

The Quality of Life Impaction by Tinnitus Comprehension

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Abstract

Tinnitus is the sensation of sound in the absence of any external source, and the aim is to assess the impaction of tinnitus on QoL. 25-tinnitus sufferers were enrolled with a wide range of hearing loss thresholds (HLT) and tinnitus severity status. Tinnitus severity, anxiety and depression were assessed using tinnitus handicap inventory (THI), tinnitus functional index (TFI), and the hospital anxiety and depression scale (HADS), respectively. Pure tone air conduction audiometry was performed. The impaction of tinnitus perception on QoL was found higher in suffering group. The anxiety and depression scale figured in 40%, and 60%, respectively. The handed use was 20 rights handed and 5 left-handed. Bilateral tinnitus is experiencing in 76%. The HL occurred in 17(68%) of tinnitus patients. The description of tinnitus sound as whistling (40%), hissing (24%), pulsating (16%), ringing (8%), and high pitch noises (12%). Regarding THI questionnaire, tinnitus subjects are divided to 60% (mild), 30% (moderate), and 10% (severe). While TFI questionnaire, 50% showed a (mild), 25% (moderate), and 25% showed (severe). We postulated a strong significant positive association between HADS and tinnitus severity: THI ($P=0.000$) and TFI ($P=0.001$). Those data revealed that tinnitus perception has negative impacts on QoL, and the severity may be altered by laterality.

Keywords: Tinnitus; THI; HLT; HADS; TFI; QoL

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Introduction

Tinnitus is the sensation of sound in the absence of any external source [1]. The prevalence was 10-15% of the adult [1]. It is mostly subjective, but only described by the subjects, sometimes have serious psychological impacts on the person [2]. Several tinnitus questionnaires made up as Tinnitus Handicap Inventory (THI) (asses emotional, functional and catastrophic subscales) [3] and the Tinnitus Functional Index (TFI) (assess awareness, coping, concentration, sleeping, hearing, relaxation, social activity and anxiety and depression) [4], to investigate the influence of tinnitus on emotional, functional, hearing, anxiety and depression. The tinnitus prevalence increased with increasing age [5].

As persons response differently to different symptoms and disorders, this study aims to assess the impact of tinnitus perception on QoL of tinnitus sufferers.

Material and Methods

Study Design and Setting

This work conducted in National Center for Audiology and Speech as prospective observational study at period from 2nd of June to 18th of December 2019.

Participants

Many inclusion and exclusion criteria were set in this study. Inclusion criteria were as following: age between 30-70 years old, subjective tinnitus for at least 3 months, and no conductive HL. 25-tinnitus sufferers were included with a wide range of HLT and TSS.

Audiology Examination

Pure tone air conduction audiometry was performed to assess the hearing level. Audiograms were measured with a calibrated diagnostic audiometer. The tones were presented at seven frequencies (0.5, 1, 2, 3, 4, 6, 8 kHz), and at different intensities, ranged from (-10 to 120 dBHL).

Behavior Assessment

Handed was assessed via utilizing Edinburgh Handedness Inventory (EHI) [6]. Beside that, anxiety and depression were screened for all persons by HADS [6].

Tinnitus Scoring

In order to assess the effect of tinnitus on QoL, the tinnitus group was asked to complete two questionnaires (THI and TFI).

Statistical Tools

The SPSS software version 24 (Chicago, US) was used for all statistical analysis. The degree of HL (%), and the presence of tinnitus, were determined separately for each ear and compared between ears and groups by independent sample t- test. Descriptive data were summarized using means and standard deviations for continuous data and percentages for categorical data. P-value <0.05 was deemed significant.

Results

This study included 25 patients: 15 (60%) male, and 10 (40%)



females. The age range of tinnitus participants was from 35 to 70 years olds. The mean±SD age of patients was 55±23 years. The anxiety and depression scale figured in 40%, and 60%, respectively. The handed use was 20 rights handed and 5 left-handed. Bilateral tinnitus is experiencing in 76%. The hearing loss occurred in 17 (68%) tinnitus patients. 10% of persons could cope with their tinnitus. The description of tinnitus sound as whistling (40%), hissing (24%), pulsating (16%), ringing (8%), and high pitch noises (12%), as showed in table 1.

The pure tone audiometry was performed and for each ear is shown in figure 1. The left ear audiograms recorded higher hearing loss thresholds than the right ear at 3, 4, 6 and 8 kHz, with no significant level ($P \geq 0.05$).

In addition, there was no significant different observed of the HL level between both genders, handed, anxiety and depression, tinnitus-severity, and laterality (sided) (bilateral and unilateral). Whereas there was a strong significant difference between normal and HL persons among hearing level ($P < 0.000$), shown in table 2.

The overall results of THI and TFI are figured in table 3. Regarding THI questionnaire, tinnitus subjects are divided to 60% (mild), 30% (moderate), and 10% (severe). While TFI questionnaire, 50% showed a (mild), 25% (moderate), and 25% showed (severe).

Table 1: The characteristics of tinnitus participants (n=25).

Variables		No.	%
Gender	Male	15	60
	Female	10	40
Handed use	Rt	20	80
	Lt	5	20
Anxiety	Yes	10	40
	No	15	60
Depression	Yes	15	60
	No	10	40
Hearing level	Normal	8	32
	Loss	17	68
Severity of tinnitus	Copy	10	40
	Suffer	15	60
Sided	Unilateral	6	24
	Bilateral	19	76
Features of tinnitus	Whistling	10	40
	Hissing	6	24
	Pulsating	4	16
	Ringing	2	8
	High pitch noises	3	12

Table 2: The effect of different variables on hearing acuity.

