

a) THE PORTUGUESE VERSION OF MINI-TQ: BRIEF SCREENING TEST FOR ASSESSMENT OF TINNITUS INDUCED STRESS

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Rui António Soares Cerejeira

Otolaryngology resident;

Department of Otolaryngology of Coimbra University Hospitals, Coimbra, Portugal

Joaquim Manuel Soares Cerejeira

Psychiatry resident;

Department of Psychiatry of Coimbra University Hospitals, Coimbra, Portugal

Sofia Margarida Marques Paiva

Otolaryngology specialist;

Department of Otolaryngology of Coimbra University Hospitals, Coimbra, Portugal

Paulo Jorge Teixeira Gonçalves

Otolaryngology specialist;

Department of Otolaryngology of Coimbra University Hospitals, Coimbra, Portugal

Horácio Jesus Firmino

Psychiatrist;

Coordinator of Old Age Psychiatry Outpatient Clinic, Department of Psychiatry of Coimbra University Hospitals, Coimbra, Portugal

Manuel João Quartilho, Ph.D.

Psychiatrist;

Coordinator of Psychosomatic Medicine Outpatient Clinic, Department of Psychiatry of Coimbra University Hospitals, Coimbra, Portugal

Adriano Supardo Vaz Serra, Ph.D.

Professor of Psychiatry – Faculty of Medicine of Coimbra University;

Director of Department of Psychiatry of Coimbra University Hospitals, Coimbra, Portugal

António Manuel Diogo Paiva, Ph.D.

Professor of Otolaryngology – Faculty of Medicine of Coimbra University

Director of Department of Otolaryngology of Coimbra University Hospitals, Coimbra, Portugal

d)

Rui Cerejeira

Rua de S. Teotónio Lote 19 – 1P

3000-377 Coimbra

Portugal

Phone: +351 965487059

r.cerejeira@netcabo.pt

ABSTRACT:

Hypothesis: The Portuguese version of Mini-TQ is as valid as the English version to assess tinnitus associated distress in the Portuguese-speaking population.

Objectives: Validate a Portuguese version of Mini-TQ (Mini-TQ-pv) to be used in clinical practice and research.

Methods: Mini-TQ-pv was administered to 51 patients with chronic tinnitus. Statistical analysis was done to determine the psychometric properties of the instrument.

Results: After double translation, face and content validity were confirmed by high internal consistency (Cronbach alpha = 0,861) and significant correlation between individual items and total score. The questionnaire was easy and quick to administer (2.57 minutes).

Conclusions: We provide a suitable Portuguese version of Mini-TQ to be used in the assessment of Portuguese-speaking patients with tinnitus.

Key Words: Tinnitus – Mini-TQ – Portuguese version

INTRODUCTION:

Tinnitus can be generically defined as the perception of a sound (in the ears or in the head) superimposed on the external acoustic background in the absence of an external source capable of explaining its origin¹.

Tinnitus is a major symptom in ENT practice affecting subjects in all demographic groups being associated with several other medical conditions. Prevalence of tinnitus in adult population is estimated to be around 10 to 15%² by epidemiological studies and it rises to 59-86% whenever there is associated hearing comorbidity³. Of these subjects, nearly 20% report significant impact of tinnitus in their quality of life, with interference in personal, professional and social functioning, forcing them to search for health care advice^{4,5,6}.

Assessment of tinnitus involves not only a thorough investigation in order to identify organic causes but also the characterization of its acoustic features and quantification of the impact caused on the patient. For that purpose two methodologies were developed. One is the audiologic method which compares sounds of known intensities and monotone frequencies with the tinnitus. This is an important limiting factor as, in many cases, tinnitus is a complex sound (described by the subject as ringing, buzzing, hissing humming) spanning over a wide range of frequencies which makes the comparison with pure sounds difficult or even impossible. The second method involves subjective evaluation of tinnitus impact and associated incapacity by the patient for which several psychometric instruments have been developed⁷. In the visual analogical scale (VAS), scored from 0 (without tinnitus) to 10 (intolerable tinnitus), the subject defines, according to his perception, the intensity of tinnitus. In tinnitus incapacity questionnaires patients are asked to answer some questions about the impact of tinnitus in their daily life (**Table 1**). These questionnaires are widely used in clinical research given the high levels of reliability (consistency or repeatability of the rating, usually assessed with a measure of internal consistency) as well as good correlation with quality of live scales and psychological symptoms used as external validators. One important issue about tinnitus incapacity questionnaires refers to

whether they reflect the true state of the patient which can be particularly difficult to achieve given the subjective nature of the symptoms. Another problem precluding the administration of these instruments in daily clinical practice is the lack of available time.

