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

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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 Malayalam language with the help of a qualified Malayalam professor. After content validity, the final DHI-M 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-M has got an acceptable internal consistency (Cronbach's alpha score: 0.936).

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

Keywords: DHI, Malayalam, standardization, internal consistency

1. Introduction

Dizziness is a well recognized problem among older persons ^[1]. The reported prevalence ranges from 13% to 38%, depending on the definition used and the population studied. Dizziness has been associated with increased risk for falls and with syncope, functional disability, nursing home placement, stroke and death ^[2]. The term dizziness means different things to different people, some use it to describe feeling lightheaded or off balance, while others use it to describe a feeling that their surroundings are spinning. Because the symptoms is quite vague and can be caused by a wide range of things, it may not always be easy to identify the underlying causes of dizziness. Dizziness may be just mildly annoying or caused by something possibly life-threatening.

Rapid evaluation and treatment may be necessary if doctors suspect a serious cause of dizziness. The doctor will ask detailed questions and take a history to define the type of dizzy feeling. The patient's description of the dizzy feeling may be the most important detail. The conventional vestibulometric techniques are inadequate for quantifying the impact of dizziness on everyday life. The 25 item Dizziness Handicap Inventory (DHI) was developed to evaluate the self perceived handicapping effects imposed by vestibular system disease. So the current study aims to standardize the original DHI to one of the Indian language Malayalam for better understanding the dizziness.

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 Malayalam with the help of qualified Malayalam professors using standard translation-back-translation method ^[4]. The translated questionnaire was distributed to 30 native Malayalam speakers who are thorough in reading and writing Malayalam language for content validity.

These speakers were asked to rate individual questions using a five point rating scale from very familiar to non-familiar [5]. The questions which were rated as 1 and 2 will be adapted to the final DHI-Malayalam 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-M 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, 15 (25%) participants were males and 45 (75%) were females between the age ranges of 29 years to 67 years (45.8±13.1 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 Malayalam version of the DHI, Cronbach's alpha test and an Item-total correlation was carried out. The Malayalam version of the DHI has got a global alpha score of 0.935 and on standardized item, an alpha score of 0.936 which is considered to be an excellent reliability 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	37.45	629.970	.457	.935
Q2	37.59	625.251	.570	.933
Q3	37.52	622.187	.547	.933
Q4	37.38	612.887	.699	.931
Q5	37.38	614.601	.600	.933
Q6	37.45	616.256	.540	.934
Q7	37.52	607.044	.668	.932
Q8	37.59	616.680	.519	.934
Q9	37.52	607.330	.633	.932
Q10	37.86	617.695	.598	.933
Q11	37.66	611.734	.594	.933
Q12	38.00	622.857	.558	.933
Q13	37.59	612.394	.662	.932
Q14	37.38	606.030	.746	.931
Q15	37.86	627.123	.547	.934
Q16	37.59	627.537	.469	.935
Q17	37.31	618.079	.541	.934
Q18	37.45	625.399	.486	.934
Q19	37.31	614.079	.560	.933
Q20	37.38	610.887	.726	.931
Q21	37.72	615.635	.639	.932
Q22	37.59	608.108	.718	.931
Q23	38.21	637.813	.385	.936
Q24	37.93	621.567	.621	.933
Q25	37.93	619.567	.606	.933

4. Discussion

The aim of the current study was to develop and standardize the Dizziness Handicap Inventory to one of the Indian language Malayalam, which is the native language of the Kerala 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 Malayalam 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 Malayalam version of DHI has got a global alpha score of 0.936 which is an excellent reliability 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 DHI⁶ 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^[7], the global alpha score was 0.92 and 0.82, 0.84 and 0.75 for the subscale functional, emotional and physical respectively.

From the results of the current study, it can be stated that the Malayalam version of DHI can be used as a reliable tool with excellent internal consistency to administer on Malayalam speaking population in Kerala to understand their problem in a better way.

5. Conclusion

It can be concluded from the current study that, DHI-M is a reliable tool based on the results of Cronbach's alpha results to administer on Malayalam speaking population. Once this study is published the DHI-M can be used all over Kerala to understand the dizziness patients in a better way.

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