Adaptation and Validation of the Turkish Version of the International Tinnitus Inventory

Original Investigation

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Abstract

Objective: Tinnitus is a common auditory symptom that negatively affects the quality of life of individuals. This study aimed to determine the validity and reliability of a Turkish version of the International Tinnitus Inventory (Tr-ITI) for both clinical and research purposes. ITI is a short, easily applicable self-report inventory to measure perceived tinnitus.

Methods: The Turkish translation of the ITI and the Tinnitus Handicap Inventory (THI) were administered to 125 participants aged 19 to 76 with tinnitus complaints for over three months. A routine audiological evaluation was performed, and the psychoacoustic properties of tinnitus were determined. Confirmatory factor analysis (CFA) was performed to construct validity, Cronbach's alpha coefficient was used for the reliability of internal consistency, and retests were administered to participants 15 days after the first measurement.

Results: CFA and inter-item correlations confirmed the unifactorial model. Tr-ITI showed high internal consistency reliability (Cronbach's alpha =0.909). All fit index values showed a good fit. Correlations between the total scores of Tr-ITI and THI were moderate (r=-0.620) and between retest scores were very high (r=0.993).

Conclusion: The Tr-ITI is a valid, reliable, and practical tool for determining tinnitus severity and tinnitus complaints.

Keywords: Otology, tinnitus, surveys and questionnaires, quality of life, validity and reliability, audiology

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Introduction

Tinnitus is the perception of sound, such as ringing, humming, etc., in the ears or in the head without an external acoustic stimulus. It is a very common auditory complaint. Although its incidence varies in various studies, it is seen between 4–37% in adults, and this rate rises to 17–30% in adults aged 50 and over (1, 2). It is known that prolonged duration and increased severity of tinnitus cause different psychological problems ranging from depression and anxiety to suicidal thoughts, as well as attention and concentration difficulties, reduce enjoyment of life, cause sleep problems, affect social activities and relationships, and increase hearing problems (3-8). All of these factors lead to a significant decrease in the quality of life.

Detailed assessment is critical for tinnitus treatment and/or therapy. However, it is very difficult to measure tinnitus objectively as it is a perception that

varies from person to person. The measurement of the psychoacoustic aspects of tinnitus (pitch and loudness matching, minimal masking level, residual inhibition) is an objective measurement. However, the correlation between the psychoacoustic properties of perceived sound as tinnitus and its impact on an individual's life is weak (9). Although the intensity and frequency of the sound perceived by people with tinnitus are similar, tinnitus severity can be found at different levels. Therefore, self-report scales have an important role in the assessment of tinnitus severity. Self-reported tinnitus handicap scales are used in clinical processes such as tinnitus counseling, therapy, and measurement of therapy outcomes (10).

The use of scales/inventories/questionnaires in tinnitus is important in terms of obtaining measurable information, planning therapy, determining the results, providing wide-ranging information, containing standardized questions, and protecting the clinician from medicolegal problems related to subjective complaints such as tinnitus. Thus, most audiology clinics use tinnitus questionnaires to evaluate tinnitus-related handicaps, particularly at the first appointment. Validated questionnaires are evidence-based and cost-effective tools for tinnitus evaluation. There are different questionnaires commonly used worldwide. The Tinnitus Handicap Inventory (THI), the Tinnitus Questionnaire, the Tinnitus Reaction Questionnaire, the Tinnitus Functional Index, and the Tinnitus Handicap Questionnaire are the main scales in tinnitus evaluation (11-15). The THI and the Mini Tinnitus Questionnaire have already been validated in Turkish (16, 17). The International Tinnitus Inventory (ITI) was developed by Kennedy et al. (18) in 2005, inspired by the International Outcomes Inventory-Hearing Aids (IOI-HA). Item format and responses are similar to IOI-HA.

The ITI is a patient-friendly questionnaire with a simple response format (18). The ITI is a time-saving short inventory consisting of only eight items and easy to administer as part of the clinical routine. Its small number of items provides clear and fast information about tinnitus and the difficulties it causes, enabling the clinician to easily determine the most distressing effects of tinnitus (19). The items inquire about the effect tinnitus has on hearing, sleep, enjoyment of life, daily activities, other health problems, peace of mind, other people, and the annoyance tinnitus causes. In this study, we adapted the ITI to Turkish and tested its validity and reliability in the Turkish population without any otologic and neuro-otologic problems.

