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STUDY THE HEALTH CONDITION OF PATIENT WITH TINNITUS

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Abstract

Introduction. Tinnitus is a symptom which prevalence in a world was about 14.7%. Currently there is no gold standard of treatment of this disease, however cognitive behavioral therapy is identified as effective treatment. Effectiveness of treatment can be measured using questionnaire-tinnitus functional index (TFI).

The aim of our work is to study the health condition of patients with tinnitus with the TFI instrument in Almaty city, Kazakhstan.

Materials and methods: A prospective study was conducted during 2021-2023. Using versions of the TFI questionnaire translated into Russian and Kazakh, a prospective study survey was undertaken in 2022-2023 in the city of Almaty among patients with tinnitus. Data analysis was carried out in accordance with the TFI methodology and using SPSS 13 program. 25 TFI questions consist scale deals with such aspects of the impact of tinnitus as concentration, sleep problems, limited social contacts due to tinnitus, etc. In addition, the TFI consists of eight subscales. The overall TFI and scores for each of the eight subscales can range from 0 to 100 and are calculated by summing the responses to all questions.

Results: 58 participants over 18 years old attend in survey, the mean ± SD = 55.05 (± 15.47). The third participants indicated tinnitus as big as well as a small problem. The TFI score overall was 55.5. The men had higher rate in all subscales in comparison to female.

Conclusion: This was the first research where identified TFI among patient with tinnitus in Almaty population and in Kazakhstan. In the future needs additional studies to measure efficacy before and after treatment of patients with tinnitus using TFI.

***Keywords**: tinnitus, tinnitus functional index, quality of life, Kazakhstan.*

Аннотация

ИЗУЧЕНИЕ СОСТОЯНИЯ ЗДОРОВЬЯ ПАЦИЕНТОВ С ШУМОМ В УШАХ

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Введение. Шум в ушах — это симптом, распространенность которого в мире составила около 14,7%. В настоящее время не существует золотого стандарта лечения этого заболевания, однако когнитивно-поведенческая терапия считается эффективным методом лечения. Эффективность лечения можно измерить с помощью опросника - функционального индекса шума в ушах (TFI).

Целью нашей работы является изучение состояния здоровья пациентов с шумом в ушах с помощью опросника TFI в городе Алматы (Республика Казахстан).

Материалы и методы. Используя версии опросника TFI, переведенные на русский и казахский языки, в 2021-2023 годах в городе Алматы было проведено проспективное исследование среди пациентов с шумом в ушах. Анализ данных проводился в соответствии с методологией TFI и с использованием программы SPSS 13. 25 вопросов TFI состоят из шкалы, посвященной таким аспектам воздействия шума в ушах, как концентрация внимания, проблемы со сном, ограничение социальных контактов из-за шума в ушах и т. д. Кроме того, TFI состоит из восьми субшкал. Общий TFI и баллы по каждой из восьми субшкал могут варьироваться от 0 до 100 и рассчитываются путем суммирования ответов на все вопросы.

Результаты. В опросе приняли участие 58 участников старше 18 лет, среднее значение ± SD = 55,05 (± 15,47). Третьи участники указали на шум в ушах как на большую, так и на небольшую проблему. Общий балл TFI составил 55,5. У мужчин был более высокий показатель по всем подшкалам по сравнению с женщинами.

Заключение. Это было первое исследование, в котором был применен TFI среди пациентов с шумом в ушах в популяции Алматы и в Казахстане. В будущем необходимы дополнительные исследования для оценки эффективности до и после лечения пациентов с шумом в ушах с использованием методологии опросника TFI.

***Ключевые слова**: шум в ушах, функциональный индекс шума в ушах, качество жизни, Казахстан.*

Түйіндеме

ТИННИТУСЫ БАР НАУҚАСТАРДЫҢ ДЕНСАУЛЫҚ ЖАҒДАЙЫН ЗЕРТТЕУ

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Кіріспе. Тиннитус-бұл әлемде таралуы шамамен 14,7% болатын симптом. Қазіргі уақытта бұл ауруды емдеудің алтын стандарты жоқ, дегенмен когнитивті мінез-құлық терапиясы тиімді емдеу болып саналады. Емдеудің тиімділігін осы сауалнама арқылы өлшеуге болады - құлақтың шуылының функционалды индексі (TFI).

