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Original Article

A Comparative Study of Readability, Acceptability, and the Adaptation of an Internet-based Cognitive Behavioral Therapy for Tinnitus

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BACKGROUND: Internet-based cognitive behavioral therapy has shown effectiveness in managing chronic tinnitus. Internet-based cognitive behavioral therapy is currently available in only a few languages (English, Swedish, Spanish, and German). The current study aimed to adapt, evaluate, and compare the readability and acceptability of the Turkish internet-based cognitive behavioral therapy materials compared to previous versions.

METHODS: Internet-based cognitive behavioral therapy materials were adapted from the preexisting American English to the Turkish population in a 4-step process: (1) cultural adaptations, (2) acceptability adaptation of materials to the Turkish-speaking population, and (3) literacy-level adjustments. Experts (n = 11) and patients (n = 11) rated the intervention materials and the ePlatform for acceptability, including usability, content, presentation, and suitability (4).

RESULTS: Literacy-level adjustments generated acceptable and readability levels of the Turkish version of the internet-based cognitive behavioral therapy program. The average readability score was 76.15 ± 0.35. The Turkish internet-based cognitive behavioral therapy (Mdn: 7.00) was statistically lower compared to the Swedish (Mdn: 9.00) but higher when compared to the American English and Spanish (Mdn: 5.00) versions. There were no statistical differences between the British English and Turkish versions in readability scores. Acceptability in the internet-based cognitive behavioral therapy platform was rated favorably.

CONCLUSION: The Turkish internet-based cognitive behavioral therapy was found to be user-friendly and easy to understand, with navigations that are straightforward, have clear information, and are supported by audiologists. The readability score of the Turkish internet-based cognitive behavioral therapy is within recommended limits to ensure comprehensibility. We suggest that an online cognitive behavioral therapy program is adaptable for other languages for countries with a limited number of clinicians focused on cognitive behavioral therapy and tinnitus.

KEYWORDS: Cognitive behavioral therapy, ICBT, internet interventions, tinnitus, tinnitus treatment

INTRODUCTION

Tinnitus is a prevalent and distressing symptom affecting around 1 in 8 adults globally.[1] Although most patients are not distressed by their tinnitus, a significant number (20%) find it intrusive.[2] Tinnitus is a chronic condition; no cure exists, though spontaneous

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remission may occur. Although different treatment options exist, most are not evidence-based. The treatment that has shown the most consistent evidence of efficacy is cognitive behavioral therapy (CBT) for tinnitus.[3] Cognitive behavioral therapy reduces tinnitus-related disabilities through cognitive restructuring and behavioral modification by altering maladaptive cognitive, emotional, and behavioral reactions to tinnitus.

A recent systematic review showed that the pooled results of studies examining the effectiveness of CBT for tinnitus indicated positive outcomes in terms of reducing tinnitus distress and associated effects such as anxiety, depression, and insomnia.[4] Despite the evidence that CBT reduces tinnitus distress, it is rarely provided or recommended, as there are few healthcare practitioners with the necessary credentials in both CBT and tinnitus management.[5] Since there is a shortage of experts to implement CBT for tinnitus in Turkey and worldwide, there is a need for better access to evidence-based treatment approaches.

Internet-based interventions may be one option for improving accessibility. Although not all people have access to the Internet in Turkey, the proportion of Internet users was 82.6% for individuals in the 16-74 age group in 2021. In addition, 80.5% of all individuals in the same age group use the Internet regularly (almost every day or at least once a week) (Turkish Statistical Institute, 2021). In terms of how the Internet is used, 70% of active Internet users in Turkey utilize the Internet to get health-related information (sometimes—40.9%, often—18.1%, always—11.0%).[6] To our knowledge, no Internet intervention exists for a Turkish population with tinnitus, although some other populations have used web-based auditory training.[7]

E-health has increasingly become an essential source for therapeutic intervention, especially since the occurrence of the COVID-19 pandemic.[8] This healthcare modality is being used increasingly, and it is more widely accepted by patients and providers.[9] Online users can interact with healthcare experts and access treatment components such as explanatory modules, worksheets, and expert opinions. The increasing use and applicability of e-health are due partly to its advantages in terms of accessibility, digitalization, economic connection, and availability. Within the field of audiovestibular rehabilitation, the use of e-health tools, such as the use of Internet interventions and smartphone applications, has also grown.[10]