Methods

The study design and the consent form were approved by the Non-interventional Clinical Researches Ethics Board of Hacettepe University under project no GO 18/1106 (decision no: GO 18/1106-31, date: 27.11.2018). The informed consent form was signed by all participants. The study was conducted according to the principles of the Declaration of Helsinki.

Translation and Cultural Adaptation of the International Tinnitus Inventory

For the cross-cultural adaptation, we followed the guidelines proposed by Guillemin et al. (20) and Beaton et al. (21). In this first step of the study, permissions were obtained from the original ITI developer for translation into Turkish and the validity and reliability process. Commonly used validity and reliability processes were carried out: forward-translation and back-translation, followed by validation testing and reliability testing. The forward-translation of the ITI was done independently by a team of two audiologists and one English linguist-a native Turkish speaker fluent in English. All team members noted the cultural and linguistic details. This team elaborated the semantic, linguistic, cultural, and conceptual properties of all three translations duo with the original version and made a synthesis of the Turkish translations. Then, the translated content was back-translated into English by a native-speaker English linguist. The back-translated version was compared with the original ITI by the designated team of two audiologists and one English linguist, taking into consideration the semantic, conceptual, and cultural aspects. There were no significant differences between the original ITI and the back-translated version and required no revisions. Then, a pilot study was conducted using the final Turkish version with 20 randomly selected participants. Their opinions about the clarity, content, and intelligibility of the questions on the scale were obtained. In line with their recommendation, the Turkish version of the ITI (Tr-ITI) was finalized with minor changes such as revision of suffixes.

Participants and Audiologic Evaluation

One hundred twenty-five adults aged 19 to 76 years with tinnitus complaints for at least three months were included in the study. All participants were literate in Turkish and at the cognitive level to understand and conduct the instructions given for the study. The sample size was determined by the minimum (min) subject-item ratio of 10 (22). Individuals who were referred to the audiology department for hearing and tinnitus evaluation accepted to participate in the study. The routine audiological evaluation was performed for each participant, using a calibrated clinical audiometer (Interacoustics AC 40, Denmark) with Telephonic TDH 49 headphones in a quiet soundproof room. Pure tone audiometry was performed for air conduction thresholds at frequencies between 125–8000 Hz, and bone conduction thresholds at frequencies between 500–4000 Hz. Pure tone average (PTA) was calculated at frequencies between 500–4000 Hz. Psychoacoustic properties of tinnitus (frequency,

loudness, minimal masking level, and residual inhibition) were tested on all participants.

Validity and Reliability

The ITI is an eight-item questionnaire based on the most common complaints of tinnitus patients. It is brief, has a clear and simple response format, and is comparable across languages. Each item is scored on a scale of one to five, with one indicating great difficulty and five indicating no difficulty with tinnitus; i.e., a decrease in the score reflects a more troublesome perception of tinnitus.

In this study, THI was used as a parallel inventory. THI is a commonly used self-report inventory comprising 25 questions about tinnitus complaints to determine the perceived tinnitus handicap severity. THI evaluates tinnitus in functional, emotional, and catastrophic aspects. Each item has "yes", "no" and "sometimes" response choices. The total score ranges between 0-100, and the maximum (max) score means max tinnitus severity.

After the translation step, the validity of the inventory was tested. In this step, Tr-ITI was administered to 125 volunteer participants. They were informed about the inventory and rated the Tr-ITI and THI in a silent room at the clinic.

For the construct validity analysis, confirmatory factor analysis (CFA) was performed to analyze the validity and exploratory factor analysis (EFA) was done to investigate the factor structure of the Tr-ITI. The reliability of internal consistency was interpreted according to Cronbach's alpha coefficient. For evaluating measurement reliability, the correlation between items and the corrected item-total score correlation, the effect on the scale score means, and the change in Cronbach's alpha value when the item is removed were investigated. The test-retest method was used to examine the reliability of the measurement results. The consistency of the inventory was examined based on time, and the correlation between measurements was calculated with a retest. The retests of Tr-ITI were administered to participants 15 days after the first measurement.

