

Adapting Health Literacy Tool for Use in Hospital: Experience of Holy Family Hospital Rawalpindi, Pakistan

Health Literacy
Tool for Use in
Hospital

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ABSTRACT

Objective: To adapt HL-SF12 for measurement of literacy regarding disease prevention, health care and health promotion in patients visiting tertiary care hospital, Rawalpindi, Pakistan.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted Department of Community Medicine, HITEC-IMS, Taxila during the year January to June 2021.

Materials and Methods: Data was collected in three public sector tertiary care hospitals including Holy Family Hospital Rawalpindi during the year 2018. We translated the HL-SF12 (short-form health literacy 12 items questionnaire) for Pakistani population in Urdu language. Face validity was assessed by 5 patients resembling target population. For content validity, 7 public health experts were consulted. Construct validity was assessed by administering questionnaire to patients and analyzing its results by exploratory factor analysis and correlation analysis. A total of 450 adults of either gender with age > 18 years, able to communicate in Urdu were selected from outpatient and emergency departments of three public sector hospitals.

Results: Health literacy questionnaire adapted by translating a 12 item pre-validated tool by European Consortium was accepted by subject experts as feasible. Some change in order of questions was advised by experts that were followed by researcher. Patients responded well to the questionnaire and didn't require any help of data collectors for understanding of questions. Exploratory Factor analysis of this data identified three components. Construct validity assessed by correlation analysis was reasonably high.

Conclusion: Health literacy questionnaire by European Consortium was adapted by translation in Urdu language and was successfully applied with reasonable validity.

Key Words: Health literacy; HL-SF12; health promotion; delivery of health care; prevention and control

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INTRODUCTION

'Health literacy' is the ability of individuals to access, understand and utilize health related information which is necessary to maintain good health.¹ Low health literacy is associated with risky health behaviors leading to diseases.²

Health literacy has been assessed by different researchers across the globe using different methods. These methods vary from assessment using document literacy, and quantitative literacy to validated tools. Tools for health literacy assessments include Rapid Estimate of Adult Literacy in Medicine (REALM),

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Test of Functional Health Literacy in Adults (TOFHLA), some validated self-report scales and a tool designed by European Union (EU). These have been used in different countries for health literacy measurement for patients and general population.³

A Health Literacy tool was designed by European Union and survey done in 2009-2012. It was supported and funded by the European Commission. The aims included to measure health literacy in Europe, to establish networks, at national and European level and to promote health literacy in Europe. This Health Literacy Survey (HLS) tool comprised questions that further helped to design a model around concepts of health literacy.⁴ In first phase a comprehensive questionnaire with 47 items was made and used in 2011 for health literacy survey in eight member states of European Consortium. Shorter versions of this tool (12 item and 6 item questionnaires) were developed and validated in the same project after testing comprehensive one.⁵

Pakistan continues to struggle with low health literacy that often results in late presentation of disease, poor adherence to treatment and meagre understanding of

wellness and disease prevention. In a country burdened by diseases of the developing and the developed world, with poor healthcare infrastructure and low literacy levels improving healthcare literacy could have major influence on health and wellness of our masses.⁶ In Pakistan, there is scarcity of evidence regarding the role of health literacy on treatment outcomes, medication adherence or use of health care services. Sulehri MA et al studied commonly reported health literacy factors including information regarding balanced diet, injury prevention during traveling, hand-washing and hygiene, safety, use of drugs, behavior in schools, family and community.⁷ Another study done in Karachi assessed health literacy using Health Literacy Survey Questionnaire (HLS-Asia-Q) and reported low levels of literacy.⁸ In Rawalpindi, health literacy levels were measured using a validated tool designed by European Consortium and was found to be low.⁹ However to our best knowledge, no study was found published on validation of health literacy questionnaires or adaptation of any valid tool with local context. Our objective is to adapt HL-SF12 Tool for measurement of Health Literacy regarding disease prevention, health care and health promotion in patients visiting tertiary care hospital, Rawalpindi, Pakistan. This tool is validated in many countries and is a highly reliable tool. It has been adapted in other languages also. This study aims to adapt this tool in Urdu language and provide researchers a validated tool for measuring health literacy levels for Pakistani population speaking Urdu. This will help acquiring epidemiological information related to health literacy in Pakistan and help in planning strategies for improving health literacy which is important to reduce the burden of communicable and non-communicable diseases.

MATERIALS AND METHODS

A cross sectional study was conducted in year 2018 in a period of four months from March to June to assess health literacy levels in patients visiting medical outdoor department of three tertiary hospitals. Current study conducted in 2021 was another analysis of this previously published larger study.⁹

Patients visiting medical Outdoor Patients Department (OPD) and medical emergency departments of three tertiary care hospitals were included in the study. Sample size was 450 patients in this study based on the number of patients available during one week of data collection. This sample size was sufficient as the minimum sample size requirement for factor analysis is 20 subjects per variable. We had 12 variables in our questionnaire and so minimum sample size required was 240. Patients were selected from OPD and emergency department using purposive sampling technique. Patients were included in sample if they were adults, of either gender, clinically stable patients, and able to communicate in Urdu language. Patients

were excluded from sample if they were incapable of providing informed consent.

