The psychometric properties of the Tinnitus Handicap Questionnaire in a Dutch-speaking population

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Objective: The aim of the study is to translate and validate the tinnitus handicap questionnaire (THQ) for a Dutch-speaking population. The factor structure of the questionnaire, the reliability and the validity is determined. Furthermore, a statistical comparison with the original English version of the tinnitus handicap questionnaire is performed.

Methodology: We assessed 101 patients at the Tinnitus Research Initiative clinic of Antwerp University Hospital. Twenty-seven Dutch items from the tinnitus handicap questionnaire by Kuk et al. [(1990), Ear Hear **11**:434-45.] were obtained by the process of translation and back translation. The factor structure, internal consistency, was evaluated using Cronbach's alpha coefficient and item correlations were used to confirm reliability. The construct validity was confirmed with a visual analogue scale for loudness and distress, awareness, annoyance, the Tinnitus Questionnaire (TQ), the mini-Tinnitus Questionnaire, the Hospital Anxiety and Depression Scale (HADS), the Beck Depression Inventory (BDI) and the Profile of Mood State (POMS), ensuring that this new instrument measures the tinnitus handicap.

Results: This study demonstrates that the Dutch version of the tinnitus handicap questionnaire is a reliable (Cronbach's alpha coefficient $\alpha = 0.93$) and valid measure of self-perceived tinnitus-related distress [with visual analogue scale for loudness ($r = 0.39$) and distress ($r = 0.45$), awareness ($r = 0.39$), annoyance ($r = 0.57$), the Tinnitus Questionnaire ($r = 0.82$), the mini-Tinnitus Questionnaire ($r = 0.79$), the Hospital Anxiety and Depression Scale ($r = 0.62$) and the Beck Depression Inventory ($r = 0.32$)]. The psychometric properties are in line with previous findings on the English version with regard to reliability and validity. However, the items in the subscales differ from the English version. While the English version has three subscales, our version has only two subscales. Yet, the English version reports that for the three factors, there is a low internal consistency and low correlation among the different items. For the Dutch-speaking version, both factors show a very high reliability and validity.

Conclusions: The tinnitus handicap questionnaire is suitable for assessing the handicapping effects of tinnitus among a Dutch-speaking population in both clinical and research settings.

Tinnitus can be defined as the perception of a sound (i.e. pure tone, noise and hissing.) without the presence of an objective physical sound source.[1] Approximately 30% of individuals perceive tinnitus at some point in their life and 10–15% experience tinnitus severely enough to seek medical attention.[2,3] About 6–25% of the affected people report interference with their lives as tinnitus causes a considerable amount of distress,[3–5] with 2–4% of the total population suffering in the worst degree.[2] The psychological complications such as annoyance, concentration problems, depression, anxiety, irritability, sleep disturbances and intense worrying can be a result of the constant awareness of this phantom sound.[6,7]

A standardisation of measures to validate the efficacy of different treatment approaches is crucial to quantify research results and to make it possible to compare intra- and inter-patient outcome results of different centres. The use of standardised measures can ensure uniform comparison among studies. A self-administered tinnitus questionnaire is one of the most commonly employed assessment devices, and one such self-administered tinnitus questionnaire is the tinnitus handicap questionnaire (THQ).[8] The THQ is a highly reliable (Cronbach's alpha coefficient $\alpha = 0.94$) and valid instrument [i.e. strong correlations between the THQ and tinnitus loudness

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judgement ($r = 0.57$), life satisfaction ($r = -0.54$), depression ($r = 0.63$) and general health status ($r = 0.54$)].[8] The THQ is a 27-item self-administered questionnaire that aims to quantify the impact of tinnitus by measuring the perceived degree of handicap.[8] The THQ consists of three subscales that address the (1) individuals' physical health, emotional status and social consequences of tinnitus, (2) individuals' hearing difficulty and (3) the patients' view of tinnitus and a total score. Responders are asked to answer the questions with number from 0 ('strongly disagree) to 100 ('strongly agree'). The larger the total score is on the THQ the more severe the handicap.

The aim of the study reported here was to translate and validate the THQ for a Dutch-speaking population. The factor structure of the questionnaire, the reliability and the validity of the translated THQ was determined. Furthermore, a statistical comparison with the original English version of THQ is performed.