The need for a brief and easy to use questionnaire with simultaneously good psychometric characteristics resulted in the development of Mini-TQ (Mini-Tinnitus Questionnaire)⁹. This assessment instrument consists of 12 sentences to which the patient has 3 possible options: true (2 points), partially true (1 point) and false (0 points). A severity index is attributed to the final score (0-24) according to the authors (Table 2). Mini-TQ is brief and easy to administer in a clinical setting, taking only 2-3 minutes, and has similar psychometric proprieties to more complex questionnaires. Concurrent validity of Mini-TQ verified against TQ resulted in high levels of agreement between the two questionnaires in the subscales of emotional distress, cognitive distress and intrusiveness. Mini-TQ also correlated similarly as TQ with general psychopathology assessment scales.

Some authors have questioned if Mini-TQ can provide a good and balanced coverage of tinnitus-induced distress considering that it does not include items assessing common complaints such as hearing problems⁸. There is also some debate as to whether a 3-options questionnaire has the sufficient discriminant validity and sensitivity to change. This is important when discussing the usefulness of Mini-TQ and other tinnitus incapacity questionnaires to assess the clinical evolution, predict the outcome and discriminate sub-populations of patients who would benefit from additional interventions.

This paper presents the translation to Portuguese and validation procedure of Mini-TQ in order to allow its use in assessment of tinnitus in Portuguese-speaking patients. We have also studied the influence of some factors with the incapacity associated to tinnitus.

METHODS:

Adaptation to Portuguese

We obtained the questionnaire from the original paper of Hiller and Goebel, with permission of the authors (appendix II). A double translation of the English questionnaire to Portuguese was made by two bilingual physicians followed by retrotranslation to English. The final version of the validated questionnaire Mini-TQ Portuguese version (Mini-TQ-pv) is attached to this paper (appendix I).

Sample and procedures

The study was conducted in the Tinnitus Clinic of Coimbra University Hospitals from 01/01/2007. Mini-TQ-pv was administered, during the consultation, consecutively to the first 51 patients assessed for the first time with chronic tinnitus (more than 6 months of duration). Administration time was measured (in minutes). Patients were asked about the clearness of questions (Did you experience difficulties in interpreting any of the items of the questionnaire?), and the duration of the assessment (Did you find the questionnaire too long to complete?) with a yes/no answer option. For the purpose of the study, the audiogram was considered to be normal whenever the hearing threshold was less than 20 dB in all frequencies.

Statistical procedure

Data collected in the assessment were introduced and processed by statistical software SPSS (*Statistical Package for the Social Sciences*), version 14.

Descriptive statistics of demographic and clinical data of the sample were calculated (age, gender, duration of tinnitus, audiogram, hearing aids).

Correlation between each individual item and total score of Mini-TQ-pv was tested with Spearman coefficient for qualitative variables. Reliability was assessed by internal consistency (model of Cronbach alpha) defined as the level of homogeneity between the different items of the questionnaire. Values higher than 0,700 were considered to be adequate. Association of demographic and clinical variables with total score of Mini-TQ-pv was assessed with the following: Pearson coefficient for correlation between quantitative variables; Spearman coefficient for correlation between qualitative variables, Student t test for comparison of means between two groups with quantitative variables; ANOVA test for comparison of means between more than 2 groups.

RESULTS

The sample consisted in 51 subjects, 29 females and 22 males. Mean age was 61.39 ± 13.337 years (range 32-85). Clinical features are presented in Table 3. The typical patient had tinnitus for 1-5 years (51.0%), abnormal audiogram (80.4%), tinnitus associated to presbycusis (45.1%) or with unknown cause (37.3%) and without hearing aids (98.0%).