Statistical Analysis

Statistical analyses were done using IBM SPSS Version 22 (IBM SPSS Corp.; Armonk, NY, USA), and CFA was done with AMOS (IBM, New York, NY). The normal distribution of scale total scores was examined using the Kolmogorov–Smirnov test. Within the scope of the validity-reliability study of the scale, the Kaiser–Meyer Olkin (KMO) test, EFA, CFA, Cronbach's alpha test, Spearman's correlation test, and item-total correlations were examined. The goodness-of-fit indices were calculated to test the factor structure. A 5% type-I error level was used to understand the statistical significance.

Results

Participants and Audiologic Evaluation

A total of 125 individuals, 66 males aged between 19–71 years (mean ± SD =48.2±13.0) and fifty-nine females aged between 22–76 years (mean ± SD =51.1±12.8) participated in the study. Seventy-two participants had normal hearing, 31 participants had slight, 19 had mild, and three had moderate hearing loss in the left ear. Five of the participants were using hearing aids. Seventy-six participants had normal hearing, 28 had slight, 17 had mild, three had moderate, and one had moderately severe hearing loss in the right ear. Participant data about the PTA (0.5–4 KHz), better ear PTA, worse ear PTA (WEPTA), tinnitus duration, tinnitus loudness (SL), tinnitus frequency, minimal masking level, residual inhibition, and tinnitus site are given in Table 1.

The mean of the Tr-ITI total score was 27.88±7.0 (min =8, max =39). The mean of each item and the average of the total items are given in Figure 1. The annoyance caused by tinnitus

Table 1. Participants' information about demographic, tinnitus, and hearing status

		Participants (n=125)
Age (year)	Mean ± SD	49±1.1
Sex (M/F)	n	66/69
Hearing loss (NH/HL)	n	72/53
Right Ear PTA (dB HL)	Mean ± SD	20±11.5
Left Ear PTA (dB HL)	Mean ± SD	19.5±10.7
Better Ear PTA (dB HL)	Mean ± SD, (min-max)	17.1±9.7 (0–55)
Worse Ear PTA (dB HL)	Mean ± SD, (min-max)	21.9±12.1 (0–65)
Tinnitus duration (month)	Mean ± SD	13±1.2
Tinnitus duration		
3–6 months	n - %	40–32%
6 months–1year		15–12%
1–2 years		15–12%
More than 2 years		55–44%
Tinnitus loudness (SL)	Mean ± SD	34.6±27.7
Tinnitus frequency (KHz)	Mean ± SD	8.2±3.3
MML (SL)	Mean ± SD	7.9±4.4
Residual inhibition		
Complete (C)	n	75 (C), 40 (P), 10 (N)
Partial (P)		
No (N)		
Tinnitus site [Right (R), Left (L), Bilateral (B)]	n	45R, 43L, 37B

M: Male, F: Female, NH: Normal hearing HL: Hearing loss, SL: Sensation level, MML: Minimal masking level, SD: Standard deviation, min-max: Minimum-maximum

and the negative effects of tinnitus on enjoyment of life were the areas that individuals complained about the most.

The mean score of Tr-ITI was 27.8±7.7 (min =8, max =39) for females, and 28.593±6.4 (min =11, max =39) for males. There were no statistical differences between the mean score of males and females (Mann–Whitney U test, p=0.585). There were no correlations between tinnitus duration, gender, age, and total Tr-ITI score (Spearman's correlation test p>0.05). Likewise, no statistically significant correlations were found between the Tr-ITI score and the BEPTA and WEPTA (p>0.05).

The mean of the THI was 40.31±25.2 (min =6, max =100) which indicates level three tinnitus severity.

Construct Validity Results

Before the CFA, the suitability of the data for factor analysis and the adequacy of the sample was evaluated with Bartlett's sphericity test and KMO test. Bartlett's test of sphericity was $\chi 2$=604.774 (p=0.00) and KMO measure of sample adequacy was 0.899.

EFA showed that Tr-ITI had a single-factor structure in eight items in accordance with the original structure of the inventory. The factor structure of the 8-item Tr-ITI was tested with CFA. The results obtained with CFA and the path diagram are given in Figure 1. As seen in Figure 2, each item of the unidimensional inventory was meaningful and sufficient to explain the dimension. Factor loadings of items are shown in Table 2. These findings showed that TR-ITI is a unifactorial scale as is the original version.