Method

Development of the Dutch version of the THQ

The original version of the THQ[8] was translated into Dutch using the translation–back-translation method. The Dutch version was translated by one experienced tinnitus researcher who is fluent in both English and Dutch. To establish semantic equivalence, the Dutch version THQ was then back-translated into English by another researcher who was ignorant of the original version. The final translation was obtained after several forward and back translations and after being tested on 101 native Dutch speakers. The final Dutch version of the THQ is shown in Table 1. Patients were asked to indicate on a scale from 0 (you strongly disagree) up to 100 (you strongly agree) if they agree with the 27 statements. Patients received an informed consent before filling out the questionnaires.

Subjects

A total of 101 outpatients (men 64; women 37) presenting to the Tinnitus Research Initiative clinic at the University Hospital, Antwerp, with complaints of tinnitus filled out the questionnaire. None of the patients indicated that they had difficulties completing the questionnaire. The mean reported age was 45.58 years (SD = 13.17, range 18–77 year). All patients had tinnitus for more than 6 months, and most patients had tinnitus between 2 and 10 years. The mean duration of tinnitus was 4.54 years.

Validation measures

To validate that distress was measured, a Dutch translation of the Hospital Anxiety and Depression Scale (HADS), the Beck Depression Scale (BDI), the Tinnitus Questionnaire (TQ), Visual Analogue Scale (VAS) for tinnitus intensity, tinnitus distress, tinnitus awareness and annoyance, and the Profile of Mood States (POMS) was used.

VAS. A visual analogue scale for loudness ('How loud is your tinnitus?') and distress ('How stressful is your tinnitus?') was assessed.

Awareness. Patients were asked to indicate on a scale from 0 (you strongly disagree) up to 100 (you strongly agree) how aware they were of their tinnitus.

Annoyance. Patients were asked to indicate on a scale from 0 (you strongly disagree) up to 100 (you strongly agree) how annoyed they were of their tinnitus.

TQ. We used the Dutch translation of the TQ validated by Meeus et al.[9] This scale is comprised of 52 items and is a well-established measure for the assessment of a broad spectrum of tinnitus-related psychological complaints. The TQ measures emotional and cognitive distress, intrusiveness, auditory perceptual difficulties, sleep disturbances and somatic complaints. As previously mentioned, the global TQ score can be computed to measure the general level of psychological and psychosomatic distress. In several studies, this measure has been shown to be a reliable and valid instrument in different countries.[10,11] A 3-point scale is given for all items, ranging from 'true' (2 points) to 'partly true' (1 point) and 'not true' (0 points). The total score (from 0 to 84) was computed according to standard criteria published in previous work.[9,11,12]

Mini-TQ. The inclusion of the 12 items was based on three criteria, similar to the study on the Mini-TQ by Hiller and Goebel[13]: the degree to which each item was associated with the overall tinnitus-related distress (item-total correlations), how often each item was endorsed by tinnitus patients (item frequencies) and how dependably the contents were reported (κ values obtained in a test–retest study). This questionnaire is validated by Vanneste et al.[14]

HADS. The HADS is designed as a simple yet reliable tool for use in medical practice[15] and considered to be a measure of general distress.[16–18] This scale consists of 14 questions, seven measuring anxiety (score from 0 to

Table 1. The items for the THQ. Results from the factor analysis using principal component extraction. The communality is the sum of the squared correlations between a variable and each of the two factors

