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Development of Health Literacy Assessment Tool for Type 2 Diabetic Patients of Pakistan having an Understanding of Urdu Language

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Abstract

Background: Health literacy and its assessment is required to determine health seeking behavior of people in a community. Health literacy level varies according to the cultural and lingual diversities of a community.

Objective: To develop and assess the internal consistency of a Health Literacy Assessment Tool in the Urdu language to determine health-related behavior regarding type-2 diabetes.

Methodology: Study design: Cross-sectional study. Study duration: June 2016 to June 2017. The health literacy assessment tool for type 2 diabetics was first piloted on fifteen patients that were fulfilling the inclusion criteria in the diabetes clinic outpatient department of Shaikh Zayed Hospital Lahore. The sample size was 135 patients which was determined by the power of precision 3. Patients were interviewed by convenient sampling. The internal consistency and validity of the tool were determined by Cronbach alpha as 0.86. Health literacy level was categorized as 0-3 = inadequate, 4-6= moderate, and 7-10= adequate health literacy. Overall 43% of patients scored 3 or less on HLAT (inadequate health literacy) for type-2 diabetic patients, whereas 37% of patients who scored 4 to 6 on HLAT have a moderate health literacy level and 20% who scored 7 to 10 on HLAT have adequate health literacy level.

Results: The construct validity of the tool was determined by the discussion of two domains with researchers and the questions were also discussed in detail to find out the health literacy level of diabetic patients. This tool is the newly constructed tool for the population of Pakistan who can understand the Urdu language and no other such tool has been constructed yet so it was not assessed for convergent validity. The internal consistency of the tool was determined by Cronbach alpha which was 0.86 (>0.70).

Conclusion: Our health literacy assessment tool for type-2 diabetes patients has shown good internal consistency and more than half of the diabetic patients have moderate to adequate literacy levels.

Keywords: Health literacy assessment tool, Type-2 diabetes, Internal Consistency, Validity, Urdu.

Introduction

Health literacy is assessed in different domains of the functional, interactive, and critical ability of an individual to keep themselves healthy.[1] As chronic diseases require continuous compliance and lifestyle modification to prevent them from developing major and minor complications. Among chronic diseases, type-2 diabetes is a highly prevalent disease in Pakistan.[2] If not treated properly it may lead to microvascular and macrovascular complications and burdens the health system. Type 2 diabetes mellitus can be controlled by improving the health literacy and health-seeking behavior of a population.[3] The World Health Organization and the United States Department of Health and Human Services are expanding the concept and scope of health literacy, its measurement doesn't only include numeracy or reading skills but it also includes health information-seeking skills.[2]

Healthcare professionals provide information to the patients about their health and utilization of health facilities either in written, verbal, or visual forms, health literacy can be improved if a good communicating medium is used.[3] Health system plays a significant role in improving literacy level as health literacy is not only the ability to get information but also includes proper communication skills between health care providers and patients.[4] Most adults can easily understand health information if it is provided either through verbal or visual presentation. Audio and video are helpful in understanding difficult information and they can also increase compliance.[5]

Health literacy measuring tools have been developed but there is no single tool that is applicable to all cultures that are having different languages and social influences on their health. In order to develop a measuring scale for health literacy, the tool should include health-related context.[6] There are two domains of Health literacy that are reported by IOM, which include print literacy and oral literacy related to health information provided to patients. The understanding depends upon reading and listening skills and the culture and social norms.[7] At present no valid tool has been identified which can be used

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globally. For the evaluation of health literacy in American adults, the Test of functional health literacy of adults "(TOFHLA) is used but it is a more time-consuming test as its administration time is 10 to 20 minutes. This tool was designed to find out the reading and numeracy skills of patients, its format includes filling in the blank and selecting an appropriate word in medical terms. This tool is evaluating vocabulary skills but it has been found better than the rapid estimate of adult literacy in medicine. Realm is a less time-consuming test than TOFHLA but it includes only medical words for reading and comprehension. Those who are scoring adequate functional health literacy are able to read and understand the medical terms, prescription, and schedule of medication. Those who have a marginal or inadequate level of Health literacy seek help from Health professionals. Literacy skills can also be determined by self-reporting from the patient, which is helpful to predict low literacy[8] Another tool newest vital sign (NVS) measures reading and numeracy skills, it uses a nutrient label and the patient is asked six questions from the label. Scoring is one by adding correct answers and categorized as limited literacy (0 to 3) and adequate literacy (4 to 6). This test is more sensitive and less time-consuming as compared to TOFHLA and REALM.[9] These Health literacy tools have been translated into English and Spanish-speaking adults (s-TOFHLA), Portuguese (s-HATFPA-18), and Chinese languages (NVS). Still, there are many challenges for health literacy assessment tolls for validity and acceptability. Functional Health literacy cannot only be evaluated on a single parameter of reading ability but it is more than reading skills. The common language in which patients can communicate with Health providers is the better way of assessment.[10] Health providers are reluctant to screen patients for their literacy level as it may reflect a problem in the health system and a lack of their training.[11] The Health literacy tools that have been developed might not be applicable in all clinical settings, so certain criteria should be followed to make literacy tools applicable on clinical and research sides.[10]