To improve the accessibility of CBT, a guided internet-based cognitive behavioral therapy (ICBT) intervention was developed in Sweden,[11] which was later adapted for use in Germany, Australia, Spain, the United Kingdom, and the United States. Initial guidance by clinical psychologists was provided in the Sweden and Germany studies, but in more recent studies in the United Kingdom and the United States, audiologist-guided ICBT was found to be effective with long-term (1-year) results being stable[12] in randomized control trials,[13-15] as summarized in a systematic review.[16] A systematic review identified 15 trials on internet-based interventions for audiological conditions.[17] The majority (nine studies) were aimed at tinnitus. Of these, 8 were CBT interventions, and 1 was based on acceptance and commitment therapy, which is a form of CBT. The review highlighted the potential of ICBT for tinnitus as a way to deliver evidence-based, approachable care.

Given its promising effects in research studies and the demand versus treatment gap with regard to tinnitus services, dissemination of ICBT in more countries is required.[18] Considering global migration (180 000 migrants came to Europe in 2017 and 134 000 in 2018),[19] internet-based therapies with standard, effective, multilingual options, such as ICBT, could be delivered worldwide. For example, while Turkish is the official language of the Turkish Republic, it is also the most commonly spoken immigrant language in Germany, with over 2½ million speakers.[20] To date, ICBT has not been developed for a Turkish population, although provision of ICBT could greatly improve access to affordable and evidence-based tinnitus care. Tinnitus care in Turkey is insufficiently accessible, as it is largely delivered in-person, and provision is limited in more rural settings. In such settings, other approaches used for tinnitus care are not always evidence-based, and there are only a few experts providing CBT for tinnitus.

Before adoption into research and clinical practice, ICBT materials must be adapted for a Turkish population to ensure they are culturally suitable and comprehensible to the general Turkish-speaking population, especially those with low literacy levels. The American Medical Association and the National Institutes of Health have recommended that health material should be readable by sixth graders.[21] Among Turkish adults, 2.7% have *inadequate* health literacy (less than or equal to sixth grade), 38.6% are *marginally* health literate (seventh to eighth grade), and 58.7% have adequate health literacy (greater than or equal to ninth grade).[22] This is lower than health literacy levels in the United States and the United Kingdom, where 65% (intermediate: 53%, proficient 12%) and 73%, respectively, have adequate health literacy.[23,24] Literacy levels are lower among older Turkish adults, and the European Health Literacy Scale indicated that 85.1% of those possess "problematic" or "inadequate" health literacy.[25]

Although no guidelines exist about readability of health information and/or materials in most countries, including Turkey, it is necessary to have health materials written at lower reading grade level to ensure comprehension by most persons who access the material. Also, before translating ICBT instrument from one language into another, various cultural and linguistic adaptations must be considered.[26] This study aimed to translate, adapt, and evaluate the readability and cultural suitability of a Turkish version of ICBT for tinnitus. A further aim was to compare the readability and acceptability of the Turkish ICBT materials to English, Swedish, and Spanish versions of the materials as reported in the previous publications.[27,28]

METHODS

Study Design

The study used preexisting American English ICBT materials to adapt the ICBT program culturally and linguistically for a Turkish population. The Hacettepe University Non-Interventional Clinical Research Ethics Board gave its approval for this study (2022/GO 21/1306). Informed consent was obtained from all individual participants included in the study.

The research was carried out in accordance with the principles outlined in the Helsinki Declaration.

The cultural adaptation of existing ICBT materials was designed as a 4-step process:

1. the original instrument's translation into the target language,
2. cultural adaptations and expert review,
3. readability amelioration and comparison, and
4. acceptability assessment.

Internet Platform

The iTerapi platform was developed in Sweden.[29] It is used in studies across many countries and versions of ICBT.[29] iTerapi was chosen for its security, well-described therapist guidance solutions, and potential for universal availability, which allows for a large data pool from patients with tinnitus worldwide.[30] Nearly 900 automated e-mails or texts used in the platform interface were translated. In addition, instructions for patients and therapists on how to navigate in the system were adapted in the Turkish version.