Items	Communality	Item-total correlation
1. Ik krijg steun van vrienden wat mijn tinnitus betreft	0.65	
I have support from my friends regarding my tinnitus		0.08
2. Tinnitus creëert familiale problemen	0.75	
Tinnitus creates family problem		0.40
3. Mijn tinnitus is erger geworden over de jaren	0.58	
My tinnitus has gotten worse over the years		0.23
4. Ik geniet niet van het leven door mijn tinnitus	0.66	
I do not enjoy life because of tinnitus		0.71
5. De algemene bevolking kent de destructieve natuur van tinnitus niet	0.79	
The general public does not know about the devastating nature of tinnitus		0.37
6. Ik ben niet in staat om gesprek te volgen tijdens vergaderingen door mijn tinnitus	0.74	
		0.52
I am unable to follow conversation during meetings because of tinnitus		
7. Tinnitus beïnvloedt de kwaliteit van mijn relaties	0.74	
Tinnitus affects the quality of my relationships		0.68
8. Ik denk dat ik een gezonde kijk heb op tinnitus	0.52	
I think I have a healthy outlook on tinnitus		0.12
9. Ik kan mij niet concentreren door mijn tinnitus	0.63	
I cannot concentrate because of tinnitus		0.73
10. Door tinnitus vermijd ik luidruchtige situaties op te zoeken	0.66	
Tinnitus causes me to avoid noisy situations		0.28
11. Tinnitus draagt bij tot een gevoel van algemeen ziek zijn	0.65	
Tinnitus contributes to a feeling of general ill health		0.55
12. Tinnitus verhindert mij te vertellen waar geluiden vandaan komen	0.73	
Tinnitus interferes with my ability to tell where sounds are coming from		0.55
13. Tinnitus maakt mij geïrriteerd	0.64	
Tinnitus makes me feel annoyed		0.75
14. Ik kan mij onmogelijk ontspannen door tinnitus	0.75	
I am unable to relax because of tinnitus		0.74
15. Tinnitus maakt mij onzeker	0.77	
Tinnitus makes me feel insecure		0.73
16. Tinnitus maakt mij angstig	0.75	
Tinnitus makes me feel anxious		0.62
17. Ik voel mij vaak gefrustreerd door mijn tinnitus	0.77	
I feel frustrated frequently because of tinnitus		0.71
18. Tinnitus maakt mij moe	0.63	
Tinnitus makes me feel tired		0.61
19. Door tinnitus voel ik mij depressief	0.78	
Tinnitus causes me to feel depressed		0.71
20. Tinnitus verhindert mij te begrijpen wat er gezegd wordt wanneer ik luister naar de televisie	0.84	
		0.60
Tinnitus interferes with my speech understanding when listening to the television		
21. Tinnitus heeft ervoor gezorgd dat ik de mensen moeilijker begrijp	0.86	
Tinnitus has caused a reduction in my speech understanding ability		0.60
22. Tinnitus verhindert mij te begrijpen wat er gezegd wordt wanneer ik een gesprek voer met iemand in een luidruchtige ruimte	0.76	
		0.48
Tinnitus interferes with my speech understanding when talking with someone in a noisy room		
23. Ik vind het moeilijk om tinnitus uit te leggen aan anderen	0.59	
I find it difficult to explain what tinnitus is to others		0.37

Table 1. (*Continued*)

Items	Communality	Item-total correlation
24. Ik klaag meer door mijn tinnitus *I complain more because of tinnitus*	0.65	0.59
25. Ik heb moeite om 's avonds in slaap te vallen door mijn tinnitus *I have trouble falling asleep at night because of tinnitus*	0.67	0.54
26. Ik voel mij ongemakkelijk in sociale situaties door mijn tinnitus *I feel uneasy in social situations because of tinnitus*	0.74	0.78
27. Tinnitus veroorzaakt stress *Tinnitus causes stress*	0.71	0.65

Factor	Eigenvalue	% of variance	Cumalative % of the variance
1	10.29	38.07	38.07
2	3.55	13.14	51.21

THQ, tinnitus handicap questionnaire.

21) and seven measuring depression (score from 0 to 21). A total score can also be calculated, ranging from 0 to 42. Each question was rated on a 4-point scale.

BDI. BDI is a depression test to measure the severity and depth of depression symptoms. Each of the inventory items corresponds to a specific category of depressive symptom and/or attitude according to DSM-IV. Each question was rated on a 4-point scale. This scale consists of 21 questions. The statements are rank ordered and weighted. This questionnaire was validated in Dutch.[19]

POMS. The POMS contains 32 self-report items using the 5-point Likert Scale. Participants can choose from 0 (not at all) to 4 (extremely). The scale consists of five subscales: Tension, Depression, Anger, Power and Fatigue and is validated in Dutch.[20]

Results

Factor structure

A first step was to determine the intercorrelation of the observed variables using the Kaiser–Meyer–Olkin (KMO) measure. This KMO determines the ratio of magnitude of the observed correlations among variables to the magnitude of the sum of the observed correlations and partial correlations among the variables. A ratio close to 1 would indicate that a factor analysis is appropriate on the observed variables. A ratio close 0 would indicate otherwise. Most researchers agree with an overall KMO of 0.60 or higher to proceed with factor analysis. A KMO ratio of 0.86 was obtained for the set of 27 items, indicating that it

was appropriate to explore the underlying dimensions or factors governing responses to the questionnaire.

Factor analysis using principal component extraction was performed. Six factors with eigenvalues >1 were indentified (i.e. Kaiser Criterium). Eigenvalues are a measure of the variance in the items accounted for by a given factor of dimension. However, a scree plot indicates that two factors would be ideal (i.e. Cattell scree test plots). The scree plot shows the number of component and the corresponding eigenvalues (see Fig. 1). When the drop ceases and the curve makes an elbow towards less steep decline, all further components after the one starting the elbow can be dropped.