Variables		HLT mean±SD (t-test)	P value
Gender	Male	49±20	0.3
	Female	41±25	
Handed use	Rt	42±20	0.09
	Lt	58±19	
Anxiety and Depression	Yes	50±18	0.5
	No	51±20	
Hearing level	Normal	67±3	0.000
	Loss	25±7	
Severity of tinnitus	Copy	48±19	0.9
	Suffer	48±21	
Sided	Unilateral	51±22	0.5
	Bilateral	49±26	

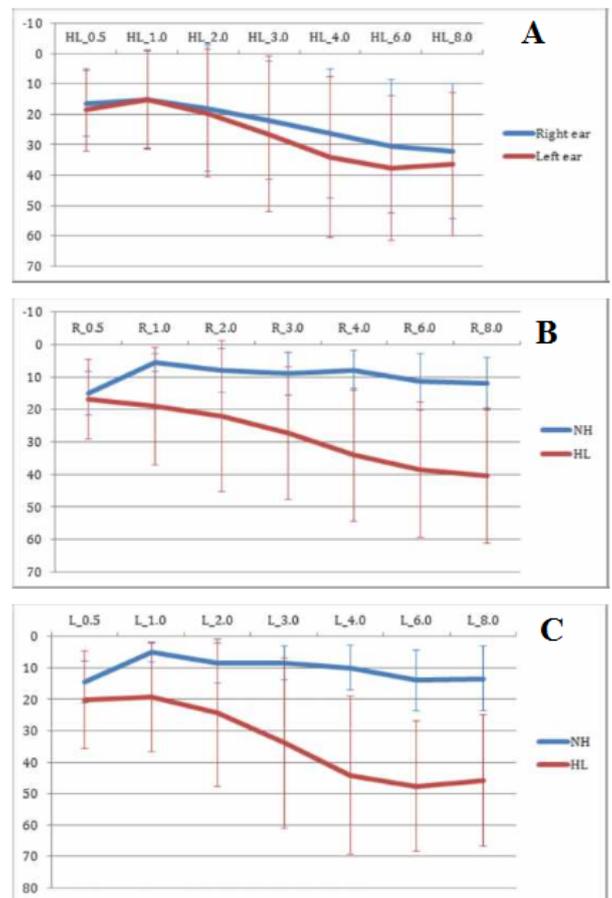


Figure 1: Normal hearing was defined as pure tone hearing thresholds of 20 dB or better at these frequencies, and hearing loss was defined as a hearing threshold more than 25 dB at any frequency. Where: A is Pure tone audiometry, B is Rt ear audiograms, and C is Lt ear audiograms.

Table 3: The impact of tinnitus perception results using THI and TFI.

Questionnaire	Scores	%
THI	Mild	60
	Moderate	30
	Severe	10
TFI	Mild	50
	Moderate	25
	Severe	25

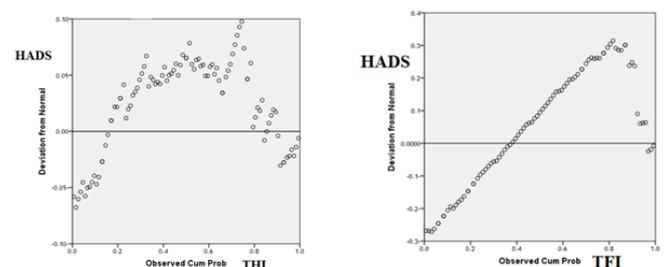


Figure 2: Correlation between HADS, A: THI scores, and B: TFI.

We postulated a strong significant positive association between HADS and tinnitus severity: THI ($P=0.000$) and TFI ($P= 0.001$), as showed in figure 2.



Discussion

The prevalence of tinnitus in man more than women that is consistence with other [7]. The connection between sex and tinnitus severity was observed variables as some researchers found women showed higher scores comparing to male [8], while others have shown the opposite [5,9], or other recorded no correlation [10]. Here, there was no significant difference between males and females in terms of HL and tinnitus severity was assessed.

Different studies concluded that there is no correlation between severity and age [2,10]; however, Hiller and Goebel [11] found there is a positive correlation between severity and age.

The association between hearing impairments and loneliness was identified, which found that the incidence of loneliness is significantly higher in hearing impairment sampling comparing to normal [12,13].

In this study, we found nearly two-third of the tinnitus participants had some degree of hearing loss, while one-third had normal hearing that is nearly consistent with a large epidemiology study [14].

There were no significant differences were recorded in the THI and TFI scores between tinnitus participants with normal hearing and tinnitus participants with hearing loss, which has been found as well in these previous studies [2,14-16].

The laterality was not found to play a significant role severity in a study conducted by Alsanosi AA (2011) [7], (overall THI score). Here, also did not find a significant difference in the THI score between unilateral and bilateral. However, unilateral tinnitus showed a significant higher negative impaction than bilateral.

Conclusion

In conclusion, we demonstrated the negative impacts of tinnitus perception on QoL. The ageing factor was affected the hearing acuity of tinnitus population. Also, tinnitus laterality seems to play a factor on severity.

Conflict of Interest

We declare that we have no conflict of interest.

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