the control of rheumatic diseases core English questionnaire into Bengali and its cross-cultural adaptation and validation

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Received: 18 December 2020
Accepted: 12 January 2021

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ABSTRACT

Background: The World Health Organization (WHO) and the International League Against Rheumatism (ILAR) initiated the Community-Oriented Program for the Control of Rheumatic Diseases (COPCORD) project in 1981. The aim of this study was to translate the revised WHO-ILAR COPCORD questionnaire into Bengali and to test if the Bengali version could be reliably used for the identifying rheumatic diseases in Bangladeshi people.
Methods: This was an observational study conducted in rheumatology wing, department of medicine, BSMMU from April to October, 2011. It was implemented in two stages: Translation and cross-cultural adaptation of questionnaire and testing of questionnaire. For translation into Bengali and cross-cultural adaptation, the recommendation by Beaton's procedure was followed. Respondents were enrolled from rheumatology outpatient departments of medicine, BSMMU, household members and healthy patient's attendants. Data were collected and analyzed using SPSS windows v16.
Results: Thirty subjects completed the preliminary version of the questionnaire. Fifteen males (50%) and fifteen (50%) females were interviewed. Mean age of the respondents were 31.97±10.15 with age range 16-55 years. Test-retest reliability of the Bengali version of the questionnaire was tested by interviewing 70 subjects. To evaluate agreement between two measurement qualitative questions were analyzed using kappa test and quantitative question were tested by spearman's correlation. Most of the questions (88.2%) showed high or good agreement (kappa agreement >0.6) and one (5.88%) question showed moderate agreement (0.4-0.6). In case of quantitative questions responses in test and re-test were found to have 50% good correlation and remainder poor correlation in Spearman's correlation.
Conclusions: Pretest and reliability has shown the questionnaire clear in wording and culturally appropriate. Process of translation and adaptation using Beaton's procedure was user friendly, comprehensive and appears an essential method for translation of the questionnaire.

Keywords: WHO-ILAR-COPCORD core English questionnaire, Rheumatic diseases, WHO, ILAR

INTRODUCTION

CDC projection shows that, rheumatic diseases will affect 59.4 million (24.2%) persons by 2020 in the United States.[1] Furthermore, it has been suggested that in the new millennium the health burden of rheumatic diseases will increase.[2,3] The WHO and the ILAR instigated the COPCORD project in 1981.[4] An important part of a COPCORD survey is the subsequent development of an education program for health workers and the community, with the aim of preventing rheumatic diseases and ensuring that those suffering obtain appropriate treatment. A number of countries have already participated in this program and have used the WHO-ILAR COPCORD core

questionnaire (CCQ) to determine the prevalence rates of rheumatic diseases in their countries. The COPCORD-core questionnaire has been used in some other countries as well as in Bangladesh.[5-12] The point prevalence estimates of musculoskeletal pain in rural, urban slum and affluent communities were 26.2, 24.9 and 27.9% respectively in Bangladesh in 2003.[13] The earlier versions of COPCORD CCQ were based on ILAR experience. The CCQ was later modified and developed APLAR COPCORD workshop Korea, 1991. Maintaining basic framework, CCQ was modified and further developed by the fast-track COPCORD Bhigwan (India) model and published using COPCORD Bhigwan model.[14] The bone and joint decade (BJD) India has launched several population surveys to measure the RMS burden. There is an urgent need for a COPCORD data repository. Several COPCORD have differed in their methods. Differences pertain to population sample size, techniques for data collection and recording, chronology of events and phases and classification of symptoms/diseases/disorders. The COPCORD model in current global use needs to be revised. In Bangladesh we already estimated burden of rheumatic disease by initial COPCORD core questionnaire that have been mentioned earlier. Now we had translated, validated and cross-culturally adapted of this recently accepted WHO-ILAR COPCORD questionnaire. Translated questionnaire was served in the community to test its metric properties and efficacy in identifying the rheumatic cases.