Data collection procedure: A pre-validated questionnaire¹⁰ was adapted to collect information regarding health literacy of patients after taking permission from developers of this tool. The questionnaire included 12 questions from a short version of health literacy questionnaire designed and validated by European Consortium under European Health Literacy (HLS-EU) project.⁹ We translated the 12 item questionnaire (more detail of translation, back translation) into Urdu and pilot tested it among 50 patients. Face validity of final questionnaire was assessed by 5 persons resembling target population. For assessing content validity, questionnaire was sent to 7 public health experts and their opinions were taken. These experts belonged to different institutes and all had more than three years' experience in public health. The panel of experts determined whether the contents of the questionnaire were relevant to the conceptual framework and the local context. Reliability of this translated questionnaire was determined by calculating Cronbach's Alpha in SPSS, which came out to be 0.806, showing that the tool was highly reliable. Therefore, questionnaire was approved for final study. The 12 questions included in it were related to assessment of health literacy levels in three domains, including health promotion, disease prevention and health care. Patients were asked questions to assess their ability to 'access', 'understand' and 'use' health related information in these three domains of health. Data was collected from the patients by trained data collectors and answers were recorded on a Likert scale from very easy to very difficult. Informed consent was taken from the patients before their interview. Confidentiality of their data was ensured.

Statistical analysis: The data was entered and analyzed using SPSS version 21. Data from pilot study was not included in the final analysis. Data was analyzed by exploratory factor analysis (EFA), internal consistency analysis. Principal component analysis was run in SPSS for confirming constructs in adapted questionnaire. KMO and Bartlett's test was performed and orthogonal rotation was used. KMO value >0.6 was considered acceptable. Components were extracted based on Eigen value >1. Items were grouped in a component based on loading in component matrix. For construct validity, convergent validity was assessed based on correlation >0.5. Internal consistency of items was assessed by calculating Cronbach alpha. Acceptable level of cronbach was 0.7.

RESULTS

A total of 450 participants gave consent to fill data. The mean age of 450 respondents was 37.6 years (SD + 13.1Years). Majority respondents had 1-10 years of education. Socio-demographic characteristics have been summarized in table 1.

Table No.1: Socio-demographic characteristics of respondents (n=450)

Characteristics		Findings*
Age in years		37.6 + 13.1
Gender	Male	195 (43.3%)
Employment	Employed	202 (44.9%)
	Unemployed	242 (53.8%)
	Student	5 (1.1%)
	Retired	1 (0.2%)
Nature of job	Business	38 (21.1%)
	Govt. job	19 (10.6%)
	Private job	77 (42.8%)
	Related to health	0 (0.0%)
	Education	31 (17.2%)
	Commerce	2 (1.1%)
	Any other	13 (7.2%)
Educational Status	Illiterate	16 (3.6%)
	1-10 years of education	191 (42.5%)
	>10-12 years of education	106 (23.6%)
	13-16 years of education	122 (27.2%)
	> 16 years of education	13 (2.9%)
Monthly income in Rupees	< 10,000	129 (30.4%)
	10,000-20,000	149 (35.1%)
	>20,000-30,000	92 (21.6%)
	>30,000-40,000	34 (8.0%)
	>40,000-50,000	7 (1.6%)
Watch health related programs on TV	Never	169 (37.6%)
	Often	240 (53.3%)
	Mostly	41 (9.1%)

*Findings are mean +SD or count (percent) as applicable.

Table No.2: Items loading on constructs

Items	Constructs*		
	Disease Prevention	Health care	Health promotion
1 To find information on treatments of illnesses that concern you?		.848	
2 To understand the leaflets that come with your medicine?		.738	
3 To judge the advantages and disadvantages of different treatment options?		.810	
4 To call an ambulance in an emergency?		.634	
5 To find information on how to manage mental health problems like stress or depression?	.457	.375	
6 To understand why you need health screenings (such as breast exam, blood sugar test, blood pressure)?	.808		
7 To decide how you can protect yourself from illness based on advice from family and friends?	.739	-.106	
8 To assess the need of vaccination	.726		-.148
9 To find out about activities (such as meditation, exercise, walking, Pilates etc.) that are good for your mental well-being?	.324		-.653
10 To understand information in the media (such as Internet, newspaper, magazines) on how to get healthier?		.189	-.840
11 To judge which everyday behavior (such as drinking and eating habits, exercise etc.) is related to your health?			-.860
12 To join a sports club or exercise class if you want to?	.589	.259	.174

*Constructs extracted by Principal Component analysis using Oblique rotation

HLQ by European Consortium was translated into Urdu language with 12 questions for adaptation with local context. This tool’s content validity was assessed by taking feedback from 7 experts. They all considered questions relevant and appropriate to assess health literacy. One expert advised some change in order that was not considered feasible.

