

VALIDITY AND RELIABILITY OF THE TURKISH VERSION OF THE VERTIGO HANDICAP QUESTIONNAIRE (VHQ) IN A GROUP OF PATIENTS WITH VERTIGO

VERTİGO HANDİKAP ANKETİ'NİN (VHA) TÜRKÇE UYARLAMASININ GEÇERLİLİĞİ VE GÜVENİLİRLİĞİ

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ABSTRACT

Purpose: The Vertigo Handicap Questionnaire (VHQ) assesses common perceptions and the psychosocial consequences of vertigo, which include restriction of physical and social activities, and anxieties about vertigo and its effect on social relationships. The aim of this study was to determine the validity of the Turkish translation of the VHQ for Turkish vertiginous patients. The Turkish translation of the VHQ and Vertigo Symptom Scale (VSS) was administered to a Turkish sample of 32 vertiginous patients and 30 healthy controls. **Methods:** Vertigo symptoms were evaluated with a structured interview. Neuro-otological function was assessed by otorhinolaryngological examination. The study group consisted of 32 patients with vertigo who completed the VHQ on 2 occasions with a 24-hour interval, and 30 healthy control subjects. There were 24 female and 8 male vertiginous patients with a mean age of 41.4. Otorhinolaryngological examination, the VHQ, the VSS, the Hospital Anxiety and Depression Scale (HADS), and the Brief Disability Scale (BDQ) were applied to all patients. The VHQ was also applied to the control group. **Results:** The diagnostic classification of the patients was as follows: 13 patients had the classic symptoms of "benign paroxysmal positional vertigo" (BPPV), and 6 had symptoms of Ménière disease. The remaining patients did not fit any specific classification. Mean handicap score was 43.4±16. VHQ scores did not differ significantly between the 2 occasions ($p < 0.05$). A high correlation and high test-retest reliability between the 2 different measures were seen ($r = 0.5$, $p = 0.003$). The VHQ had a high level of internal consistency and reliability (Cronbach's alpha = 0.80). VHQ scores were significantly higher in the patient group than in the control group ($p < 0.0001$). **Conclusion:** Our findings show that the Turkish version of the VHQ had good statistical validity and reliability in a group of Turkish vertigo patients. The effects of medical and surgical treatments on vertiginous patients can be evaluated by the Turkish version of the VHQ.

Key Words: Handicap, Vertigo, Validity, Reliability.

INTRODUCTION

"Vertigo" is the medical term for illusory movement perception of one's self or

ÖZET

Amaç: Vertigo Handikap Anketi (VHA) vertigonun sık görülen psikososyal ve algısal sonuçların değerlendirilmesidir. Bu çalışmada VHA'nın Türkçe uyarlamasının vertigo şikayeti ile başvuran ve çalışma desenini tamamlayan 32 hastada yapısal ve işlevsel tutarlılık, test tekrar test güvenilirliği, geçerliliği incelenmiştir. **Yöntem:** Vertigo şikayeti ile başvuran Kulak Burun Boğaz bölümü tarafından vertigo semptomları değerlendirilen 60 hasta araştırmaya alınmış, çalışmayı 32 hasta tamamlamıştır. Hastalar birbirinden 24 saat ara ile iki ayrı oturumda VHA'yı yanlamıştır. Hastaların 24'ü bayan, 8'i erkek, yaş ortalaması 41,4 (SD 10,4) bulundu. Tüm hastalara VHA, Vertigo Semptom Ölçeği (VSO), Hastane Anksiyete ve Depresyon Ölçeği (HADÖ) ve Kısa Yeti Yitimi Ölçeği (KYÖ) uygulanmıştır. **Bulgular:** Hastaların tanısal sınıflandırması: 13 hastada "Benign Paroksizmal Pozisyonel Vertigo" (BPPV), 6 hastada klasik Ménière hastalığı semptomları bulunmaktadır. Kalan 13 hasta ise herhangi bir sınıflandırmaya tam olarak uymamaktadır. Test tekrar test güvenilirliği: VHA ortalama puanları değerlendirildiğinde iki oturum arasında anlamlı bir farklılık bulunmamıştır ($p < 0.05$). İki ayrı ölçüm ortalama puanları arasında yüksek pozitif korelasyon bulunmuştur ($r = 0.5$, $p = 0.003$). VHA yüksek iç tutarlılık düzeyine sahiptir (Cronbach alfa = 0,80). Ortalama VHA puanı 43,4±16 bulunmuştur. Test geçerliliği sınaması amacıyla sağlıklı kontrol grubuna da VHA uygulanmıştır. Bulgularımıza göre başdönmesi olanlar sağlıklı kontrol grubuna göre anlamlı olarak daha yüksek handikap puanları almaktadır. KYÖ ile VHA ortalama puanları arasında korelasyon incelenmiştir. Sonuçta yüksek bir korelasyon bulunmuştur ($r = 0.64$, $p < 0.001$). Buna karşın HADÖ ile bir korelasyon saptanmamıştır. **Sonuç:** Bulgularımız VHA Türkçe uyarlamasının yüksek bir istatistiksel güvenilirlik ve geçerlilik gösterdiğini desteklemektedir. İleri araştırmalarda daha fazla sayıda hastadan elde edilen veriler kontrol grubu ile değerlendirilmelidir. Vertigo tedavisinde kullanılan medikal ve cerrahi yöntemlerin hastaların yaşadığı handikap düzeyine etkisinin izleniminde VHA güvenilir biçimde kullanılabilir.