Мақсаты. Қазақстанның Алматы қаласындағы TFI құралының көмегімен құлағында шуы бар пациенттердің денсаулық жағдайын зерттеу болып табылады.

Материалдар мен әдістері. Перспективалық зерттеу 2021-2023 жылдар аралығында жүргізілді. TFI сауалнамасының орыс және қазақ тілдеріне аударылған нұсқаларын пайдалана отырып, 2022-2023 жылдары Алматы қаласында құлақ шуы бар науқастар арасында перспективалық зерттеу жүргізілді. Деректерді талдау TFI әдіснамасына сәйкес және SPSS 13 бағдарламасын қолдана отырып жүргізілді. TFI 25 сұрағы зейінді шоғырландыру, ұйқы проблемалары, шуылға байланысты шектеулі әлеуметтік байланыстар және т.б. сияқты шудың әсер ету аспектілеріне бағытталған шкаладан тұрады. Сонымен қатар, TFI сегіз ішкі шкаладан тұрады. Жалпы TFI және сегіз ішкі шкаланың әрқайсысы үшін ұпайлар 0-ден 100-ге дейін болуы мүмкін және барлық сұрақтарға жауаптарды қосу арқылы есептеледі.

Нәтижелер. Сауалнамаға 18 жастан асқан 58 қатысушы қатысты, орташа ± SD = 55,05 (±15,47). Үшінші қатысушылар құлақтың шуылын үлкен де, кіші де проблемаға бағыттады. Жалпы TFI ұпайы 55,5 болды. Еркектер әйелдермен салыстырғанда барлық ішкі шкала бойынша жоғары көрсеткішке ие болды.

Қорытынды. Бұл Алматы мен Қазақстанда құлағында шуы бар науқастар арасында TFI анықталған алғашқы зерттеу болды. Болашақта TFI сауалнама көмегімен құлақ шуы бар науқастарды емдеуге дейін және одан кейінгі тиімділікті бағалау үшін қосымша зерттеулер қажет.

***Түйінді сөздер:** құлақтағы шу, құлақтағы шудың функционалдық индексі, өмір сапасы, Қазақстан.*

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Introduction

Tinnitus is a condition experienced by sounds as buzzing, ringing or others, in the absence of exposure to the external environment [1]. In a systematic review and meta-analysis, the prevalence was determined 14.4% [12], while in European countries it was 14.7% [2] (which varied greatly between countries 8.7% in Ireland to 28.3% in Bulgaria), and in Korea 20.7% [13].

The complexity of providing care to patients with tinnitus lies in the lack of uniform standards for diagnosis and treatment methods. Therefore, this may be an additional barrier to getting help for those with tinnitus. At present, colleagues from the United States of America (USA) [20], Europe [7] and Japan have [17] developed clinical guidelines. In all clinical guidelines presented, cognitive behavioral therapy is the most effective treatment. In addition, studies and developed guidelines describe the use of different types of questionnaire, which allows you to determine the psychological state of patients with tinnitus, as well as the effectiveness of treatment. One of the questionnaires that is often used is tinnitus functional index (TFI)[16]. The TFI is used to identify the severity of tinnitus and its negative impact on the patient. Thus, internationally recognized tool adapted in different countries [4,18]. The aim of our study is to study the health condition of patients with tinnitus with the TFI instrument.

Materials and methods: A prospective study was conducted in 2021-2023. As a first step, the researchers translated the questionnaire, with permission from its developers. Individual two translators independently translated the questionnaire from English into Russian and Kazakh. After the translation, the questionnaire was also sent to the psychologist to analyze the questions and its readability. After approval and adjustment by a psychologist, the questionnaire was pilot tested among 10 patients with tinnitus. After which, the questionnaire was translated from Kazakh and Russian into English by two other independent translators.

At the next stage, a survey was conducted among patients with tinnitus in the second half of 2022. The survey consisted of 25 TFI questions and additionally patient data such as age and gender were collected. The collection was carried out in two leading medical organizations in the direction of otolaryngologists (ENT – doctors) in Almaty city. The patients themselves completed the survey. It took 30-40 minutes to fill out the questionnaire. The doctoral researcher was present next to the patient in order to answer questions if they arose while filling it out. If necessary, the researcher could answer all the questions that arose in patients with tinnitus. Before filling out the questionnaire, oral and written informed consent was taken from patients.