Translation of the Internet-Based Cognitive Behavioral Therapy Materials into the Turkish Language

The original ICBT material included 17 fixed modules, 5 optional modules, 15 expert opinions or demonstration videos, 59 worksheets or task-related questions, and 87 further help questions and answers. All material was translated into Turkish by 2 native-speaking, independent audiologists and 1 certified translator. Since the audiologists had knowledge about healthcare terminology and tinnitus, the translator corrected only colloquial phrases, health jargon, idiomatic expressions, and emotional terms in everyday use in Turkish. A Turkish speaker dubbed the videos, and Turkish subtitles were added. A significant question arose about the translation of the word "tinnitus" into Turkish. Since tinnitus is known as "*çınlama*: the ringing" or "*kulak çınlaması*: ear ringing" in the Turkish population, these terms do not cover all forms of tinnitus. Clinically, some patients object to the term *ringing* because they have low-frequency or noise-type tinnitus. Therefore, we decided to use the term "tinnitus" to cover all types of sound in the ear or head. This term is also known in Turkish, especially among healthcare experts and the population who consult doctors for treatment of this condition.

Another question in the translation was whether to use formal or informal language because Turkish is an agglutinative language, whereas English is not. In other words, English uses small helping words to provide and change meaning, whereas Turkish primarily uses suffixes. Informal writing is a shorter way of conveying information than formal or royal language, and thus yields lower readability results. The translation team decided to use mainly formal writing for descriptive details to ensure their meaning was properly covered and informal writing to share personal thoughts and feelings. For instance, in English, the phrase "Go to your room" in informal Turkish is "Odana git." In formal Turkish, it is "Odanıza gidiniz." The formal Turkish phrase has a higher syllable count, and this raises readability scores.

The sound enrichment module provided examples of coping strategies, including smartphone applications that participants utilize to decrease their awareness of their tinnitus. However, most of the suggested smartphone applications do not have a multilanguage interface, including Turkish. Although we provided all existing apps to participants (ICBT has 11 apps for IOS and 15 apps for Android), we recommended using the apps with Turkish options.

Cultural Adaptations and Expert Review

Cultural adaptation is a systematic alteration of an evidence-based intervention to take into account language, culture, and circumstances to be compatible with the patient's cultural habits, meanings, and values.[31] According to an empirical study about cultural adaptation, 3 frameworks were highlighted: (a) cultural concepts of distress; (b) treatment components; and (c) treatment delivery.[32] Existing modules were free from sex, age-related, race, religious beliefs, and ethnic references[27]; therefore, we did not need to remove or change any information from the original texts.

A panel of experts examined the modules, including a professor of audiology, a Ph.D. student of audiology, a practicing audiologist, and a psychologist from Turkey. These experts recognized any components of the text, pictures, or presentation that needed cultural or linguistic adaptation to improve its cultural appropriateness.[31] The panel incorporated components of clinical care for tinnitus patients with which they were familiar to increase acceptability of treatment modules. The panel's previous experience with treatment approaches and related aspects in clinical practice, for example, helped them explain the possible benefits of sound treatment, and the term *relaxation* was changed. Longer videos (i.e., more than 3-4 minutes) were shortened.

Readability Amelioration and Comparison

Another facet of Internet-based treatment material design is readability, which relates to the ease with which a text may be read and understood in terms of vocabulary and grammar. Test adaptations frequently result in changes in syntax, which can lead to differences in item difficulty and test length.[33] Furthermore, tests translated from English to other languages are frequently longer, inadvertently changing the nature of the test.[33] We measured the word count, number of characters, number of short words (<5 characters), number of sentences, paragraph number, average word length, average sentence length, and assessed readability values according to Ateşman[34] adapted from the Flesch for Turkish formula. To compare Turkish readability results with the existing ICBT materials in American English, British English, and Swedish, the Flesch–Kincaid reading grade level and Spanish Crawford formula were included as presented in Beukes et al.[27] (see Table 1). Formulas resulted in grades ranging from 0 to 100 or in graphs. A higher readability score means a lower reading grade level (RGL), or an easier text to read.