Anahtar Kelimeler: Vertigo, Güvenilirlik, Geçerlilik, Handikap.

environment. The symptoms of vertigo resulting from vestibular dysfunction range from disorientation, disequilibrium and attacks of dizziness to loss of postural control. Recurrent

episodes of vertigo can lead to serious adverse effects on the life quality and emotional status of patients (1). In severe cases, even surgical therapy is indicated for relief of vertiginous attacks (2, 3).

Vertigo symptoms can occur suddenly, or may be provoked by head movements or by environmental motions. Consequently, many people with vertigo restrict their activity, travel and social commitments in order to reduce the risk of provoking these unpleasant symptoms. Therefore these vertiginous symptoms could create major functional handicap and distress.

Elevated levels of anxiety, somatoform complaints, and mood disturbances often accompany complaints of vertigo (4). Vestibular dysfunction can lead to anxiety or panic attacks, and the somatic symptoms of anxiety may increase dizziness and related symptomatology (1,4,5).

The Vertigo Handicap Questionnaire (VHQ) assesses common perceptions and the psychosocial consequences of vertigo, which include restriction of physical and social activities, and anxieties about vertigo and its effect on social relationships (6). The original English version of the VHQ has high internal consistency (Cronbach's $\alpha=0.86$) and test-retest reliability ($r=0.97$) (6).

The purpose of the present study was to study the validity of the Turkish version of the VHQ, and to determine the levels of psychosocial handicap in vertigo patients in a group of Turkish vertiginous patients. We examined the structure and internal consistency of the scale and the relationship between VHQ scores and anxiety, depression and disability levels of patients with vertigo.

PATIENTS AND METHODS

Sixty patients with peripheral vertigo consecutively admitted to the otorhinolaryngology department were included in the study. Clinical symptoms were evaluated with a structured interview. Neuro-otological function was assessed by audiometric and caloric tests. Psychiatric diagnoses of the patients were evaluated according to DSM IV (American Psychiatric Association). Informed consent was obtained from the subjects. The patients were

newly diagnosed and drug-free during the evaluation period.

The patient group consisted of 32 patients who completed the VHQ on 2 occasions, separated by a 24-hour interval. There were 24 females and 8 males with a mean age of 41.4 (SD 10.4). Thirteen patients had the classic symptoms of "benign paroxysmal positional vertigo" (BPPV), another 6 patients had symptoms of Ménière disease, and the remaining patients did not fit any classification.

The control group consisted of 30 healthy subjects free of known physical and psychological disorders, recruited principally from among final-year medical students and hospital health workers. There were 20 females and 10 males with a mean age of 26.2 (SD 5.2). The VHQ and Vertigo Symptom Scale (VSS) were applied to the control group.

The VSS, VHQ, Hospital Anxiety and Depression Scale (HADS), and Brief Disability Questionnaire (BDQ) were applied to all patients. The VHQ (4) consists of 25 statements about the handicapping consequences of vertigo, ranging from difficulty performing various physical activities to interference with social relationships and leisure pursuits. Respondents circled a number from 0 to 4 to indicate how often (if at all) they experienced each form of handicap. Thirteen items were phrased such that circling 4 ("never") indicated maximum handicap (e.g., "I can move around quickly and freely"), while 12 of the items were phrased in reverse, so that answering 4 indicated no handicap (e.g., "I am unable to walk very far"). Four additional questions assessed whether vertigo caused any occupational difficulties. Patients filled in the VHQ on 2 occasions; there was a 24-hour interval between the 2 assessments. For the reliability of the items, the filling in of the questionnaire was explained to the patients.

