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Development and standardization of dizziness handicap inventory (DHI) in the Indian language Kannada

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Abstract

Background: Dizziness is one of the most common complaints in medicine, affecting approximately 20% to 30% of persons in the general population. Dizziness is a general term for a sense of disequilibrium. Vertigo is a subtype of dizziness, defined as an illusion of movement caused by asymmetric involvement of the vestibular system. The general health related quality of life in dizziness patients is affected from minimal to profound severity depending upon the frequency of the problem.

Materials & Methods: The original version of DHI was taken and translated to Kannada language with the help of a qualified Kannada professor. After content validity, the final DHI-K was administered on 60 patients who came to the department with the complaint of vertigo/dizziness. Cronbach's alpha was done to find out the internal consistency of the questionnaire and an Item-total correlation was also carried out.

Results: The DHI-K has got an acceptable internal consistency (Cronbach's alpha score: 0.735).

Conclusion: The DHI-K has proved to be an acceptable scale to administer on Kannada speaking population to rule out the impact vertigo/dizziness on their quality of life.

Keywords: DHI, Kannada, standardization, internal consistency

1. Introduction

Dizziness is one of the most common complaints in medicine, affecting approximately 20% to 30% of persons in the general population [1]. Dizziness is a general term for a sense of disequilibrium. Dizziness is a word that is often used to describe two different feelings. Lightheadedness is a feeling that one is about to faint or pass out. Although he/she may feel dizzy, they do not feel as though they or their surroundings are moving. Lightheadedness often goes away or improves when you lie down. If lightheadedness gets worse, it can lead to a feeling of almost fainting or a fainting spell. Vertigo is a feeling that you or your surroundings are moving when there is no actual movement. One may feel as though they are off balance, spinning, whirling, falling, or tilting. When one has severe vertigo, they may feel very nauseated or vomit. Although dizziness can occur in people at any age, it is more common among older adults. A fear of dizziness can cause older adults to limit their physical and social activities.

The general health related quality of life in dizziness patients is affected from minimal to profound severity depending upon the frequency of the problem. Although dizziness is a common symptom in both primary care and referral practices, the relative frequency of various causes has not been well delineated. Dizziness was attributed to a peripheral vestibulopathy (44%), central vestibulopathy (11%), psychiatric causes (16%), and other conditions (26%) and unknown causes (13%), Cerebrovascular disease (6%), cardiac arrhythmia (1.5%) and brain tumor (<1%) [2]. Since the prevalence of dizziness among general population is increasing in the current scenario, there is a need for thorough understanding of the condition to provide effective rehabilitation. Various inventories or scales can be used to measure the impact of dizziness on individual's physical, functional and emotional aspects depending upon the severity of the problem. For effective understanding of the condition,

one should provide these inventories in the native language of the patient so that the exact information in the scales can be easily given to them. DHI is one of the most commonly used clinical tool and it is necessary to translate this inventory to various native languages of India for better understanding of the condition to provide effective rehabilitation.

2. Materials and Methods

2.1 Development of the inventory

The English version of the DHI [3] was adopted for the current study with the permission of the author. The questionnaire was then translated to Kannada with the help of qualified Kannada professors using standard translation-back-translation method [4]. The translated questionnaire was distributed to 30 native Kannada speakers who are thorough in reading and writing Kannada language for content validity. These speakers were asked to rate individual questions using a five point rating scale from very familiar to non-familiar. The questions which were rated as 1 and 2 will be adapted to the final DHI-Kannada without any modification and those questions which were rated 3 and above was reframed according to the suggestions and then accommodated to the final questionnaire.

2.2 Participants

A total of 60 participants aged between 18 years to 65 years (40.8±12.2 years) who complaints vertigo/dizziness were recruited from the department of ENT and department of Audiology of the study center. Participants with any psychological and neurological problem were excluded from the study.

2.3 Procedure

All the participants were recruited based on the inclusion and exclusion criteria. The final DHI-K questionnaire was administered to all the participants recruited, after obtaining the informed consent. The participants were asked to read each questions thoroughly and mark the appropriate responses according to their condition. Majority of the participants had a basic qualification and could fill the questionnaire without the help of the clinician. Very few participants filled in the questionnaire with the help of the clinician only due to their inability to read and write. The obtained data were further taken for statistical analysis to obtain the Cronbach's alpha score and item-total correlation which reflects the internal consistency and reliability.