Acceptability Assessment

To determine quality attributes that assess the acceptability of user interfaces and materials, we used the following subscales:

- Usability: How easy is it to use the client interface and materials?
- Content: How well organized and complete is the content?
- Presentation: How clear and aesthetically pleasing is the presentation?
- Suitability: How appropriate is the content and presentation for the intended audience?

Table 1. Language-specific Readability Formulae used for ICBT Materials

Formula	Language	The Calculation for the Reading Grade Level of Text	Readability Score-Reading Grade Level
Ateşman	Turkish	198 825-40 175 × (total syllables/total words) – 2,610 × (total words/total sentences)	90-100: <4th grade 80-89: 5th or 6th grade 70-79: 7th or 8th 60-69: 9th or 10. grade 50-59: 11th or 12th grade 40-49: 13th or 15th grade 30-39: Bachelor's degree 29 < : Bachelor or higher degree
Flesch–Kincaid	English	(0.39 × ANW) + (11.8 × Average number of syllables per word) − 15.50	100.0-90.0: 5th grade 90.0-80.0:6th grade 80.0-70.0:7th grade 70.0-60.0:8th & 9th grade 60.0-50.0:10th to 12th grade 50.0-30.0:College 30.0-10.0:College graduate 10.0-0.00:Expert
Fry	English	The intersection on a graph with the y-axis indicating the number of sentences and the x-axis indicating the number of words	Low average number of syllables and sentences indicate better reading grade level
Crawford	Spanish	(Number of sentences per 100 words × −0.205) + (Number of syllables per word averaged from 100 words × 0.049) − 3.407	Fry type readability formula. Low average number of syllables and sentences indicate better reading grade level.

ANW, average number of words; H3, average number of words with 3 syllables; H4, average of 4-syllable words; H5, average of 5-syllable words; H6, average number of words with 6 or more syllables; ICBT, internet-based cognitive behavioral therapy.

We also asked open-ended questions about the overall acceptability of the user interface and materials. There were 15 five-point Likert-type items in the survey, which has been used in previous acceptability assessments of ICBT programs.[35] The scale ranged from 0 to 4, with 0 denoting strong disagreement and 4 a strong agreement.

We invited 11 experts, including audiologists, ENT physicians, and psychologists, with a mean of 9.91 (SD 4.6) years of experience (ranging from 3 to 18 years) and 11 patients with chronic tinnitus with a mean tinnitus duration of 7.45 (SD 9.41) years (ranging from 1 to 25 years). The mean tinnitus distress was 74.40 (SD 24.34), measured with the Tinnitus Handicap Inventory (THI).[36] Four patients with tinnitus had normal hearing, whereas 7 had sensorineural hearing loss varying from mild to profound degrees. One participant used a bimodal cochlear implant. A total of 6 of the 11 patients had bilateral, 3 had left-ear, and 2 had right-ear tinnitus. None of them had utilized tinnitus therapy before. Participants determined quality attributes that assessed usability of interfaces and materials. Descriptive information of the experts and participants with chronic tinnitus is shown in Table 2.

Data Analysis

The assumption of normality was checked using the Shapiro–Wilk test and descriptive methods (histograms, probability plots). Descriptive analyses were presented using means and standard deviations. We used the Kruskal–Wallis test to compare the readability results between five languages, as the data violated the assumption of normality. To determine statistical significance, a type-I error level of 5% was used. When necessary, the Bonferroni correction was applied. Statistical Package for Social Sciences software version 22.0 (IBM Corp; Armonk, NY, USA) was used for all statistical analyses.

RESULTS

Readability of Turkish Internet-Based Cognitive Behavioral Therapy Intervention

The average readability score was 76.15 ± 0.35 based on the Ateşman formula for Turkish ICBT, which indicated good accessibility of the materials. Average word and sentence lengths were 2.66 ± 0.05 and 5.4 ± 0.28, respectively, which contributed to appropriate readibility levels.