The correlation between THI and Tr-ITI was moderate (Spearman's rho r=-0.620 p=0.00), which is the indicator of convergent validity (23).

The goodness of fit indexes of Tr-ITI and thresholds for acceptable and good fit are given in Table 3. Analysis showed that the indexes of the TR-ITI values met the threshold for a good fit.

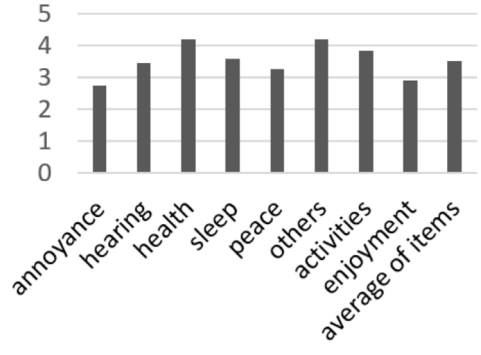

Figure 1. Means of Tr-ITI items
Tr-ITI: Turkish version of the International Tinnitus Inventory

Reliability Results

The responses given to the eight items by the participants with tinnitus and Cronbach's alpha were used to assess internal consistency. Cronbach's alpha was 0.909, which means high internal consistency. Item reliability was examined with item analysis, the correlation between the items was analyzed, and their consistency was studied. As seen in Table 4, there is a high positive correlation between items; the correlation coefficient was not below 0.30 in any of the items. These findings showed that the items in the Tr-ITI were interrelated and that no item should be removed. The highest correlation was found between "others" and "activities" items (r=0.786), and the lowest correlation was between "others" and "annoyance" items.

As a result, when Cronbach's alpha and correlation coefficients between items and the items analysis results were interpreted together, it was revealed that the Tr-ITI had a high degree of reliability. Table 5 shows that removing any item from the inventory did not increase the mean and Cronbach's alpha coefficient.

For test reliability, TR-ITI was completed for a second time by 50 subjects after a 15-day interval and total score consistency between measurements was found high (Pearson correlation test r=0.993, p=0.00).

Discussion

Tinnitus is a subjective phenomenon that is difficult to measure via evidence-based assessment. Self-report scales are indispensable tools in determining the severity of tinnitus and the domain of life it affects. Tinnitus affects life in different domains. Sleep problems, emotional distress,

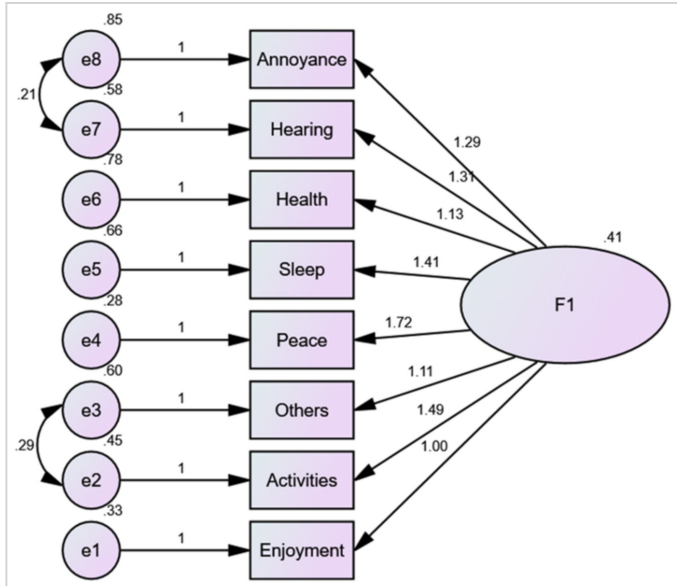

Figure 2. Unidimensional structural model for the Tr-ITI
Tr-ITI: Turkish version of the International Tinnitus Inventory

concentration difficulties, and social problems are the areas of tinnitus that most affect daily life. For effective counseling and therapy, identifying the primary complaints from tinnitus is crucial. Literature shows numerous scales and indexes for measuring tinnitus severity. The ITI is one of the short and easily applicable inventories for a tinnitus evaluation. It is valuable for the quick assessment of the most commonly reported tinnitus complaints (18).