The VSS (7) is made up of items assessing symptoms of balance dysfunction (e.g., dizziness, vertigo, postural instability, and falling), and symptoms of somatic anxiety and autonomic arousal (e.g., diverse pains and somatic sensations, sweating, pounding heart, breathing difficulties, and fainting). Respondents circled a number from 0 to 4 to indicate how often they had experienced each symptom in the previous

year.

Two subscales of the VSS were constructed from the same items as in the previous study (7). Those items loading on the second 2 factors formed a scale measuring "vertigo and related symptoms" (VER), and a "scale assessing symptoms of somatic anxiety and autonomic arousal" (AA). Both scales had good internal consistency (VER=0.82; AA=0.90) (7).

The HADS consists of 14 items, 7 for anxiety (HADS-A) and 7 for depression (HADS-D), formulated in a language that is readily understandable. Symptoms of severe psychopathology are not included in the HADS, and this makes it more sensitive to milder psychopathology, thus avoiding the "floor effect" that has been frequently observed when psychiatric rating scales have been used in nonpsychiatric samples. The HADS is well accepted in both psychiatric and nonpsychiatric settings. The cut-off level for possible cases of anxiety disorder and depression is recommended at scores of 8 on each subscale, and a HADS total score of 14 (8-10).

The BDQ asks questions about well-being and disability, and it provides an interesting comparison as it is scored as the sum of its 11 items (maximum score 22, higher scores indicate worse disability). The BDQ has been used to measure disability in physical and psychological disorders. It has good internal consistency. Two additional questions in the BDQ ask about days cut due to ill health, and the total number of days spent in bed due to ill health (11).

The reliability of the VHQ was measured by test-retest reliability on 2 separate occasions. Mean VHQ values were compared between the 2 sessions using Student's t-test, and the internal consistency of the VHQ was determined by

Cronbach's alpha coefficient. Corrected item correlations were calculated for each item separately. Linear correlations between scale scores in the 2 sessions were calculated by Pearson's correlation coefficient. All quoted p values are for 2-tailed probabilities.

To examine the validity of the Turkish version of the VHQ we compared it with the BDQ in vertiginous patients. The correlation between the mean scores of the BDQ and VHQ scales was calculated. The discriminant validity of the VHQ and VSS scales was evaluated by comparing scale scores in the control group with those in patient groups.

RESULTS

Psychiatric assessments were made according to DSM IV criteria. Sixteen (49.9%) patients had no psychiatric diagnosis, 6 (18.8%) had generalized anxiety disorder, 2 (6.3%) had premenstrual syndrome, 2 (6.3%) had agoraphobia, 2 (6.3%) had somatoform pain disorder, and 4 (12.5%) had other psychiatric diagnoses.

The mean VHQ, VSS subscales (VER and AA), HADS-A, HADS-D, and BDQ scores are shown in Table 1. Table 2 shows the test-retest correlation and comparison of vertigo symptoms and vertigo handicap levels in the patient group. The findings showed that the VHQ and VSS have strong test-retest reliability (Table 2). The intercorrelations between the questionnaire measures in the patient sample are shown in Table 3. Handicap scores were significantly correlated with the somatic anxiety subscale of the VSS ($r=0.31$, $p=0.041$). There was no significant correlation between handicap scores and the severity subscale of the VSS ($r=0.2$,

Table-1: Mean scores of vertigo symptoms, severity, handicap and psychometric scales.

	Vertigo patients	Control group Mean \pm SD	Mean \pm SD	P
VSS subscale 1: VER (Vertigo-related symptoms)	20.4 \pm 6.5	5.6 \pm 4.9	9.4	0.0001
VSS subscale 2: AA (Autonomic Anxiety)	21.2 \pm 11.2	12.7 \pm 8.9	2.7	0.008
VHQ Handicap scores	43.5 \pm 16.0	29.4 \pm 13.1	4.3	0.0001
BDQ Handicap scores	12.2 \pm 3.6			
HADS Anxiety scores	7.6 \pm 4.5			
HADS Depression scores	7.1 \pm 4.1			

Independent t test was performed to test the discriminative validity of the VHQ and VSS subscales between the patient and control group.

Table-2: Test-retest correlation and comparison of vertigo symptoms, and handicap levels in the patient group showed that the VHQ and VSS have strong test-retest reliability.