Figure 1 and Table 3 present RGL comparisons among Swedish, American English, British English, Spanish, and Turkish versions of the ICBT. The Kruskal–Wallis test showed statistically significant differences in RGL based on the ICBT versions used (Chi-square = 96.31, $P < .0001$, df = 4). Post hoc Mann–Whitney *U* tests using a Bonferroni-adjusted alpha level of 0.01 (0.05/5) were used to compare all group pairs. The Turkish ICBT (Mdn: 7.00) showed statistically lower readability compared to the Swedish (Mdn: 9.00) version ($P = .0002$), but higher readability scores than the United States (Mdn: 5.00) ($P = .014$) and Spanish (Mdn: 5.00) ($P < .0001$) versions. No difference in readability scores was found between the British English and Turkish versions ($P = .065$).

Acceptability of Turkish Internet-Based Cognitive Behavioral Therapy Intervention

A total of 22 experts and individuals with tinnitus evaluated the intervention in terms of suitability, content, usability, presentation, and exercises provided. The mean time experts and patients spent in the program was 23.18 (SD 15.53) and 21.00 (SD 18.05) minutes, respectively, for each module. The differences between experts and adults with tinnitus were analyzed using the Mann–Whitney *U* test in terms of 4 categories and 15 subscales. Ratings were not significantly different between the 2 groups, as shown in Figure 2.

Table 2. Demographic Characteristics of the Experts and Adults with Tinnitus Groups

	Tinnitus Group Number (%) or Mean (SD)	Experts Group Number (%)
Gender	Male: 4 (36) Female: 7 (64)	Male: 5 (45) Female: 6 (55)
Age (year)	41.90 ±10.09	35.54 ±7.86
Highest educational level	Less than high school: 1 (9) High School: 2 (18) Some college but no degree: 0 A bachelor's degree: 6 (54) A master's degree: 1 (9) A doctoral degree: 1 (9)	Less than high school: 0 High School: 0 Some college but no degree: 0 A bachelor's degree: 3 (27) A master's degree: 5 (45) A doctoral degree: 3 (27)
Occupation	Entry-level or unskilled: 1 (9) Skilled or expert: 6 (54) Retired: 2 (18) Not working: 2(18)	Audiologist: 5 (45) Psychologist: 3 (27) ENT:1 (9) Researcher: 2 (18) Tinnitus support worker: 0
How easy to use on a computer or the Internet?	Find it hard: 0 Basic skills: 4 (36) Frequent user: 7 (63)	Find it hard: 0 Basic skills: 0 Frequent user: 11 (100)
For which activities using the internet most	Communication (e-mail or chat): 10 (90) Reading news: 11 (100) Online shopping: 5 (45) Watching videos: 9 (81) Listen to music: 5 (45) Search for information: 11(100)	Communication (e-mail or chat): 11 (100) Reading news: 8 (72) Online shopping: 8 (72) Watching videos: 9 (81) Listen to music: 10 (90) Search for information: 11(100)

Although ICBT had high acceptability ratings by both experts and individuals, the module length subscale was rated lower by experts than the individuals with tinnitus. The overall mean rating was 3.60 (SD 0.63) and 3.47 (SD 0.67) by experts and individuals with tinnitus for ICBT, respectively, as seen in Table 4. Table 4 also shows comparisons of usability (straightforward to use, easy to navigate, appropriate module length), content (suitable level of information, informative materials, interesting materials), presentation (content was well-structured, suitable presentation, easy to read), suitability (for those with tinnitus, appropriate range of modules, beneficial topics covered), and exercises provided (worksheets appropriateness, clear instructions on how to practice, motivation to do the exercises). Subscales of 5 categories are shown in Figure 2.

No statistical differences were found between the groups regarding time differences ($P = .19$). However, patients' number of logins (n = 59 on average: 5.3 range: 2-11) were higher than the experts'(n = 40 on average: 3.6 range: 2-12).