Our study showed TR-ITI to be of a unifactorial structure similar to the original version of the inventory (Appendix). The findings suggest that the Tr-ITI has very high internal consistency reliability (Cronbach's alpha coefficients =0.909). The internal consistency reliability of the Tr-ITI is similar to those of the English (Chronbach's alpha coefficients =0.91) and the French (Chronbach's alpha coefficients =0.87) validations of inventory (18). As seen in Table 5, Cronbach's

Table 2. The Tr-ITI items and factor loadings

Item	Items in Turkish	Factor loadings
Item 1 (Annoyance): Think about your tinnitus over the past two weeks. On an average day, how often have you found it annoying?	Item 1: Son iki hafta içindeki çınlamanızı düşününün. Ortalama bir günde hangi sıklıkta sinir bozucu olduğunu düşündünüz?	0.667
Item 2 (Hearing): Think about the situation where you most wanted to hear. Over the past two weeks, how much difficulty has the tinnitus caused in that situation?	Item 2: İşitmenizin en iyi olmasını istediğiniz durumu düşünün: Son iki hafta içinde, o durumda çınlamanız ne kadar zorluğa neden oldu?	0.738
Item (Health) 3: How much has your tinnitus caused or aggravated other health problems?	Item 3: Çınlamanız başka sağlık sorunlarına neden oldu mu ya da diğer sağlık sorunlarınızı artırdı mı?	0.630
Item 4 (Sleep): Over the past two weeks, how much has your tinnitus affected your sleep?	Item 4: Son iki hafta içinde, çınlamanız uykunuzu ne kadar etkiledi?	0.741
Item 5 (Peace): Over the past two weeks, how much has your tinnitus affected your peace of mind?	Item 5: Son iki hafta içinde, çınlamanız iç huzurunuzu ne kadar etkiledi?	0.900
Item 6 (Others): Over the past two weeks, how much do you think your tinnitus has affected other people?	Item 6: Son iki hafta içinde çınlamanızın diğer insanları ne kadar etkilediğini düşünüyorsunuz?	0.673
Item 7 (Activities): Overall, how much has your tinnitus affected the things you can do?	Item 7: Genel olarak, çınlamanız yapabileceğiniz şeyleri ne kadar etkiledi?	0.819
Item 8 (Enjoyment): Considering everything, how much has your tinnitus changed your enjoyment of life?	Item 8: Her şey göz önüne alındığında, çınlamanız yaşamdan aldığınız zevki ne kadar değiştirdi?	0.743

Tr-ITI: Turkish version of the International Tinnitus Inventory

Table 3. Comparison of standard adaptation for good fit and acceptable fit index parameters with Tr-ITI

	χ^2/d.f.	RMSA	GFI	AGFI	NFI	CFI	IFI
Thresholds for acceptable fit	2≤ χ2/SD ≤3	0.05≤ RMSEA ≤0.08	0.90≤ GFI ≤0.95	0.85≤ AGFI ≤0.90	0.90≤ NFI ≤0.95	0.90≤ CFI ≤0.95	0.90≤ IFI ≤0.95
Thresholds for good fit	0≤ χ2/SD ≤2	0.00≤ RMSEA ≤0.05	0.95≤ GFI ≤1.00	0.90≤ AGFI ≤1.00	0.95≤ NFI ≤1.00	0.95≤ CFI ≤1.00	0.95≤ IFI ≤1.00
Measurement model (Tr-ITI)	**1.258**	**0.46**	**0.956**	**0.912**	**0.964**	**0.992**	**0.992**

χ2 /d.f.: Chi-square divided by the degrees of freedom, GFI: Goodness of fit index, AGFI: Adjusted GFI, CFI: Comparative fit index, RMSEA: Root mean square error of approximation, CFI: Comparative Fit Index, IFI: Incremental Fit Index, SD: Standard deviation, Tr-ITI: Turkish version of the International Tinnitus Inventory

Table 4. Item correlation matrix of Tr-ITI

Item	Item 1: Annoyance	Item 2: Hearing	Item 3: Health	Item 4: Sleep	Item 5: Peace	Item 6: Others	Item 7: Activities	Item 8: Enjoyment
Item 1: Annoyance	1.000							
Item 2: Hearing	0.643	1.000						
Item 3: Health	0.433	0.523	1.000					
Item 4: Sleep	0.513	0.586	0.454	1.000				
Item 5: Peace	0.625	0.662	0.525	0.671	1.000			
Item 6: Others	0.383	0.497	0.553	0.453	0.596	1.000		
Item 7: Activities	0.504	0.600	0.587	0.614	0.722	0.786	1.000	
Item 8: Enjoyment	0.469	0.488	0.436	0.503	0.705	0.525	0.626	1.000