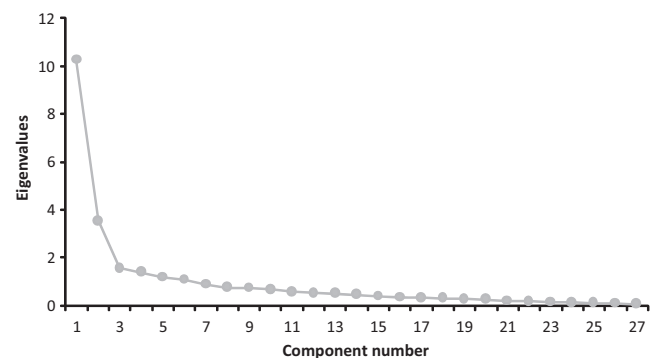The first factor explained 38.07% of the total variance (eigenvalue = 10.29) and a second factor explained

Fig. 1. Scree plot for the tinnitus handicap questionnaire shows the number of components and the corresponding eigenvalues. When the drop ceases and the curve makes an elbow towards less steep decline, all further components after the one starting the elbow can be dropped. The scree plot indicates that two factors would be ideal.

13.14% of the total variance (eigenvalue = 3.55). The communalities of each item ranged from 0.52 to 0.86.

Because the two factors might be correlated, we performed an oblique rotation to transform the factor loading matrix into a more interpretable form. Table 2 presents the factor pattern matrix after oblique rotation, as well as the correlation coefficients among the two factors. Eighteen items loaded highly on factor 1 and 9 items loaded highly on factor 2. Examination of these items indicated that factor 1 reflected the effects of tinnitus on the patients' social (items 2, 4, 7, 23, 24 and 26), emo-

Table 2. Pattern matrix for the two factors and correlations among the two factors. The variables are grouped according to factor pattern

	Component	
	Factor 1	Factor 2
THQ19	**0.89**	−0.08
THQ17	**0.85**	−0.01
THQ27	**0.85**	−0.10
THQ14	**0.84**	0.03
THQ16	**0.82**	−0.14
THQ11	**0.77**	−0.12
THQ15	**0.75**	0.12
THQ4	**0.75**	0.10
THQ24	**0.73**	−0.03
THQ13	**0.71**	0.22
THQ18	**0.66**	0.10
THQ25	**0.64**	0.01
THQ26	**0.59**	0.42
THQ9	**0.51**	0.46
THQ7	**0.49**	0.45
THQ8	**−0.39**	0.33
THQ2	**0.36**	0.18
THQ23	**0.29**	0.20
THQ21	0.09	**0.86**
THQ20	0.10	**0.85**
THQ22	−0.05	**0.85**
THQ6	0.03	**0.84**
THQ12	0.17	**0.70**
THQ3	−0.02	**0.42**
THQ10	0.09	**0.36**
THQ5	0.21	**0.33**
THQ1	0.07	**−0.22**

	Correlation	
	Factor 1	Factor 2
Factor 1	1.00	0.27
Factor 2	0.27	1.00

Extraction method: principal component analysis.
Rotation method: oblimin with Kaiser normalisation.
Rotation converged in seven iterations.

tional (items 8, 13, 15, 16, 17, 19 and 27) and physical behaviours (items 9, 11, 14, 18 and 25). Factor 2 included items that reflected the patients' hearing ability (items 6, 10, 12, 20, 21 and 22) and the patient's view of tinnitus (item 5), whether the patient had support (item 1) and whether it had worsened (item 3). Closer look at Table 2 further indicates that item 1 has a low loading on both factor 1 (0.07) and factor 2 (−0.22).

Reliability

A reliability analysis was performed to determine the internal consistency (i.e. Cronbach's alpha coefficients) and the item-total correlation coefficients. The items 1 and 8 were inverted, as these were negative items, by subtracting 100 before calculating the scores. A Cronbach's alpha coefficient of 0.93 was obtained for the 27 items, indicating a good internal consistency. Item-total correlations ranged from 0.08 to 0.78. The lowest item-correlation was obtained by item 1, the highest by item 26.

For the two factors, the Cronbach's alpha coefficients were also calculated to examine the reliability of each scale separately. For factor 1, a Cronbach's alpha coefficient of 0.94 was obtained and 0.82 for factor 2. This demonstrates again a good internal consistency.