	First session Mean± SD	Second session Mean± SD	Correlation Correlation coefficients (r)	Sig.	Paired samples t test		
					t	df	Sig. (2-tailed)
VHQ	44.1±16.5	42.8±15.7	0.503	0.003*	0.42	31	0.68
VSS (Severity)	20.3±7.0	20.5± 5.9	0.547	0.001*	-0.255	31	0.80
VSS (Somatic Anxiety)	20.8 ±11.6	21.5±10.9	0.688	0.000*	-0.436	31	0.67

Table-3: Correlations between VHQ, subscale of VSS, BDQ, and HADS. A significant correlation was found between mean VHQ and BDQ scores.

		VHQ
VSS-1 (VER)	r=	0.21
	p=	0.09
VSS-2 (AA)	r=	0.36
	p=	0.04*
HADS-Anxiety	r=	0.026
	p=	0.890
HADS-Depression	r=	0.010
	p=	0.957
BDQ	r=	0.640
	p=	0.0001*

* Pearson correlation test was performed, and a significant correlation was found (2-tailed).

p=0.09). Anxiety and depression were not strongly correlated with vertigo symptoms or handicap levels. Conversely, disability levels were strongly correlated with the handicap of vertigo (Table 3).

The discriminant validity of the VSS scales and the VHQ were evaluated by comparing scale scores in the control and patient groups. VHQ scores were significantly higher in the patient group than in the control group (p<0.0001). Patients scored higher than controls on the VHQ and VSS subscales (Table 1). The mean VHQ score of the patient group (43.5 ± 16) was significantly higher than that of the control group (29.4 ± 13.1). VER scores differentiated the controls from the patient group. The patient group had significantly higher scores on the AA subscales of the VSS (Table 1).

The mean score in the VHQ was 43.5 ± 16.0. Cronbach's alpha of the VHQ in this study was 0.80. VHQ scores showed a significant correlation with the somatic anxiety subscale of the VSS (r=0.36, p=0.041). VHQ scores did not significantly differ between the 2 occasions (p>0.05). A high correlation was found in the test-retest scores of the VHQ (r=0.5, p=0.003) (Table 2). A significant correlation was found between

Table-4: Correlations of items and total score of VHQ.

Item of VHQ		Mean VHQ
1	r=	0.729
	p=	0.000*
*2	r=	-0.091
	p=	0.619
3	r=	0.713
	p=	0.000*
*4	r=	-0.471
	p=	0.007*
5	r=	0.589
	p=	0.000*
*6	r=	-0.187
	p=	0.305
7	r=	0.581
	p=	0.000*
8	r=	0.692
	p=	0.000*
*9	r=	-0.498
	p=	0.004*
10	r=	0.655
	p=	0.000*
*11	r=	0.415
	p=	0.018*
12	r=	0.442
	p=	0.011*
13	r=	0.440
	p=	0.012*
*14	r=	0.032
	p=	0.864
15	r=	0.577
	p=	0.001*
*16	r=	-0.173
	p=	0.345
17	r=	0.650
	p=	0.000*
*18	r=	-0.515
	p=	0.003*
19	r=	0.644
	p=	0.000*
20	r=	0.681
	p=	0.000*
*21	r=	-0.547
	p=	0.001*
22	r=	0.696
	p=	0.000*
23	r=	0.779
	p=	0.000*
*24	r=	-0.240
	p=	0.186
25	r=	0.390
	p=	0.027*

* Pearson correlation test was performed, and a significant correlation was found (2-tailed).

VHQ and BDQ scores ($r=0.64$, $p<0.001$), (Table 3). This correlation showed that the VHQ was as valid as the BDQ in vertiginous patients. These findings indicate that the Turkish version of the VHQ had a high level of internal consistency and reliability (Cronbach's alpha = 0.80). VHQ scores ranged from 0 to 100.

Although the internal consistency of the VHQ was high (0.80), an inspection of the raw data clearly reveals that, in the patient groups, responses were often erratic immediately after a change in the direction of coding. For example, if respondents were required to circle "4" to indicate "they were not handicapped" on one question, and, on the succeeding question a response of "0" indicated "they were not handicapped", many respondents circled "4" for both questions. Items that elicited erratic responses were identified by ascertaining which items resulted in a reduced alpha coefficient for the whole scale. Six such items (items 4, 9, 16, 18, 21, 24) were excluded, yielding a 19-item scale with an internal consistency of 0.89, and a score range of 0-76.