Tr-ITI: Turkish version of the International Tinnitus Inventory

Table 5. Change of Cronbach's alpha value for items in the Tr-ITI

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
Annoyance	25.47	39.025	0.642	0.904
Hearing	24.77	38.905	0.732	0.895
Health	24.02	40.129	0.627	0.904
Sleep	24.63	38.638	0.687	0.899
Peace	24.95	36.772	0.829	0.886
Others	24.02	40.298	0.681	0.900
Activities	24.39	37.531	0.812	0.888

Tr-ITI: Turkish version of the International Tinnitus Inventory

alpha coefficient decreased after removing each of the eight ITI items from the inventory construct. Moreover, Table 4 shows that inter-item correlations were high; these indicate that each item contributes to Tr-ITI. For this reason, the number of items in the Turkish version was not changed, and the study was completed without removing any items. The positive correlations between inventory items range between 0.14 and 0.68 in the French version and between 0.32 and 0.75 in the English version of the ITI. Our correlations between items range between 0.3 and 0.7, findings were similar to those of the French and English versions of the inventory. The highest correlation seen between "others" and "activities" items come to mean that tinnitus negatively affects social life. In our study, the annoyance caused by tinnitus and the decrease in the enjoyment of life were the most common complaints of individuals. The item related to the annoyance caused by tinnitus was also the item with the worst average score in the English and French versions. Tinnitus distress or annoyance is the common patient-reported complaint, so questions about these issues appear on nearly all self-report tinnitus scales (10, 24, 25).

The ITI, compared to other tinnitus-related questionnaires, contains few items. When we studied the tools for tinnitus measurement, we saw that widely used questionnaires and scales have a large number of items, for example the THI and the Tinnitus Functional Index have 25 items, the Tinnitus Questionnaire has 52 items, the Tinnitus Handicap Questionnaire has 27 items, and the Tinnitus Reaction Questionnaire has 26 items (11-15). Among these tools, the ITI stands out in its shortness, easy application, and usefulness in determining the symptoms of tinnitus quickly. Tinnitus is a complex auditory symptom and is comorbid with a lot of diseases and health conditions (like sleep problems, psychiatric illness, etc.) and needs to be evaluated in many ways (24-27). To evaluate tinnitus and these conditions, many assessment questionnaires and scales are used in the initial tinnitus assessment and follow-up period. This causes the patient to get bored while applying the scales, perhaps not being able to complete the forms carefully and creating doubts about the reliability and accuracy of the answers.

Our study found that the mean score of Tr-ITI was 27.88±7.0, and the study of the original version of ITI was 31.6. The mean THI score of our participants was 40.31±25.2 (level three tinnitus severity) and there was a strong correlation between THI and Tr-ITI scores. THI is the most widely used scale for assessing tinnitus severity and the Tr-ITI score showed high consistency with THI. The Tr-ITI could be used instead of THI for tinnitus measurement, especially in the initial interview of tinnitus evaluation in busy ENT and audiology clinics. ITI is a robust questionnaire and easy to interpret (18). The literature shows that ITI is frequently used in the evaluation of tinnitus, especially in Ménière's disease patients (28-32).

Our study evaluated the validity of the Tr-ITI using the path diagram and the goodness of fit indexes. The model of the Tr-ITI data showed that the fitness degree index of the structural model is significant (p=0.00). As shown in Table 3, all fit index parameters of the Tr-ITI are between the thresholds for a good fit. Furthermore, the Tr-ITI has excellent test-retest reliability, meaning the inventory is consistent and stable over time. No retesting has been performed in the English and French versions. Researchers project this in future studies (18).