Program suggestions from experts included adding audio-listening features, more detailed tinnitus neurophysiology information, and the option to enlarge texts for patients with impaired vision. Patients suggested more information about the program, such as the definition of candidates for the program and more videos. Although some experts thought the modules were too long, no individuals with tinnitus indicated this. Moreover, experts suggested adding extra optional modules with information on misophonia and somatosensory tinnitus. The frequently asked questions section was highly appreciated by all participants and suggested that it could be

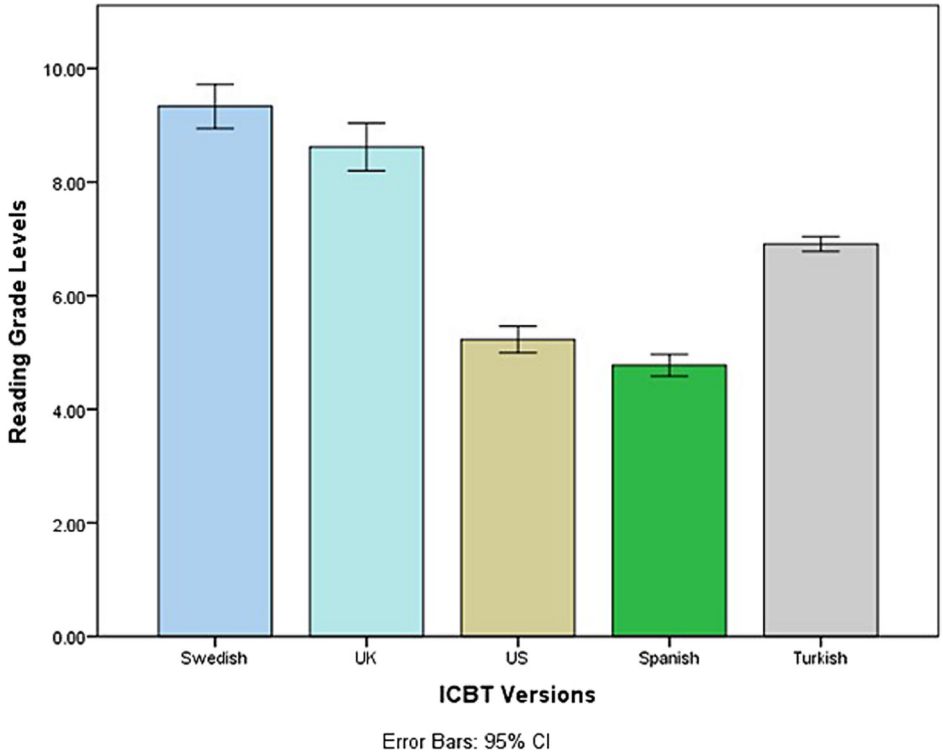

Figure 1. Average readability grade levels for the different versions of Internet-based cognitive behavioral therapy materials. Error bars represent standard error. Lower scores represent lower readability levels.

Table 3. Reading Grade Level for Different Versions of the ICBT Materials

Readability Formula ICBT Modules	Swedish Version	UK Version	US Version	Spanish Version	Turkish Version
	F-K RGL	F-K RGL	F-K RGL	Crawford	Ateşman
About this treatment	9	9	5	5	7
Tinnitus overview	11	9	5	5	7
Deep relaxation	9	9	6	5	7
Positive imagery	9	8	5	5	7
Deep breathing	9	7	5	4	7
Changing views	10	7	5	4	7
Entire body relaxation	10	9	5	4	6
Shifting focus	10	7	6	5	7
Frequent Relaxation	10	9	6	5	7
Thinking patterns	10	10	6	4	7
Rapid relaxation	9	8	5	5	6
Challenging thoughts	9	8	5	5	7
Relaxation routine	9	10	5	5	7
Being mindful	11	9	5	5	7
Listening to tinnitus	No module	No module	4	5	7
Key point summary	9	9	5	5	7
Future planning	9	9	5	5	7
Optional modules					
Sound enrichment	9	9	5	4	7
Sleep management	10	10	5	5	7
Improving focus	8	9	6	5	7
Sound tolerance	8	8	6	5	7
Listening tips	8	8	5	5	7

*F-K RG, Flesch–Kincaid reading grade level; ICBT, internet-based cognitive behavioral therapy.

expanded. These suggestions will be implemented to the program where possible.

DISCUSSION

To increase the accessibility of evidence-based tinnitus care, this study adapted the English ICBT materials to Turkish from the American- and British English versions. In addition, readability and acceptability were evaluated.