METHODS

It was an observational study conducted in rheumatology wing, department of medicine, BSMMU from April to October, 2011. The aim of this study was to translate the revised WHO-ILAR COPCORD questionnaire into Bengali and to test if the Bengali version could be reliably used for the identifying rheumatic diseases in Bangladeshi people. It was implemented in two stages: Translation and cross-cultural adaptation of the questionnaire and testing of the questionnaire. For translation into Bengali and cross-cultural adaptation, the recommendation by Beaton's procedure was followed. The synthesized preliminary Bengali version of the questionnaire was tested for its comprehensibility in ten 12-year-old children and later in 30 patients. Content validity was evaluated by three expert Rheumatologists and test-retest reliability was done with 70 respondents. Respondents were enrolled from rheumatology outpatient, departments of medicine, BSMMU, household members and healthy patient's attendants. Data collected through these procedures were entered using Microsoft access. All statistical analysis was done from collected data using SPSS windows version 16. We assessed content validity through calculation of responses by the experts for each question. Their suggestions also considered. To evaluate agreement between two measurement qualitative questions were analyzed using kappa test and quantitative questions were tested by Spearman's correlation. Ethical clearance was taken from ethical committee of BSMMU.

Inclusion criteria

Inclusion criteria included the patients having age ≥15 years, school boys and girls, patients of rheumatology outdoor, healthy patients' attendance, volunteer and household persons.

Exclusion criteria

Exclusion criteria excluded severely ill patients, mentally retarded and handicapped person, patients who were not willing to participate and having age <15 years.

RESULTS

Comprehensibility testing in adult

The questionnaire was applied to 30 adult subjects. Fifteen males (50%) and fifteen (50%) females completed the questionnaire. Mean age of the respondents were 31.97±10.15 with age range 16-55 years (Table 1). Twenty-eight (93%) were Muslims and two Hindus. Four (13%) could write and read their names, 20 (66%) had more than primary level education. Eleven (36.7%) of the participants were retired persons and 5 were housewives.

Table 1: Socio-demographic characteristics of the respondents (n=30).

Variables	Frequency	%
Gender		
Male	15	50.0
Female	15	50.0
Age (year)		
<20	3	10.0
20-29	10	33.3
30-39	10	33.3
40-49	5	16.7
50-59	2	6.7
Mean±SD (age)	31.97±10.15 (16-55)	
Family type		
Single	25	83.3
Joint	5	16.7
Family member		
<5	19	63.3
5-10	8	26.7
11 and above	3	10.0
Mean (SD) member of family	4.87±4.00 (1-19)	
Religion		
Muslim	28	93.3
Hindu	2	6.7
Marital status		
Unmarried	7	23.3
Married	23	76.7
Educational status		
Can read and write	4	13.3
Primary	6	20.0
Secondary	6	20.0
Higher secondary	9	30.0
Degree	5	16.7

Table 2: Distribution of the respondents by occupation (n=30).

Profession	Frequency	Percent (%)
Student	4	13.3
Service (in door)	5	16.7
Service (out-door)	2	6.7
Sales person	2	6.7
House maid	1	3.3
Retired	11	36.7
Housewife	5	16.7
Total	30	100.0

The occupations of others were service (both indoor and outdoor) 7 (26.7%), sales person 2 and student 4 (13%) (Table 2).

Most of respondent's income was five to twenty thousand only one respondent's income was above twenty (Table 3).

Table 3: Distribution of patient by family income (n=30).

Family income (Tk)	Frequency	Percent (%)
<=5,000	10	33.3
5,001-10,000	11	36.7
10,001-20,000	8	26.7
20,001 and above	1	3.3
Mean±SD	12041.67±8720.18	
Range	2000-40000	
Total	30	100.0

Content validity

The content validity of the questionnaire assessed by an expert committee composed of three experts in the field of rheumatology. Results presented as follows:

Table 4: Grading of the questions by the evaluators.

Question no.	Relevance of question				Evaluate every aspect of item (pain, trauma, functional ability, treatment)				No. of questions	
Question no.	**Fully relevant**	**Relevant**	**Relatively relevant**	**Not relevant at all**	**Good**	**Avg**	**Less than avg.**	**Poor**	**Yes**	**No**
1	2	1			2	1			3	
2	1	2			2	1			3	
3	1	2			2	1			3	
4	1	1	1		2	1			3	
5	2	1			3				3	
6	2	1			2	1			3	
7	1	2			1	2			3	
8a	3				3				3	
8b	3				3				3	
10a	1	2			2	1			3	
10b	3				3				3	
10c	3				3				3	
10d	3				3				3	
10e	3				3				3	
11	2	1			2	1			3	
Total	31	13	1		36	9			45	
Percentage (%)	68.8	28.8	2.2		80	20			100	

In q. 10.e comment regarding VAS (visual analogue score) may be considered in questionnaire. Some of the questions Q.2, 3, 4 were less relevant in terms of assess pain, trauma.