Four patients (7.8%) have answered “Yes” to the question about difficulty of interpretation of the items. Average time to fill in the questionnaire was 2.57 ± 0.671 minutes (range 1-4). Fifty patients (98%) reported that Mini-TQ-pv was not too long to complete. Internal consistency (Cronbach alpha) considering all the items was 0.861. As depicted in Table 4, male gender was associated to a lower total score in Mini-TQ-pv than female gender (Student t test significance = 0.044). Age, etiology and duration of tinnitus were not significantly associated with total score in Mini-TQ-vp (Table 5).

Score in every individual item correlated significantly with total score of Mini-TQ-pv, as shown in Table 6.

DISCUSSION AND CONCLUSIONS

Despite recent advances in research, pathophysiology and neurobiology of tinnitus remain largely unknown. Standardized approaches to management and treatment of tinnitus are not available at the moment. Excluding a minority of cases where reversible causes can be identified and amenable to specific procedures (medical and/or surgical), the main objective in the management of tinnitus is to reduce, as much as possible, the impact in patients and to improve the quality of life. Therefore, it is essential to have an effective and consistent method of quantifying levels of psychological distress to be used, as a routine procedure, in a daily practice clinical setting.

Mini-TQ is an easy instrument to use with high internal consistency and reliability, being as powerful as TQ in clinical assessment of tinnitus⁶. Portuguese version of Mini-TQ proved to be an adequate translation of the English version as shown by similar internal consistency as the original questionnaire for outpatients (0.861 and 0.90 respectively) and strong correlation between individual items and total score. In addition, patients to whom Mini-TQ-pv was administered didn't experience major difficulties.

Of the variables tested, only gender was associated to differences in the total score of Mini-TQ-pv with males presenting statistical significant lower scores. This finding raises the question whether levels of reported tinnitus distress may reflect higher levels of co-morbid anxiety disorders known to be more prevalent in women¹⁸. Only one person in our sample was using hearing aids, although many others could have that indication. This is an important issue as hearing aids may have a relevant role in the management of tinnitus, especially in patients with audiometrically demonstrable hearing loss¹⁹. The reasons for this figures whether they are economic, stigma, denial of need, lack of appropriate benefit, or others were not addressed by this study and warrant further investigation.

We conclude that Mini-TQ-pv can be used for Portuguese speaking-patients with tinnitus as an equivalent of the English version since they have similar face and content validity. This study provides a suitable Portuguese version of Mini-TQ to be used by clinicians and researchers in the field of tinnitus. Future studies should address the usefulness of this instrument not only in clinical research but also as a routine procedure in the initial assessment and follow-up of Portuguese speaking-patients with tinnitus.

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APPENDIX I

Mini Tinnitus Questionnaire – English Version⁶

The purpose of this questionnaire is to find out whether the noises in your ears/head have had any effect on your mood, habits or attitudes. Please tick the answer that applies to you for each statement.

		true	partly true	not true
1.	I am aware of the noises from the moment I get up to the moment I sleep			
2.	Because of the noises I worry that there is something seriously wrong with my body			
3.	If the noises continue my life will not be worth living			
4.	I am more irritable with my family and friends because of the noises			
5.	I worry that the noises might damage my physical health			
6.	I find it harder to relax because of the noises			
7.	My noises are often so bad that I cannot ignore them.			
8.	It takes me longer to get to sleep because of the noises			
9.	I am more liable to feel low because of the noises			
10.	I often think about whether the noises will ever go away			
11.	I am a victim of my noises			
12.	The noises have affected my concentration			

APPENDIX II

Mini Tinnitus Questionnaire – versão portuguesa (Mini-TQ-pv)

O objectivo deste questionário é saber se os seus zumbidos têm algum efeito no seu humor, hábitos ou atitudes. Por favor coloque uma cruz (X) na resposta mais adequada para cada afirmação:

		Verdadeiro	Em parte verdadeiro	Falso
1	Eu sinto os zumbidos desde que me levanto até ao momento em que vou dormir.			
2	Por causa dos zumbidos, eu receio que exista algo de muito errado com o meu corpo.			
3	Se os zumbidos continuarem, não valerá a pena continuar a viver.			
4	Eu fico mais irritável com a minha família e com os meus amigos, por causa dos zumbidos.			
5	Tenho medo que os zumbidos possam prejudicar a minha saúde física.			
6	Tenho mais dificuldade em relaxar, devido aos zumbidos.			
7	Muitas vezes os zumbidos são tão maus que não consigo ignorá-los.			
8	Demoro mais tempo a adormecer, devido aos zumbidos.			
9	Fico mais propenso(a) a sentir-me “em baixo” devido aos zumbidos.			
10	Penso muitas vezes se os zumbidos alguma vez vão desaparecer.			
11	Sou uma vítima dos meus zumbidos.			
12	Os zumbidos têm afectado a minha concentração.			

Instrument		Items	Authors
TQ	<i>Tinnitus Questionnaire</i>	52	Hallam ¹⁰ ; Hiller, Goebel ¹¹
TSI	<i>Tinnitus Severity Index</i>	48	Meikle et al ¹²
TRQ	<i>Tinnitus Reaction Questionnaire</i>	26	Wilson et al ¹³
THQ	<i>Tinnitus Handicap Questionnaire</i>	27	Kuk et al ¹⁴
THI	<i>Tinnitus Handicap Inventory</i>	25	Newman et al ^{15, 16}
STSS	<i>Subjective Tinnitus Severity Scale</i>	16	Halford, Anderson ¹⁷
Mini-TQ	<i>Mini-Tinnitus Questionnaire</i>	12	Hiller & Goebel ⁹
Table 1: Questionnaires for assessment of tinnitus induced distress.			

Severity index	Mini-TQ total score
Compensated	1-7
Moderate distress	8-12
Severe distress	13-18
Most severe distress	19-24
Table 2: Severity index for Mini-TQ total score	

Duration of tinnitus	%	Etiology	%
6 months – 1 year	11.8	Sudden hearing loss	5.9
1 – 5 years	51.0	Accoustic trauma	5.9
5 – 10 years	19.6	Presbycusis	45.1
> 10 years	17.6	Unknown	37.3
		Other	5.9
Audiogram	%	Hearing aids	%
Normal	19.6	Yes	2.0
Abnormal	80.4	No	98.0
Table 3: Clinical features of the sample.			

	Gender	N	Mean	Standard Deviation
Total Score	Male	22	10.32	6.506
	Female	29	13.93	5.916

Table 4: Total score by gender.

Variable	Statistic Test	Significance ($\alpha=0.05$)
Age	Pearson correlation	0.479
Duration of tinnitus	ANOVA	0.688
Etiology	ANOVA	0.753
Table 5: Association between demographic and clinical variables and total score of Mini-TQ-pv: significance values (n=51).		

N=51	Total score		Total score
Item 1		Item 7	
Spearman	0.310	Spearman	0.598
Sig	0.027	Sig	0.002
Item 2		Item 8	
Spearman	0.559	Spearman	0.543
Sig	<0.001	Sig	0.003
Item 3		Item 9	
Spearman	0.501	Spearman	0.833
Sig	<0.001	Sig	<0.001
Item 4		Item 10	
Spearman	0.621	Spearman	0.450
Sig	<0.001	Sig	0.001
Item 5		Item 11	
Spearman	0.731	Spearman	0.719
Sig	<0.001	Sig	<0.001
Item 6		Item 12	
Spearman	0.781	Spearman	0.781
Sig	<0.001	Sig	<0.001
Table 6: Spearman coefficient and significance (2-tailed) for correlation between individual items and total score of Mini-TQ-pv. ($\alpha=0,05$)			

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Corresponding Author: Dr Rui Antonio Cerejeira,

Corresponding Author's Institution: Hospitais Universidade Coimbra

First Author: Rui Cerejeira

Order of Authors: Rui Cerejeira; Joaquim Cerejeira; Sofia Paiva; Paulo Gonçalves; Horácio Firmino;
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