Construct validity

A one-way ANOVA shows that there were no gender differences for factor 1 ($F_{1,99} = 1.92$, $P = 0.17$), factor 2 ($F_{1,99} = 0.76$, $P = 0.39$) and the total score ($F_{1,99} = 1.92$, $P = 0.17$) on the THQ. Table 3 shows the patients' responses on each of both factors and the total score on the THQ.

Table 4 reveals the correlations between factor 1, factor 2 and the total score THQ on the one hand and VAS loudness, VAS distress, awareness, annoyance, TQ and subscales, the different subscales of the POMS and the BDI on the other hand. Correlations were found between −0.23 and 0.82.

Table 3. Mean scores on factor 1, factor 2 and the total score on the THQ

	Male patients		Female patients		All patients	
	M	SD	M	SD	M	SD
Factor 1	45.28	23.39	38.83	20.99	42.92	22.65
Factor 2	51.51	21.93	47.50	23.11	50.04	22.34
Total	47.36	20.47	41.76	17.93	45.31	19.68

THQ, tinnitus handicap questionnaire.

Table 4. Correlation between factor 1, factor 2 and the total score of the THQ and validation measures

	THQ		
	Factor 1	Factor 2	Total
VAS loudness	0.37***	0.39***	0.39***
VAS Distress	0.46***	0.39***	0.45***
Awareness	0.36***	0.48***	0.39***
Annoyance	0.57***	0.49***	0.57***
TQ			
Distress (cognitive + emotional)	0.79***	0.37***	0.75***
Perceptual dfficulties	0.43***	0.78***	0.53***
Sleep disturbance	0.54***	0.22*	0.55***
Somatisation	0.23*	0.23*	0.44***
Intrusiveness	0.60***	0.39***	0.59***
Distress emotional	0.79**	0.27*	0.73***
Distress cognitive	0.59***	0.45***	0.61***
Total TQ	0.81***	0.60***	0.82***
Mini-TQ	0.81***	0.42***	0.79***
HADS			
Anxiety	0.53***	−0.08	0.47***
Depression	0.72***	0.26**	0.67***
Total HADS	0.69***	0.09	0.62***
POMS			
Tension	0.62***	0.10	0.58***
Depression	0.53***	0.05	0.46***
Anger	0.65***	0.16	0.61***
Power	−0.23*	−0.02	−0.25*
Fatigue	0.56***	0.10	0.53***
BDI	0.36***	0.22*	0.32**

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.
BDI, Beck Depression Inventory; HADS, Hospital Anxiety and Depression Scale; THQ, tinnitus handicap questionnaire; VAS, Visual Analogue Scale.

The results in Table 4 indicate that factor 1 correlates very high with the total score of the TQ, the MINI-TQ, distress (cognitive + emotional) and distress emotional and high with intrusiveness, total score on the HADS and tension of the POMS. The factor correlates also with the other questionnaires but not that high.

Factor 2 correlates very high with perceptual difficulties and high with total score on the TQ. Factor 2 correlates moderate with VAS loudness, Vas Distress, awareness, annoyance, the different subscales of the TQ, Mini-TQ, depression of the HADS and BDI. Important to note is that factor 2 does not correlate with the different subscales of the POMS. Important to note is also that factor 2 correlates better with awareness than factor 2.

The total score correlates with all different validation scales, but correlates very high with the total score on the TQ, the Mini-TQ, distress emotional, distress (cogni-

tive + emotional) and high with distress cognitive, anger and annoyance.

Multiple regression analyses were performed for each of the validation measures as the dependent variable and the scores on the 2 factors as independent variables. Table 5 presents a summary of these regression analyses. It was shown that both factor 1 and factor 2 predict scores on VAS loudness, VAS distress, awareness, annoyance, total score on the TQ, Anxiety HADS, total score on the HADS, and tension, depression, anger and fatigue of the POMS. Distress (emotional + cognitive), sleep disturbance, intrusiveness, distress emotional, distress cognitive and Mini-TQ, depression of the HADS, power of the POMS and BDI was only predicted by factor 1, while perceptual difficulties were only predicted by factor 2.

Discussion

The results of this study demonstrate that the Dutch version of the THQ has good internal consistency and reliability, similar to the original English version. The internal reliabilities of both subscales (i.e. factors) are adequate, as indicated by the Cronbach's alpha coefficients. Factor analysis failed to extract the three distinct factors as proposed by Kuk *et al.*[8] In our version, we could only extract two factors with a high reliability. However, the English version already indicates that the third factor – which only includes four items – has a poor reliability and has low correlations with validation measures.