Although the American English version of the ICBT was readable at or below the sixth-grade level,[27] initial translations to Turkish increased the sentence lengths. This was due to difficulty translating nonmedical words, numbering important messages, using visible headings and subheadings, naming diagrams, and viewing videos. Readability levels of the Turkish version were thus higher than the American English and Spanish versions[35] but were comparable to the British English version, which has shown good outcomes.[37] A readability score of 6 is acceptable, as it is the mean score recommended by the American Medical Association and the National Institute of Health Level,[21] although no such guidelines exist for Turkey.

The ICBT materials had a 2.76 (SD 0.05) mean word length and 5.7 (SD 0.28) sentence length. These numbers were within the guidelines by Ateşman[34] that syllable length is 2.2 and 3 for easiest and hardest text, respectively (the mean is 2.6), and sentence lengths of 4 and 30 words for the easiest and hardest text, respectively (the mean is 9–10 words). The mean Turkish readability score by the Ateşman formula, adapted from Flesch formula, was 76.15, showing acceptable readability levels of the Turkish ICBT.

Readability is crucial in order for clients to be able to understand how the texts in a treatment program. However, formulas do not assess every aspect of readability. Readability might also be affected by typography (font, size, line height) and user-friendly web design.[38] The ICBT program already considers these technical necessities and includes guided support, user-friendly content, and appearance.[28] Further efforts could be made to assess readability using a more objective and inclusive methodology, such as eye-tracking.[39] Moreover, the comprehension of these materials will also be evaluated more directly using methods like the Cloze Test in future studies.

When evaluating acceptability, both experts and patients rated the Turkish ICBT highly. The results of the current study are compatible with the UK version in terms of high satisfaction rate and the same acceptability questionnaire.[28] Statistical comparisons showed no significant differences between the ratings of the participants and the experts on all scales and subscales. Similarly, in Spanish materials with the same level of acceptability, questions showed no differences between the 2 groups.[40] Previous studies and our results suggest that ICBT has high acceptability from both experts and patients.

Expert reviewers in the United Kingdom provided the highest ratings of informative materials (mean score was 5 from 1 to 5 Likert scale) and the lowest score on motivation to do the exercises (mean score was 3.60 from 1 to 5 Likert scale). The experts in Turkey rated the highest score for appropriate range of modules and beneficial topics covered (mean scores were 3.90 from 0 to 4 Likert scale), and the lowest score for appropriate module length (mean score was 2.70 from 0 to 4 Likert scale). The discrepancies could be explained by the time differences between the studies. Also, because of the trends toward digitized information through technology and the Internet, users expect to see less-written material and more video or audio information.[41] Open-ended comments in our study suggested more videos and audio features. Such features will be developed for the program in due course.