Items 2, 6, 16 and 24 had a weak correlation with total mean VHQ score. Four such items were excluded, yielding a 21-item scale with a high internal consistency (Cronbach's alpha= 0.83), and a score range 0-84 (Table 4). All of the reverse rating items were as follows: VHQ2, VHQ4, VHQ6, VHQ9, VHQ11, VHQ14, VHQ16, VHQ18, VHQ21 and VHQ24. These 11 reverse rated items had lower Cronbach's alpha scores (0.58). If all of these reverse rated items were deleted, Cronbach's alpha increased to 0.91 in the VHQ (Table 4).

The most frequently negatively rated items are as follows: item 11 "My family takes the vertigo in its stride" (53%), item 16 "During the attack of vertigo I can carry on with whatever I am doing" (39.1%), item 6 "I am happy to go out alone" (38%), item 19 "vertigo worries me" (37%), and item 10 "I try to avoid bending over" (25%).

DISCUSSION

Our results indicate that the Turkish version of the VHQ had high reliability and validity in a group of vertiginous patients. VHQ scores showed a significant correlation with the somatic anxiety subscale of the VSS. However, no

correlation between handicap scores and vertigo severity could be established. These findings are consistent with previous VHQ validation studies (6, 12). Our findings indicate that autonomic symptoms or somatic anxiety can be measured; these contribute significantly to the handicap of vertigo.

Disability and handicap in vertigo patients can be assessed by the VHQ, which also provides specific information about particular areas of concern. Occupational problems were clearly a prominent handicap in our sample. Anxiety and somatoform complaints in patients can worsen with handicap levels. Cases with high levels of anxiety or depression should be referred for psychiatric consultation. The handicap of patients might be decreased by controlling autonomic anxiety, which can be achieved by reassurance and relaxation techniques. More extensive counseling and behavioral therapy may be helpful in preventing the development of psychological problems. Consultation with a psychiatrist or psychologist who is working together in a liaison team would be useful.

In the VHQ 3 important factors were identified (6). Most factors in the VHQ were related to restriction of activities. Physical limitation, such as inability to move quickly or walk long distances, caused difficulties in social functions. Anxiety about the attitudes of others towards vertigo and its effects was another factor. Social anxieties, fears about vertigo and behavioral restrictions accounted for roughly equivalent proportions of the variance in emotional distress. These 3 factors contributed approximately equally to patient distress. Fears about vertigo attacks were the principal motivation for the limitation of activity (6).

It is strongly recommended that levels of somatic anxiety be evaluated in patients with vestibular dysfunction. Panic attacks and other anxiety disorders have been described in association with peripheral vestibular disorders. In previous studies two-thirds of the patients had experienced psychiatric symptoms during vertigo attacks (13, 14). Approximately half of our cases had psychiatric diagnoses. Generalized anxiety disorder was the most common diagnosis in our patient group. In other studies panic disorder with or without agoraphobia and major depression were the most frequently encountered (15, 16).

Previous research on the VSS and VHQ showed that dizziness, nausea, and feelings of "distant ground" or "walking on clouds" had the greatest influence on quality of life. However, some consequences of vertigo in daily life could be related to other factors such as personality and coping capacity. The results of this study also demonstrate that patients need psychosocial support. A comprehensive assessment and evaluation are important in order to identify each patient's needs (17).

Negative beliefs about the consequences of dizziness promote long-term restriction of activity, and can be modified by therapy (17). Patients with anxiety and depressive disorders showed the greatest emotional distress and handicaps. The results indicate that psychiatric disorders, above all anxiety disorders, should be included in the differential diagnosis in patients with a long duration of dizziness and great handicaps. An interdisciplinary treatment including psychiatric approaches would be superior to somatic treatments alone (18).

Previous studies have shown that the degree of handicap is not closely related to measures of illness severity. Psychosocial and behavioral factors, and personality characteristics, such as trait anxiety, and the use of coping strategies may have an influence on the degree of handicap (6, 7, 12, 18).

CONCLUSION

Validation of the Turkish version of the VHQ is described in this study. The VHQ appears to be useful in evaluating clinical handicap caused by vertiginous disorders. It is recommended that the VHQ be used in combination with the VSS in vertiginous patients. The VHQ seems to be a more suitable instrument for evaluating patient perceived handicap and benefits following therapeutic intervention.

Our findings show that the Turkish version of the VHQ has good statistical reliability and is valid in Turkish vertigo patients. The effects of drugs or operations in the treatment of vertigo can be evaluated by the Turkish version of the VHQ. Further studies with the VHQ should be performed with a larger number of vertigo patients and healthy control groups.

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