Test-retest reliability

Seventy-five respondents were enrolled from the rheumatology outpatient department of BSMMU and from their household members. Out of them forty-eight (68.6%) were males and twenty-two (31.4%) were females. Five respondents dropped out at the 2nd visit. Patients were requested to give an approximate or average number where specific data were difficult to recall.

Mean age of the test population was 38.29±14.74 and age ranged from 16-69. Among the respondents 8 studied up to class 5 and 6, 7 respondents completed SSC, HSC respectively. The remaining 49 (69%) had completed graduation. Sixty-eight (97%) respondents were Muslims and two were Hindu (Table 5).

Among 70 subjects, 29 (41.4%) were service holder and professionals, 13(18.6%) were house wives. 9, 6 and 5

were student, business/shopkeeper and retired persons respectively (Table 6).

Table 5: Socio demographic characteristics (n=70).

Variables	Frequency	Percent (%)
Gender		
Male	48	68.6
Female	22	31.4
Age (year)		
<20	3	4.3
20-29	22	31.4
30-39	17	24.3
40-49	8	11.4
50 and above	20	28.6
Mean (SD) age	38.29±14.74	
Range	16-69	
Family type		
Single	39	55.7
Combined	31	44.3
Family member		
<5	43	61.4
5-10	25	35.7
11 and above	2	2.9
Mean (SD) member of family	4.50 (2.1)	
Religion		
Muslim	68	97.1
Hindu	2	2.9
Marital status		
Unmarried	29	41.4
Married	41	58.6
Educational status		
Primary	8	11.4
Secondary	11	15.7
Higher secondary	12	17.14
Degree	20	28.5
Post Graduate	19	27.1
Habit		
Present smoker	15	21.4
Past smoker	14	20.0

Table 6: Distribution of patient by occupation (n=70).

Profession	Frequency	%
Student	9	12.9
Service (in door)	11	15.7
Service (outdoor)	4	5.7
Doctor/engineer/banker	14	20.0
Soldier/police/security guard	1	1.4
Retired	5	7.1
Housewife	13	18.6
Garments worker	3	4.3
Driver	2	2.9
Business	6	8.6
Mason/carpenter/pipe fitter	2	2.9
Total	70	100.0

Most of the respondents come from middle class (Table 7).

In questionnaire total questions were 30. Among 18 qualitative questions, 17 (88.2%) showed high or good agreement (Kappa agreement >0.6) except one (5.88%) question regarding body swelling from past 7 days to one year showed moderate agreement (0.4-0.6). Responses during test and retest regarding body and joint pain, swelling and stiffness, intensity of pain (7 days, 7 days to 1 year), duration of each episode and trauma, interruption of work due to pain are shown in the Table 8 and 9.

Table 7: Socio-economic condition (n=70).

Variables	Frequency (%)
Upper class	12 (17.14)
Middle class	46 (65)
Lower class	12 (17.14)
Total	70 (100)

Table 8: Kappa test to show agreement of qualitative variable (regarding body and joint pain, stiffness, swelling, suffering from other illness)

Qualitative variable	Kappa value
Other than rheumatic pain	0.856
Within last 7 days	
Pain anywhere in body on last 7 days	0.801
Swelling	0.660
Stiffness	0.881
Joint pain on last 7 days	0.885
Joint swelling	1.000
Joint stiffness	0.915
Within last one years	
Pain anywhere in body on last 7 days	0.731
Swelling	0.569
Stiffness	0.888
Joint pain on last 7 days	0.877
Joint swelling	0.702
Joint stiffness	0.739

Table 9: Kappa test to show agreement of qualitative variable (Intensity of pain, duration of pain, trauma).

Variables	Kappa value	P
Intensity of pain within 7 days	0.769	0.001
Intensity of pain from 7 days to 1 year	0.773	0.001
Duration of each episode	1.00	0.001
History of trauma	0.785	0.001
Interruption of work due to pain on last 1 year	0.990	0.001

*Spearman's correlation

Among twelve quantitative questions regarding duration of bodily and joint pain, swelling and stiffness 50% showed the good correlation and poor correlation showed in one question regarding duration of body pain in last seven days. Remaining questions didn't show any correlation.

Table 10: Correlation of joint and body pain, swelling and stiffness regarding duration (within 7 days).