This study also investigated the possible correlations between the participant's age, gender, tinnitus duration hearing level, and the total score of the inventory. In the French and English versions, there was no correlation between age, gender, and the ITI total score. However, in this study, a very weak negative correlation was found between ITI total score and tinnitus duration and best ear hearing level. The tinnitus duration of their patients was one month to 57 years, whereas in our study, it was 13±1.2 months, it is probable that there was no correlation in our study because of this difference. The PTA of our participants was at a slight hearing loss level. Since we did not have many patients with hearing loss, it was thought that there was no relationship between tinnitus and hearing problems. Considering the theories of tinnitus pathophysiology, hearing loss is one of the important risk factors for developing tinnitus, but it is known that tinnitus is frequently seen in individuals without hearing loss.

There are many parameters other than hearing loss that affect the severity and continuity of tinnitus (27, 33, 34).

Self-report tinnitus questionnaires ask about particular difficulties in concentration, sleeping, coping, social, emotional well-being, and general health. The purpose of these questionnaires is to determine tinnitus severity and most particularly complaints of tinnitus (35). Then, it is aimed to help the patient by measuring counseling, therapy planning, and therapy outcomes. Tr-ITI is a valid and reliable inventory that can be used by relevant specialists such as audiologists, psychologists, and ENT specialists, useful in quickly obtaining information about complaints caused by tinnitus, and easy to implement and interpret.

Conclusion

TR-ITI is a valid and reliable scale with a high-reliability coefficient and good compliance values that can be used in Turkish for research and clinical purposes.

It is an inventory that can be used easily, especially in busy clinics in terms of easy application and time saving.

Ethics Committee Approval: The research protocol was approved by the Hacettepe University Non-Interventional Clinical Research Ethics Committee with project no. GO 18/1106 (decision no: GO 18/1106-31, date: 27.11.2018).

Informed Consent: The informed consent form was signed by all participants in the study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: G.İ.Ş.K., S.A., Design: G.İ.Ş.K., S.A., Data Collection and/or Processing: G.İ.Ş.K., G.B.Ç., Analysis and/or Interpretation: G.İ.Ş.K., G.B.Ç., Literature Search: G.İ.Ş.K., G.B.Ç., Writing: G.İ.Ş.K., S.A.

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Main Points

- Tinnitus negatively affects life in many areas within a wide range from sleep to concentration problems and from emotional to social problems. However, these effects are independent of the psychoacoustic character of tinnitus.
- The effect of tinnitus on quality of life and the effectiveness of therapy/treatment are determined by self-report scales and questionnaires.
- Turkish version of the International Tinnitus Inventory is a short, timesaving, valid and reliable screening scale that can be easily applied in audiology and ENT clinics and evaluates all domains of tinnitus.

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Appendix.

1. Son iki hafta içindeki çınlamanızı düşününün. Ortalama bir günde hangi sıklıkta sinir bozucu olduğunu düşündünüz?

Her zaman	Çoğunlukla	Bazen	Ara sıra	Asla

2. İşitmenizin en iyi olmasını istediğiniz durumu düşünün: Son iki hafta içinde, o durumda çınlamanız ne kadar zorluğa neden oldu.

Çok fazla	Oldukça fazla	Orta derecede	Biraz	Hiç

3. Çınlamanız başka sağlık sorunlarına neden oldu mu ya da diğer sağlık sorunlarınızı artırdı mı?

Çok fazla	Oldukça fazla	Orta derecede	Biraz	Hiç

4. Son iki hafta içinde, çınlamanız uykunuzu ne kadar etkiledi?

Çok fazla	Oldukça fazla	Orta derecede	Biraz	Hiç

5. Son iki hafta içinde, çınlamanız iç huzurunuzu ne kadar etkiledi?

Çok fazla	Oldukça fazla	Orta derecede	Biraz	Hiç

6. Son iki hafta içinde çınlamanızın diğer insanları ne kadar etkilediğini düşünüyorsunuz?

Çok fazla	Oldukça fazla	Orta derecede	Biraz	Hiç

7. Genel olarak, çınlamanız yapabileceğiniz şeyleri ne kadar etkiledi?

Çok fazla	Oldukça fazla	Orta derecede	Biraz	Hiç

8. Her şey göz önüne alındığında, çınlamanız yaşamdan aldığınız zevki ne kadar değiştirdi?

Çok daha kötüleştirdi	Oldukça çok kötüleştirdi	Biraz kötüleştirdi	Hiç kötüleştirmedi	Daha da iyileştirdi