This study was designed for the first time to find out the patients who are getting health information and health facilities in their own national language. As no health literacy assessment tool has yet been developed to be implemented over all cultures to evaluate them on single criteria for their health literacy. This tool provides a gateway for further research and generates a new idea to assess and screen the population in their own cultural, and environmental parameters and to remain context-specific for a particular health aspect. The Health Literacy Assessment Tool for Type-2 Diabetic patients is a comprehensive and context-specific tool for measuring health literacy levels in Type-2 Diabetics than the other current leading health literacy tools. It reflects a range of understanding abilities and skills to comprehend the given information that is necessary for the patient to improve his health. This study was conducted to develop and assess the internal consistency of a Health Literacy Assessment Tool in the Urdu language to determine health-related behavior regarding type-2 diabetes.

Methodology

Study design: Cross-sectional study. Study duration: August 2015 to July 2017. The health literacy assessment tool for type-2 diabetics was first piloted on fifteen patients that were fulfilling the inclusion criteria in the diabetes clinic outpatient department of Shaikh Zayed Hospital Lahore. The sample size was 135 patients which was determined by the power of precision 3. Patients were interviewed by convenient sampling. The study was done in the waiting area for the patients keeping the privacy of every patient all patients were interviewed separately. After taking the informed consent patient was told about the study, the demographic information was taken from the patient and then the listening session was followed by the visual session. The time taken from each patient was four minutes, this time was consumed while the patient was waiting for his turn of appointment so it was convenient both for the patient and the researcher. In the end, the patient was greeted by the researcher and was allowed to ask any question about his/her health, and all the patients were satisfied accordingly.

Health literacy assessment varies among different populations according to their culture and language, based upon this observation a self-constructed health literacy assessment tool for type 2 diabetic populations was developed. An extensive literature review was done on the development of a tool that could be implemented in the population of Pakistan that can understand their national language, Urdu.

Development and validation of health literacy assessment tool:

In order to determine the understanding of the diabetic patients a predetermined set of information was used to develop a questionnaire so that the patients could be assessed for health-related literacy levels. A self-constructed tool was designed more specifically to find out the level of understanding of Pakistanis who can understand the Urdu language when health-related information is provided to them in their national language to maintain consistency for diabetes patients. Based on collected information from the diabetes clinic a tool was developed and its relevance, difficulty level, and validity were discussed with health professionals and researchers.

The health literacy assessment tool for type-2 diabetic patients was constructed after an extensive review of all health literacy assessment tools that were used in the USA, and Europe and their translated versions in different other countries. The most important domain identified for the assessment of health literacy was the understanding of patients about their disease based on their conceptual knowledge. The understanding was evaluated by subdomains that were categorized as listening comprehension and the visual understanding of given health information. The questionnaire was established on the newest vital sign (NVS) that measures the reading and numeracy skills of a patient by showing them a picture.[2] In this self-constructed tool patient was shown a pamphlet for visual assessment and health information was given orally and verbal exchange between researcher and patient was done for health literacy assessment.

Health literacy assessment tool:

a. Listening domain: In this, the information regarding type-2 diabetes, its sign and symptoms, and management were included. The researcher then asked five questions each from the given information in the same order. The questions were in increasing order of difficulty.
1. What do you know about diabetes now?
2. How many types of diabetes are there?
3. Which type of diabetes is common?
4. What is the symptom of diabetes mellitus?
5. How diabetes can be controlled?
b. Visual domain: A pamphlet was designed that showed a character having signs and symptoms of hyperglycemia. Five questions were constructed in increasing order of difficulty and scoring was designed as given in below.
1. What is shown in this picture?
2. What is happening to the person?
3. What information you get from this?
4. Can you give reason for this condition?
5. What measures are to be taken for its management?