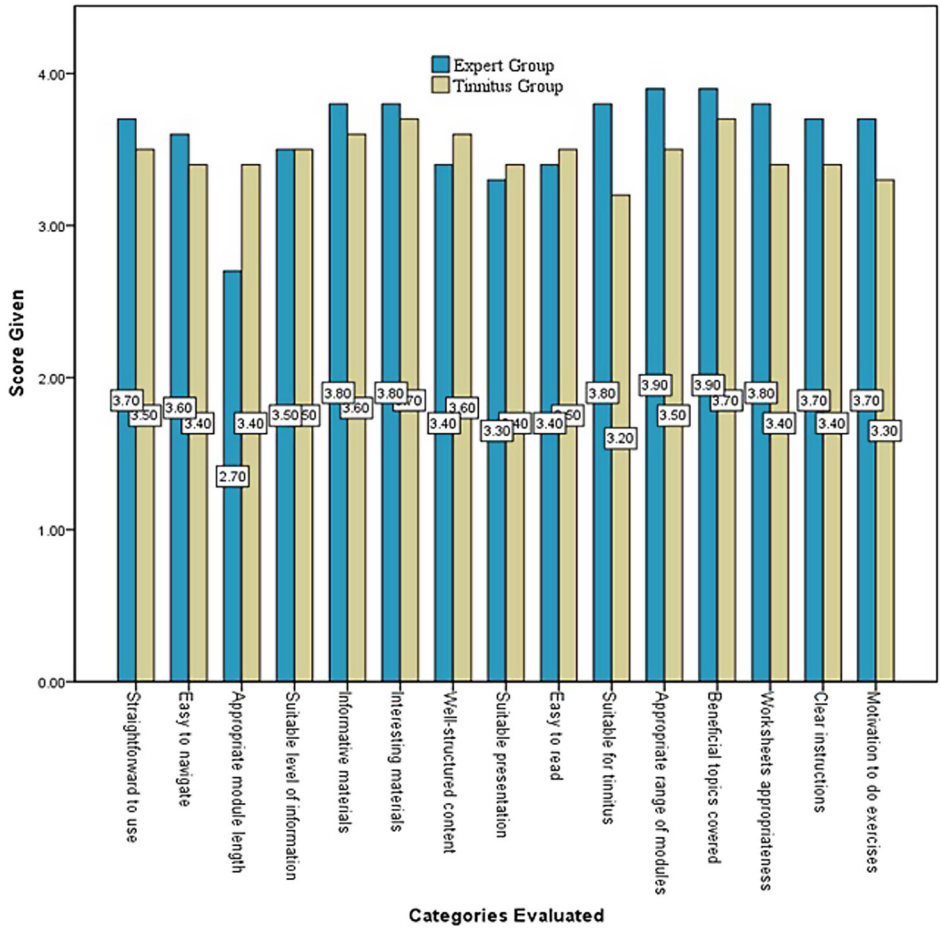

Figure 2. Comparisons of the program's appraisal of the major categories by the expert reviewers and adults with tinnitus.

The participants gave the lowest score to suitability for tinnitus (mean score was 3.20 on the 0-4 Likert scale). This may be due to their unfamiliarity with the CBT approach in tinnitus treatment and Internet-delivered therapies in Turkey. Our study participants registered for only the general evaluation, and it is probably that they had difficulties comprehending the details of the program. Furthermore, audiologists in Turkey traditionally treat their patients in individualized settings where the expert and the patient work face to face and may question the effectiveness of online tinnitus therapy. Beukes et al[42] carried out a randomized trial comparing face to face and ICBT for tinnitus in terms of tinnitus distress, insomnia, anxiety, depression, hearing disability, hyperacusis, and cognitive failures. Following 8 weeks of treatment protocol with 92 patients, no statistical differences were found in any aspect of the assessment.

Study Limitations and Future Directions

Although this study is the first step to improving the accessibility of evidence-based tinnitus materials, the results need to be considered within the limitations found. First, more information about tinnitus is required for this population. New videos should be added to discuss this. Second, we used only one readability formula; however, more formulas could give more detailed information about readability

Table 4. Intervention Ratings by the Expert Reviewers and the Adults with Tinnitus

Category	Expert Reviewers Median (25th-75th Percentile)	Individuals with Tinnitus Median (25th-75th Percentile)	*P* (significant at *P* < .05)
Usability: Straightforward to use, easy to navigate, appropriate module length	10.50 (9.50-11.00)	11.00 (9.00-12.00)	.55
Content: Suitable level of information, informative materials, interesting materials	11.50 (10.50-12.00)	11.00 (10.00-12.00)	.07
Presentation: Content was well-structured, suitable presentation, easy to read	10.50 (8.00-12.00)	10.50 (10.00-12.00)	.75
Suitability: Suitable for those with tinnitus, appropriate range of modules, beneficial topics covered	12.00 (11.75-12.00)	11.50 (8.00-12.00)	.12
Exercises: Worksheets appropriateness, clear instructions on how to practice, motivation to do the exercises	12.00 (11.25-12.00)	11.00 (8.50–=-12.00)	.11

grade level. Further studies are required to assess the efficacy of ICBT for a Turkish population.

CONCLUSION

We adapted the English version of the ICBT program to Turkish and examined its readability and acceptability. The study results showed that the program is user-friendly, easy to understand, navigations are clear, and the information is sufficient and supported by audiologists. While the readability scores of the Turkish ICBT were higher than the American English version, it was still within acceptable levels for the general population. Cultural and linguistic adjustments are important to supporting improved accessibility of CBT for tinnitus materials. Controlled trials are needed to examine the efficacy and validity of ICBT in Turkish tinnitus populations.

Ethics Committee Approval: Ethical committee approval was received from the Ethics Committee of University of Hacettepe (Approval no: GO 21/1306).

Informed Consent: Online informed consent was obtained from the patients/patient who agreed to take part in the study.

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