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Cross-Cultural Translation and Adaptation of the Newest Vital Sign Instrument for Urdu Speakers: Delphi Method

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ABSTRACT

Aim of the Study: The current study's aim was to translate and adapt The Newest Vital Sign (NVS) instrument while maintaining professional standards.

Methodology: The Delphi method was used to translate the instrument, which was then followed by cognitive evaluation rounds of one-on-one interviews with members of the intended population, larger-scale data collection, and determining the instrument's reliability and validity.

Findings: Findings of this study showed that the translated version was significantly correlated with another already translated and established instrument of health literacy. Similarly, an expert panel helped create a content validity ratio at the professional level. The internal consistency was also measured and was at a satisfactory level.

Conclusion: It was concluded that the study suggests that the Newest Vital Sign-Urdu (NVS-Urdu) is a reliable, valid, and content rich measure of functional health literacy that can be used for Urdu speakers in research, clinical practice, and public health settings.

Keywords: Health Literacy, The Newest Vital Sign, Delphi Method, Content Validity Ratio, Cognitive Evaluation.

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Introduction

Health literacy is the degree to which a person can receive, process, and comprehend the fundamental health information and services required to make informed healthcare decisions (Ratzan et al., 2000). Age and education are two well-known social factors that are correlated with health literacy. More health literacy is typically a byproduct of higher education (Ginde et al., 2008). While age and health literacy are adversely connected, with older persons having lower health literacy, education level and health literacy have been proven to be positively correlated. People with low health literacy frequently have poor health outcomes, depend more on emergency services, comprehend health literacy poorly, and are more likely to pass away young or develop major illnesses as they age (La Vonne & Zun, 2008). They also typically lack

self-management skills. It is critical to evaluate health literacy since health outcomes and health literacy are interconnected (Bostock & Steptoe, 2012; Kobayashi et al., 2015). In Pakistan's native tongue, there was no comparable tool for evaluating health literacy levels. As a result, a new health literacy assessment method was needed. A rapid and accurate technique to measure health literacy was required. One of the most popular international health literacy evaluation tools, the Newest Vital Sign (NVS), meets these requirements admirably (Ruffin et al., 2011). Its creation can be credited to the United States and adapted by a number of countries, including Taiwan, China, Japan, the Netherlands, England, and the United Kingdom (Kogure et al., 2014; Özdemir et al., 2010; Rowlands et al., 2013). The NVS consists of a six-question reading and math test and an ice cream label. This instrument, which may be administered in as little as three to five minutes and takes about the same amount of time to be solved (Lutfiyya et al., 2008), has been used to assess health literacy in a wide range of subjects from a variety of sociodemographic backgrounds (Shealy & Threatt, 2016).

Study Objective

The goals of this study were to create and validate an updated NVS (NVS-Urdu) based on the backgrounds of Urdu speakers. The study was done in two parts: first, the NVS-Urdu was made, and then its validity and reliability were tested.

Materials and Methods

Ethical Approval

The study was approved by the Departmental Research Review Committee for Ethics at the University of Gujrat's Hafiz Hayat Campus. All study participants gave written informed consent before participating after being made aware of the study's objectives.

Tool and Translation

Following established guidelines (Sousa & Rojjanasrirat, 2011), the original NVS was successively translated and cross-culturally adapted. Two native Urdu-speaking Pakistani doctors with Ph.Ds. independently translated the original NVS into Urdu. In order to create a single accurate Urdu translation, a third translator reviewed the two versions and combined their changes. Another translator with a background in medicine and fluency in Urdu was responsible for producing the backward translation. This translator was also blind to the original NVS. Between this back translation and the original NVS, there were no discrepancies.

This stage of the research, in which cultural adaptation via the Delphi method was implemented, was crucial (Graham et al., 2003). Three rules guided the process of cultural adaptation: (1) the selected foods should be familiar to the local population; (2) the nutrition labels should adhere to the requirements for nutrition labelling; and (3) the revised NVS ought to be comparable to the predecessor. Six experts from various fields, including clinical practice, statistics, and health literacy research, participated in the Delphi study. In order to confirm the original nutrition label's suitability as an Urdu food label, they were asked to compare it to the Urdu label in accordance with recognized standards and make suggestions for alterations to the original label's information. The experts then assessed the applicability of the proposed NVS-Urdu's content and design as well as the comparability of the instrument between its original and modified forms using 5-point Likert scales. A score out of five was given to the NVS-Urdu, with a score of five indicating that the original and modified versions are perfectly comparable to one another. The researcher made additional adjustments to the NVS-Urdu based on the advice and assessments of the experts. There was no controversy after several iterations of the scoring methods for the Delphi poll in which all experts supplied scores of 4 or 5. Through one-on-one interviews with students, the researcher investigated whether there were any problems with the proposed NVS-Urdu's understanding and acceptance.