Variables	Test			Re-test			*Spearman's correlation
	N	Mean	SD	N	Mean	SD	
Body							
Pain	23	6.74	2.072	21	6.57	1.121	0.06
Swelling	2	7.00	.000	1	7.00	-	-
Stiffness	5	7.00	.000	4	7.00	.000	-
Joint							
Pain	34	6.71	1.835	32	6.69	0.896	0.881**
Swelling	2	7.00	0.000	3	5.33	2.887	-
Stiffness	6	7.00	0.000	7	7.00	0.000	-

Table 11: Correlation of joint and body pain, swelling and stiffness regarding duration (from 7 days to 1 year).

Variables	Test			Re-test			*Spearman's correlation
	N	Median	Range	N	Median	Range	
Body							
Pain	27	75.00	2-1460	28	70.00	2-1460	0.530*
Swelling	3	45.00	45-365	1	45.00	-	-
Stiffness	5	60.00	2-1095	4	547.50	21-1095	0.400*
Joint							
Pain	44	90.00	2-2800	46	82.50	4-2800	0.768*
Swelling	2	570.00	45-1095	1	365.00	-	-
Stiffness	7	60.00	2-1095	4	730.00	45-1095	0.632*

*Spearman's correlation

DISCUSSION

We used Beaton's procedure to adapt the COPCORD CCQ with respect to translation, cross cultural equivalence, back translation and reliability. The translation of the CCQ to Bengali was successful, as confirmed by the back translation. It took about 10-15 minutes to administer. After pretest modification and adaptation as well as items requiring much elaboration were removed to achieve greater face and content validity. From pretest remarkable adaptations like merging of phase I and II, defining the duration of suffering for the past (within 1 year), continuation of work despite difficulty as well as modification in the trauma part were done. It made this questionnaire easy, less time consuming, better in clarity and recall. A similar study was conducted to test if the Arabic version of COPCORD CCQ could be reliably used for the screening of rheumatic diseases in Kuwaitis. In their study, they observed that Arabic version of the WHO-ILAR COPCORD questionnaire was an appropriate tool for screening of rheumatic diseases among Kuwaitis as it was culturally adequate and certainly understood.[15] In this study, the interviewers had to be trained about the questionnaire and also regarding the process of interview. Whenever recall is essential for response it could not eliminate biasness. Item related to trauma has not been evaluated adequately due to few numbers of respondents. It may be speculated that we find more respondent in other setting particularly in rural area. Eighty (80%) percent of the items of the questionnaire were scored good by the evaluation of expert rheumatologist reflecting higher comprehensibility and content validity.[15,16] The adapted and modified questionnaire was found reliable both in quantitative and qualitative questions. Among eighteen qualitative questions high agreement was observed in 17 (Kappa agreement >0.6). The validity is lower than the validity of the Kuwaiti population (0.97), indigenous peoples (0.77) but higher than the figures reported in the Ecuadorian study (0.17).[15,16,18] In spearman's correlation for quantitative questions (12), 50% showed good correlation and poor correlation showed in bodily pain within last 7 days and rest of the questions didn't show any correlation in terms of duration. Among these questionnaires most of the question regarding joint and body pain, swelling, stiffness within last 7 days showed no correlation. This might be, because respondents who were suffering from acute pain undergone spontaneous remission during 7 days' time so that there was a difficulty in recalling the exact duration. It might be due to premature duration statement about the pain (I have taken patient who had pain for last two to three days after that it may persisted for another two to three days so that during recall total duration may be longer). On the other hand, those who were suffering from chronic pain there were less recall bias most of the questions except one, regarding body swelling showed poor correlation. This question though didn't show the correlation but these are very pertinent to have the durations of suffering both in present and past.

CONCLUSION

Pretest and reliability have shown the questionnaire clear in wording and culturally appropriate. Process of

translation and adaptation using Beaton's procedure was user friendly, comprehensive and appears an essential method for translation of the questionnaire. Cross-cultural adaptation of a questionnaire requires modifications, validation and field testing. So, this translation procedure can be followed in other language and used for screening rheumatic disease in other communities. Translated and culturally adapted WHO-ILAR-COPCORD questionnaire is a valid and reliable instrument. Further study needed for questions not been addressed adequately in this questionnaire. Enrichment of this questionnaire may be done by more epidemiological surveys. Finally, eventually with the passage of time and accommodation of experience need to change the current format may arise.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Islam MA, Islam MN, Haq SA, Choudhury MR, Sultana S. Translation of revised WHO international league against rheumatism community oriented program for the control of rheumatic diseases core English questionnaire into Bengali and its cross-cultural adaptation and validation. Int J Adv Med 2021;8:235-40.