Factor analysis was performed on data for arranging items under constructs using principal component analysis. KMO value was >0.6 and considered acceptable. Three components were extracted based on Eigen value >1. Items were identified based on their loading on one construct as shown in table 2. Items with higher commonality were considered relevant to one construct and were arranged under that construct as shown in table 3.

One item related to joining sports club was arranged under health promotion construct in original HL-SF-12. Whereas in our factor analysis results, this item was found to have higher commonality with construct of disease prevention and was therefore considered an item under that component (table 3).

Construct validity assessed by convergent validity was fulfilled by correlations between items in one construct and items were found to be having high correlations of >0.5 for all items. Only one item “find information on how to manage mental health problems” had <0.5 correlation with its construct of disease prevention.

Internal consistency of each component’s items were assessed with Cronbach alpha that came out to be more than 0.7 and was considered reliable (refer to table 4). Cronbach alpha of all 12 items in questionnaire was 0.882 and thus found to be highly reliable.

Table No.3: Items relevance to all three constructs

Health care	Disease Prevention	Health promotion
1. To find information on treatments of illnesses that concern you? 2. To understand the leaflets that come with your medicine? 3. To judge the advantages and disadvantages of different treatment options? 4. To call an ambulance in an emergency?	1. To find information on how to manage mental health problems like stress or depression? 2. To understand why you need health screenings (such as breast exam, blood sugar test, blood pressure)? 3. To decide how you can protect yourself from illness based on advice from family and friends? 4. To assess the need of vaccination 5. To join a sports club or exercise class if you want to?	1. To find out about activities (such as meditation, exercise, walking, Pilates etc.) that are good for your mental well-being? 2. To understand information in the media (such as Internet, newspaper, magazines) on how to get healthier? 3. To judge which everyday behavior (such as drinking and eating habits, exercise etc.) is related to your health?

Table 4: Reliability coefficient

Domain	Cronbach alpha
Health care	0.806
Disease prevention	0.789
Health promotion	0.819

HL-SF12 questionnaire translated and adapted in Urdu has been added in supplemental section.

DISCUSSION

Health literacy remains a confusing concept and its measurement is not done in Pakistan to our best knowledge. The current lack of consensus of measurement of health literacy needed to be overcome in our setting.¹¹ This study aims to fill this gap by adapting a pre-validated health literacy questionnaire with local context. The main findings were extraction of three components that were in line with the components as in original questionnaire. They were named as health care, disease prevention and health promotion. Internal consistency of items was moderately high. Results of a European study revealed that patients' health literacy assessed with the HL-SF12 was shown with high internal consistency (Cronbach $\alpha = .87$), and moderately correlated with the single-item from Chew's Set of Brief Health Literacy Question, with satisfactory item-scale convergent validity (item-scale correlation $\geq .40$).¹²

Items retained in our questionnaire were related to information processing stages of health. One item for each stage of health care information processing (access, understanding, appraise, apply) was included. One aspect for understanding disease prevention, two items for accessing disease prevention information and one for applying it were included. Regarding health promotion, one item for each aspect (access, understand, appraise) was included. This totaled as 12 items in questionnaire. Comprehensive tool by European Consortium was finalized with 47 items in total. This included three to five items for each stage of information processing in the three domains.¹³ In

contrast with EU questionnaire, in our study one item regarding joining a sports club was found to have low commonality with a single construct. This difference maybe because in Pakistani culture sports is not considered important for health.

This study used a robust statistical approach for assessing validity of an adapted questionnaire. Sample size was sufficient. Data collectors were trained well and a pilot study was also done to check the efficacy of questionnaire. However, there were a few limitations. Correlation analysis for comparing scores on adapted questionnaire and gold standard was not done. Content analysis feedback was also not adequately incorporated. We advocate for more research in literacy and validating tools by translating in other local languages in Pakistan. Meanwhile, strategies for enhancing health literacy should be used. Nejatian recommended that ability to recognize disorders, knowledge of self-treatment and knowledge of risk factors and causes should also be included while measuring health literacy.¹⁴ These items can be added if further adaption of this tool is to be considered.

CONCLUSION

The adapted HL-SF12 was a valid and easy to use tool for assessing patients' health literacy in the hospitals to facilitate healthcare providers in enhancing patients' health literacy and healthcare qualities. This can be used by researchers in Pakistan for conducting more surveys to identify gaps. However, it should be adapted in other languages in Pakistan also.

Author's Contribution:

Concept & Design of Study: Bushra Anwar
 Drafting: Aashi Ahmed, Nadia Nisar
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