Research Design

Cross sectional survey design was used to collect the data along with one-to-one interview technique was used.

Population and Sample

Cross-sectional survey research design was used. School going adolescents was the targeted population for the study as the scale was being translated and adapted to be utilized in the same population for future research. Participants were recruited through non-probability sampling technique of convenience sampling. School going adolescent students were the targeted population of the study. A sample of 351 participants was selected via convenience sampling technique. The selected schools were located close to the university in Gujrat, Pakistan. The participants were all fluent speakers of Urdu and ranged in age from 12 to 16. The researcher made an effort to enlist participants from a variety of demographic groups, including teenagers of various ages and educational levels. While completing the suggested NVS-Urdu, participants were asked to provide thorough justifications for their responses. The layout and wording of the labels were discussed with the participants after they had finished the instrument. Up to 10 people were included in each round of interviews. The rounds continued until there was no longer any new information that could be acquired, and after each round, adjustments were made in response to the input received from the participants. Four rounds of cognitive evaluations were completed.

Data Analysis

Lawshe in 1975 created a method for evaluating the content validity, which is essentially a way to see how well experts on a panel or raters agree on the importance of a particular item (Lawshe, 1975). Each rater or expert, according to Lawshe, responds as follows to the question "Is the skill or knowledge measured by the item?" 1) essential, 2) useful but not essential, or 3) not necessary for each item. CVR has a range of .00 to .99.

An already translated and adapted scale of general health literacy (HLS-EU-Q16-Urdu) by Toor and Bibi (2021) was also administered to the same sample along with NVS-Urdu to help establish the concurrent criterion related validity.

Results

351 participants, with a mean age of 13 years and a standard deviation of 1.1, were recruited via convenience sampling for the purposes of establishing validity and reliability. 67% of the participants were boys, and 33% were girls.

Table 1. *Pearson Correlation Coefficient and Cronbach's Alpha*

	Variables	**1**	**2**
1	NVS-Urdu	-	.52***
2	HLQ-EU-Q16-Urdu		-
	M	4.22	12.27
	SD	1.47	1.14
	α	.62	.80

Note: NVS-Urdu = The Newest Vital Sign – Urdu, HLQ-EU-Q16_Urdu = Health Literacy Questionnaire European Q16 – Urdu, M = Mean, SD = Standard Deviation, α = Cronbach's Alpha, *** = p<.001

Table 1 shows a positive significant correlation (r =.52, p<.001) between NVS-Urdu and HLQ-EU-Q16-Urdu.

Table 2. *CVR of NVS-Urdu*

Item No.	CVR Value
1,2,3,4,5,6	.60

Note: CVR = Content Validity Ration

According to the table 2, all of the translated items have a positive and necessary CVR value (.60).

Discussion

The current phase of the study successfully produced a new version of The Newest Vital Sign in Urdu that can be used in Pakistan and other Urdu-speaking communities around the world. The NVS-Urdu also successfully established its criterion related validity by positively correlating with a similar, already standardized scale of health literacy, i.e., the HLS-EU-Q16-Urdu. The relationship between NVS-Urdu and HLS-EU-Q16-Urdu was statistically significant ($r = .52$, $p < .001$), indicating that criterion-related validity had been established (Bas-Sarmiento et al., 2020; Lorini et al., 2019; Waldherr et al., 2021). Cronbach's alpha was used to calculate the scale's internal consistency, and it was within an acceptable range. It demonstrated good internal consistency in Cronbach's alpha, with a value of 0.62 (Fransen et al., 2014; Rodrigues et al., 2017; Weiss et al., 2005). Most importantly, the panel's experts rated each of the scale's items, which contributed to the scale's content validity. As a CVR value of 0.60 or higher is required for professional standards, this indicates that the translations were done well and accurately (Ubavić et al., 2019).

The results from the current study further suggest that the Newest Vital Sign-Urdu (NVS-Urdu) is a reliable, valid, and content rich measure of health literacy that can be used in research, clinical practice, and public health. Simplifying, improving accuracy, and accelerating the process are becoming more prominent goals in the development of new tools for evaluating health literacy. The NVS-Urdu is a quick, efficient way to evaluate someone's aptitude that also has high reliability and validity. The NVS-Urdu is a perfect tool for evaluating health literacy because of all of these features.

Conclusion

The instrument was successfully translated and labels as the Newest Vital Sign-Urdu (NVS-Urdu). The same instrument proved to be a valid, reliable and content rich measure of functional health literacy.

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Conflict of Interest

Authors have no conflict of interest.

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