There is no number of patients with tinnitus in the medical information database; this is most likely due to the nature of the symptom. In 2020, 6 cases of tinnitus were reported in National medical information database. Therefore, this study included patients who visited a doctor between August and December 2022 at two leading medical organizations in Almaty city.

Ethical Approval: The study was approved by the Local Ethics Committee (№13 from 29.09.2021) of KazNMU, Almaty, Kazakhstan.

Data analysis was carried out in accordance with the TFI methodology [10] and using SPSS 13 program. 25 TFI questions consist scale deals with such aspects of the impact of tinnitus as concentration, sleep problems, limited social contacts due to tinnitus, etc. In addition, the TFI consists of eight subscales. A Likert scale [13] from 0 to 10 is used to measure response to each item. The overall TFI and scores for each of the eight subscales can range from 0 to 100 and are calculated by summing the responses to all questions. Interpretation provided in 2023.

Results

The study involved 58 patients. Table 1: showed their general characteristics. The age of study participants ranged from 18 to 70 years with a mean ± SD = 55.05 (± 15.47). Of the study participants, 58.6% and 41.4% are women and men, respectively. Tinnitus identified as big problem in 25.9% and very big problem 8.6% respondents as well as small problem (25.9%). Moderate problem indicated other 20.7% participants, however 18.9% indicated that nor a problem (figure 1).

Table 1.

Participant's characteristics.

		N (%)	Age (mean±SD)
Gender	Male	24 (41,4)	55,25±15,52
	female	34 (58,6)	54,91±15,67
	Total	58 (100,0)	
Age	<30	5 (8,6)	55,05±15,47
	30–39	5 (8,6)	
	40–49	8 (13,8)	
	50–59	13 (22,4)	
	60–69	19 (32,8)	
	70	8 (13,8)	

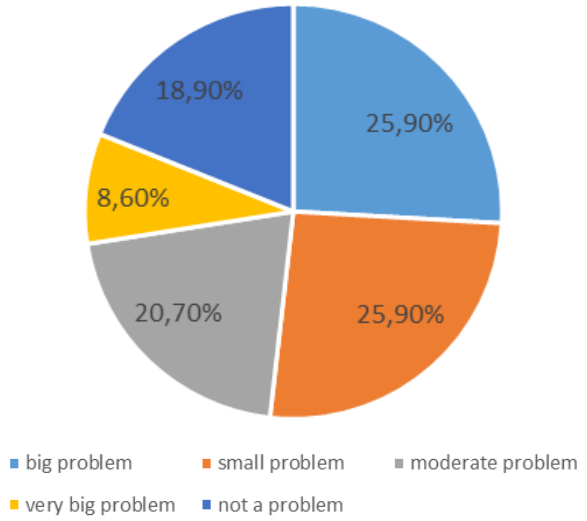

Figure 1. Percentage of the TFI score.

Comparing scores across different subscales and gender in Table 2, no significant statistical differences were found between males and females, nor in TFI scores. In comparison, men have more than women on the subscales as unpleasantness, intrusiveness, persistence by 0.56; sleep disturbance - 0.31; auditory difficulties attributed to tinnitus - 0.01; interference with relaxation - 0.37; quality of life reduced -0.05; emotional distress - 0.64; and according to reduced sense of control -1.64; cognitive interference - 0.74; TFI -0.46 vice versa.

Table 2.

TFI scores across different subscales and gender.

	male	female	total
INTRUSIVE (unpleasantness, intrusiveness, persistence)	14,88±6,85	14,32±7,86	14,55±7,4
SENSE OF CONTROL (reduced sense of control)	13,83±8,85	15,47±8,79	14,79±8,78
COGNITIVE (cognitive interference)	10,79±8,2	11,53±8,05	11,22±8,05
SLEEP (sleep disturbance)	10,13±8,17	9,82±8,4	9,95±8,24
AUDITORY (auditory difficulties attributed to tinnitus)	12,63±7,71	12,62±9,51	12,62±8,74
RELAXATION (interference with relaxation)	11,25±7,79	10,88±8,63	11,03±8,22
QUALITY OF LIFE (QOL) (quality of life reduced)	12,96±10,18	12,91±10,66	12,93±10,38
EMOTIONAL (emotional distress)	14,17±9,12	13,53±8,91	13,79±8,92
TFI	100,63±54,27	101,09±57,23	100,9±55,54

High correlation coefficient between cognitive interference with auditory difficulties attributed to tinnitus (r=0.713), as well as interference with relaxation (r=0.815), and emotional distress (r=0.735). Auditory difficulties attributed to tinnitus with interference with relaxation (r=0.769), and quality of life reduced (r=0.730); emotional distress (r=0.707); interference with relaxation with reduced quality of life reduced (r=0.730) and emotional distress (r=0.743) table 3.