Factor 1 in the Dutch version addresses the individual's physical health, emotional status and social consequences of tinnitus and can be summarised as the distress component. The second factor shows the perceptual difficulties and the awareness of the patient's tinnitus and can be summarised as the perceptual component. We used correlations between the two subscales as well as the total score on the THQ and the VAS loudness, VAS distress, awareness, annoyance, the different subscales of the TQ, total score of the TQ, the Mini-TQ, the subscales of the HADS, the total score of the HADS, the different subscales of the POMS and the BDI as a measure of construct validity. Multiple regression analysis further shows that factor 1 mainly predicts distress based on the TQ, HADS, POMS and BDI, while factor 2 only predicts perceptual difficulties of the TQ.

It is important to note that the 27 items have to be administered to ensure a valid comparison between tinnitus patients and normative data. The mean scores on factor 1 and factor 2 subscales can also be compared with the normative data. The mean score on the tinnitus handicap questionnaire reflects the degree of handicap because of tinnitus. This is closely related to the tinnitus

Table 5. Summary of regression analyses on each validation measure

	Raw B-weights		Standardised β-weights		R^2	F-value
	Factor 1	Factor 2	Factor 1	Factor 2		
VAS loudness	0.02*	0.03**	0.25*	0.29**	0.20	12.33***
VAS distress	0.04***	0.03*	0.36***	0.24*	0.26	16.89***
Awareness	0.23*	0.53**	0.18	0.41***	0.26	17.16***
Annoyance	0.60***	0.43**	0.43***	0.30**	0.40	31.84***
TQ						
Distress (cognitive + emotional)	0.22***	0.01	0.77***	0.04	0.62	73.84***
Perceptual dfficulties	0.01	0.13***	0.07	0.75***	0.61	74.07***
Sleep disturbance	0.07***	−0.01	0.56***	−0.03	0.30	20.63***
Somatisation	0.05***	0.001	0.45***	0.01	0.21	12.79***
Intrusiveness	0.10***	0.03	0.53***	0.15	0.37	28.13***
Distress emotional	0.16***	−0.02	0.83***	−0.10	0.63	76.81***
Distress cognitive	0.06***	0.03*	0.48***	0.24*	0.39	30.24***
Total TQ	0.44***	0.16***	0.68***	0.29***	0.72	111.42***
Mini-TQ	0.19***	0.01	0.79***	0.05	0.66	91.65***
HADS						
Anxiety	0.13***	−0.07***	0.72***	−0.41***	0.41	34.16***
Depression	0.12***	−0.01	0.76***	−0.08	0.53	54.20***
Total HADS	0.25***	−0.09***	0.82***	−0.28***	0.53	55.29***
POMS						
Tension	0.18***	−0.06*	0.72***	−0.23*	0.42	35.90***
Depression	0.31***	−0.05*	0.64***	−0.24*	0.32	23.20***
Anger	0.21***	−0.05*	0.74***	−0.19*	0.45	39.64***
Power	−0.06*	0.02	−0.27*	0.10	0.06	3.09*
Fatigue	0.17***	−0.05*	0.64***	−0.19*	0.34	24.59***
BDI	0.19**	0.63	0.33**	0.07	0.13	7.43**

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

BDI, Beck Depression Inventory; HADS, Hospital Anxiety and Depression Scale; VAS, Visual Analogue Scale.

questionnaire by Hiller and Goebel[9,11,12] as the correlation between two measures is very high (0.82 for the TQ). An advantage for using the TQ is that the TQ provides several subscales (distress, perceptual difficulties, sleep disturbance, somatisation and intrusiveness) that correlate with the THQ and the subscales of the THQ permitting a more detailed documentation of the tinnitus handicap. However, while the TQ has 52 items, the THQ has only 27 items and is a good instrument for measuring tinnitus-related distress in a compact, quick and economical assessment. In comparison with the Mini-TQ that only has 12 items, the THQ has the advantage that it has two subscales differentiating distress and perceptual difficulties.

Conclusion

This study demonstrates that the Dutch version of the THQ is a reliable and valid measure of self-perceived tinnitus-related distress. The psychometric properties are in line with previous findings on the English version with regard to reliability and validity. However, the items on the subscales differ from the English version. While the English version has three subscales, our version has only two subscales. Yet, the English version reports that the third factor has a low internal consistency and low correlation among the different items. For the Dutch version, both factors show a very high reliability and validity. The THQ is thus suitable for assessing the handicapping effects of tinnitus among a Dutch-speaking population in both clinical and research settings.

Conflict of interest

None to declare.

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