3. Results

Among the 60 total participants, 30 (50%) participants were males and 30 (50%) were females between the age ranges of 18 years to 65 years (40.8±12.2 years). The total scores of the questionnaire rated by all the participants ranged from 0-70; 0 being no perceived disability due to dizziness and 70 being maximum perceived severity. In order to obtain the internal consistency of the Kannada version of the DHI, Cronbach's alpha test and an Item-total correlation was carried out. The Kannada version of the DHI has got a global alpha score of 0.735 which is considered to be acceptable according to the statistics. The scale mean if item deleted, scale variance if item deleted, the corrected item-total correlation and the Cronbach's alpha score if item deleted is given in Table 1.

Table 1: Item-Total statistics

Item	Scale Mean if Item deleted	Scale Variance if Item deleted	Corrected Item-Total Correlation	Cronbach's alpha if item deleted
Q1	50.60	179.6	0.344	0.723
Q2	50.60	181.0	0.303	0.726
Q3	50.60	179.6	0.311	0.725
Q4	50.53	181.4	0.207	0.732
Q5	50.47	176.7	0.310	0.724
Q6	50.60	171.352	0.411	0.716
Q7	50.20	172.2	0.433	0.715
Q8	50.53	177.6	0.323	0.724
Q9	51.07	180.8	0.259	0.728
Q10	50.73	176.6	0.363	0.721
Q11	50.87	176.4	0.375	0.720
Q12	50.87	179.7	0.287	0.726
Q13	50.93	182.5	0.229	0.730
Q14	50.47	180.6	0.239	0.730
Q15	50.40	179.4	0.281	0.727
Q16	50.53	185.9	0.117	0.738
Q17	50.33	183.1	0.179	0.734
Q18	49.87	182.0	0.258	0.728
Q19	49.60	174.7	0.459	0.716
Q20	49.67	178.7	0.343	0.723
Q21	50.33	182.3	0.200	0.732
Q22	50.27	182.2	0.214	.731
Q23	50.47	181.7	0.195	0.733
Q24	50.87	185.6	0.116	0.739
Q25	51.00	186.6	0.088	0.741

4. Discussion

The aim of the current study was to develop and standardize the Dizziness Handicap Inventory to one of the Indian language Kannada, which is the native language of the

Karnataka which is situated in the southern part of India. The authors observed in the study center that, the incidence of patients with dizziness was high and they all reported a high level of handicap because of dizziness. Many of the

patients reported that, their quality of life was severely impaired due to the increased condition and they were unable to focus on their personal and professional life. At this point of time it was essential to administer some inventories to understand how severely the dizziness is affecting an individual and what all aspects of an individual is getting affected because of dizziness. This was the primary motive behind translating DHI to Kannada language.

The original DHI quantify the handicap due to dizziness on the physical, emotional and functional aspect of an individual. Items in physical part assesses various physical activities that induce dizziness such as looking up, walking down the aisle, quick movements of the head etc. items in the emotional part assesses various emotional problems the patients suffer because of the dizziness such as frustrations, isolated from family members, difficult to concentrate on work etc. The items in the functional part assess the functional aspects affected due to dizziness such as restrictions to travel, difficulty getting into bed, participation in social activities etc.

Even after translating the questionnaire, the important factor that should be considered is the internal consistency of the inventory which decides whether this translated questionnaire can be used in the kannada speaking population or not. This can be understood from the results of Cronbach's alpha results and the Item-Total Correlation results. The Kannada version of DHI has got a global alpha score of 0.735 which is acceptable according to the statistics. Any scale with an alpha score of greater than 0.9 has an excellent internal consistency, alpha score between 0.8-0.9 has a good internal consistency, 0.7-0.8 has an acceptable internal consistency, 0.6-0.7 has a questionable internal consistency, 0.5-0.6 has a poor internal consistency and any score less than 0.5 is unacceptable.

The original version of DHI has a global alpha of 0.91 and for the subscales it ranged from 0.74 to 0.87. The Arab version of the DHI ^[5] has an overall alpha score of 0.92 and individually for functional, physical and emotional; it has an alpha score of 0.87, 0.81 and 0.79 respectively. For the Italian version of DHI ^[6], the global alpha score was 0.92 and 0.82, 0.84 and 0.75 for the subscale functional, emotional and physical respectively. Hence, the current study proves that, the Kannada version of DHI can be used to quantify the impact of voice disorders on an individual's quality of life.

5. Conclusion

The aim of the current study was to develop and standardize the dizziness handicap inventory to one of the Indian language Kannada in order to efficiently understand the effect of dizziness on an individual's day to day life situations. From the results of the current study, it is understood that, the Kannada version of DHI has got an acceptable internal reliability. Hence, this inventory can be used across the state of Karnataka to quantify the effect of dizziness in order to obtain a better understanding of the condition even before and after the intervention.

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