Table 3.

Correlations between First-Order Factors in the TFI.

	INTRUSIVE (unpleasantness, intrusiveness, persistence)	SENSE OF CONTROL (reduced sense of control)	COGNITIVE (cognitive interference)	SLEEP (sleep disturbance)	AUDITORY (auditory difficulties attributed to tinnitus)	RELAXATION (interference with relaxation)	QUALITY OF LIFE (QOL) (quality of life reduced)	EMOTIONAL (emotional distress)
INTRUSIVE (unpleasantness, intrusiveness, persistence)	1	0,611	0,419	0,273	0,395	0,369	0,313	0,466
p		<0,001	0,001	0,038	0,002	0,004	0,017	<0,001
SENSE OF CONTROL (reduced sense of control)		1	0,693	0,600	0,626	0,644	0,594	0,661
p			<0,001	<0,001	<0,001	<0,001	<0,001	<0,001
COGNITIVE (cognitive interference)			1	0,623	0,713	0,815	0,675	0,735
p				<0,001	<0,001	<0,001	<0,001	<0,001
SLEEP (sleep disturbance)				1	0,468	0,633	0,447	0,539
p					<0,001	<0,001	<0,001	<0,001
AUDITORY (auditory difficulties attributed to tinnitus)					1	0,769	0,730	0,707
p						<0,001	<0,001	<0,001
RELAXATION (interference with relaxation)						1	0,730	0,743
p							<0,001	<0,001
QUALITY OF LIFE (QOL) (quality of life reduced)							1	0,705
p								<0,001
EMOTIONAL (emotional distress)								1

Discussion

Previously, the authors of this article conducted a situational analysis of legal documents for the provision of care to patients with tinnitus. Based on the results of the situational analysis, a group of researchers (including the authors of this article) has developed a clinical protocol in the Republic of Kazakhstan, which is at the stage of approval.

In Kazakhstan, the problems of tinnitus have not been studied enough. This may be due to the fact that specialists mainly perceive this pathology as a symptom, therefore, focusing their practical activities on the disease the tinnitus is not always a priority area for study. However recent research indicates an increase of tinnitus worldwide [8,2]. This can be related to hearing related factors as well as non-otological risk factors [3]. Moreover Choi et al. identified higher risk of tinnitus among earphone users [6].

It is also important to study the quality of life and conditions of people with tinnitus [21]. Studies have shown that tinnitus affects the psychological state, causes of depression, anxiety, or somatic symptom disorders [11,19]. In addition, the question of the influence of tinnitus on the development of a suicidal state in patients is being studied. One retrospective study examined tinnitus patients who had committed suicide, in which five patients committed suicide [14]. In another study found that the risk ratio for attempting suicide within one year was higher for patients with tinnitus compared with the control group [5]. Scoping review based on qualitative studies results suggest to develop a model that shows the behavior and risks of people with tinnitus and their thoughts or the possibility of suicide, and this model could be the basis for intervention and support for patients with tinnitus [15].

Van Hoof et al. propose adding a short version of the SF 8 questionnaire to the TFI questionnaire, thereby explaining the combined study of both treatment progress and analysis of the quality of life of patients with this symptom [22].

Therefore, more research on tinnitus is needed to better understand the condition of patients with tinnitus. Researchers should focus on adapting existing and proven tools. To the knowledge of the authors, this is the first study in Kazakhstan examining TFI for patients with tinnitus. TFI score before treatment was identified as 61.9 [9], in United Kingdom and Germany was 40.6 [8,18], whereas in our study it was 55.4. However lower TFI was identified in Chinese population 33.14, where the most respondents indicated their condition as small or moderate problem (21-28%), while in our study indicated small or big problem [23].

In the future, it is desirable to study this tool in depth before and after the treatment of tinnitus, this will allow for a comparative analysis with the results of other studies in other countries [16].

Conclusion: Adaptation of the TFI instrument allowed us to determine the overall score for subcomponents as well. This is the first study, the authors note the importance of using this tool to measure efficacy before and after treatment of patients with tinnitus.

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