Table I: Scoring method followed for listening and Visual domains

Score	Listening	Visual
0	Not able to answer	Not able to interpret picture or give any response
1	Able to answer: 20%	Able to interpret picture clearly and respond (20%)
2	Able to answer: 40%	Can understand the message from picture: picture is showing symptoms (40%)
3	Able to answer: 60%	Can explain the message from picture: picture is showing symptoms of hyperglycemia (60%)
4	Able to answer: 80%	Can give reasons for this condition: it occurs due to high sugar levels. (80%)
5	Able to answer: 100%	Can tell what measures are to be taken for management. (100%)

Scoring of the listening and visual domains separately on the following criteria with reference to the newest vital sign: 0-3: inadequate health literacy, 4-6: moderate health literacy, and 7-10: adequate health literacy

Data analysis:

The internal consistency and validity of the tool were determined by Cronbach alpha. Health literacy level was categorized as 0-3 = inadequate, 4-6= moderate, and 7-10= adequate health literacy. Mean standard deviation and percentages were calculated. Ethical approval was sought from the ethical committee of the institute.

Results:

The construct validity of the tool was determined by the discussion of two domains with researchers and the questions were also discussed in detail to find out the health literacy level of diabetic patients. This tool is the newly constructed tool for the population of Pakistan who can understand the Urdu language and no other such tool has been constructed yet so it was not assessed for convergent validity. The internal consistency of the tool was determined by Cronbach alpha which was 0.86 (>0.70).

Table II: Score for each question of HLAT, type-2 diabetic patients:

Domains	Questions	Description	Correct (%)	Wrong (%)
Listening	Question 1	What do you know about diabetes now?	74.1	25.9
	Question 2	How many types of diabetes are there?	54.8	45.2
	Question 3	Which type of diabetes is common?	31.1	68.9
	Question 4	What is the symptom of diabetes mellitus?	50.4	49.6
	Question 5	How diabetes can be controlled?	60.7	39.3
Visual	Question 6	What is shown in this picture	64.4	35.6
	Question 7	What is happening to the person?	40.7	59.3
	Question 8	What information you get from this?	18.5	81.5
	Question 9	Can you give reason for this condition?	14.8	85.2
	Question10	What measures are to be taken for its management?	27.4	72.6

Forty- three percent of patients scored 3 or less on HLAT for type-2 diabetic patients; these are the patients who have inadequate health literacy. Thirty-seven percent of patients who scored 4 to 6 on HLAT have moderate health literacy levels and twenty percent who scored 7 to 10 on HLAT have adequate health literacy levels.

Discussion

The current tools that are being used in developed and other developing countries are in English Language and have been translated into Portuguese, Spanish, and Chinese languages. These tools are only used to access basic language proficiency and numeracy as in TOFHLA, REALM, and NVS respectively.[13] These tools cannot be implemented in every culture as health literacy goes beyond reading comprehension. The TOFHLA doesn't measure advanced skills; also it cannot be used in our settings where most of the population understands the Urdu Language. People are getting their health information from Health providers and also other community members by means of verbal or visual communication. Patients who are visiting health centers are mostly illiterate and they seek help from their relatives or health care providers to know about their disease, medicine, prescription reading, and appointments with doctors.

The health literacy assessment tool for type-2 diabetes patient's demonstrated good internal consistency, with a Cronbach's alpha of 0.86 for visual and listening assessment. An instrument is reliable if its Cronbach's alpha value is greater than 0.70, which shows the internal validity of the instrument that can be applied over a study population.[14] Health literacy assessment tool was analyzed for each question responded by the patients. In the listening session, question number 1 was answered correctly by 74% of patients. Question number 3 was found to be difficult as 31% of patients were able to answer it correctly. These results show that people know about their disease and its management but it might depend upon their understanding and listening skills as the health information was first read to them and they were asked questions from the given context. Visual understanding of patients was 64.4% for question 6, only 18.5% were able to identify the symptoms of hyperglycemia and 14.8% of patients were able to analyze and give management for this condition. The mean score achieved on the health literacy assessment tool for type-2 diabetic patients, who can understand the Urdu language, was 4.3 with 43% of patients scoring inadequate health literacy level. Brazilian adults who were screened for functional health literacy through Short Assessment of Health Literacy for Portuguese Speaking Adults-18 (SAHLPA-18) had 56.6% of the adults with inadequate health literacy levels. English and Spanish speaking had 38% of adult diabetic patients with inadequate health literacy using s-TOFHLA.[15]

Conclusion

Our health literacy assessment tool for type-2 diabetes patients has shown good internal consistency and more than half of the diabetic patients have moderate to adequate literacy levels.

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