Assessment of Depression Symptoms among Tinnitus Patient using Subjective Measure: A Preliminary Study

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ABSTRACT: Tinnitus is not a disease but a symptom where the person can hear the ringing sounds in their ears without external stimuli. In chronic tinnitus, sufferers may exhibit distressing emotional and psychological disturbances. In this study, 12 tinnitus patients (9 males and 3 females) with age range from 29 to 55 years old were recruited. Subjective measurements were performed to assess the psychological symptoms using Malay version of Beck Depression Inventory (BDI) and Borang Evaluasi Soal-selidik Tinnitus (BEST). BEST questionnaire showed 6 subjects categorized their tinnitus as moderate, 4 subjects as mild tinnitus and 2 subjects as slight tinnitus. Whereas by BDI-Malay, 9 subjects categorized their level of depression as normal, followed by 2 with mild mood disturbance and only 1 has borderline clinical depression. The Spearman’s correlation showed no correlation between BEST and BDI-Malay p>0.05 (r =0.068). This study suggested that the severity of tinnitus is not correlated with the depression level.

Keyword: Tinnitus, psychological symptoms, BDI, BEST

Introduction

Tinnitus is a phantom of sound (ringing of the ears) that can affects quality of life millions of people around the world and most cases are associated with hearing impairment (Larry et al., 2010). Even though, tinnitus commonly occurs after the age of 60, there are about 8–20% of individuals with chronic tinnitus that occurs at any age (Chang, et al., 2013 and Larry et al.,
Comorbid psychiatric disorders are frequent among patients affected by tinnitus (Massimo et al., 2014). There are high incidences of depression, anxiety and sleep disorders among patients with chronic tinnitus (Zoger et al., 2006; Denis et al., 2013). Mutual clinical influences between tinnitus and psychiatric disorders may be the reasons for such observations (Massimo et al., 2014).

Tinnitus can be divided into two categories: objective and subjective. Objective tinnitus is defined as tinnitus that is audible to another person whereas subjective tinnitus is audible only to the patient. Many physicians use the term tinnitus to designate subjective tinnitus and the term somatosound to designate objective tinnitus. Therefore, the most reliable measurement of subjective tinnitus is through self-reporting and validated questionnaires using standardized scale (Ulli and Roman, 2013). In this study, the level of psychological impacts especially depression symptom was assessed using the Beck Depression Inventory (BDI) Malay and Borang Evaluasi Soal-Selidik Tinnitus (BEST). Depression is a major cause of morbidity and is associated with impairment in occupational and interpersonal functioning (Reddy et al., 2010). The Beck Depression Inventory (BDI) has been shown to have good psychometric properties for the past 40 years in Western and non-Western populations. The BDI-Malay is a translated version of the original BDI (Beck et al., 1961; Beck et al., 1988 ). Two factors of the BDI-Malay namely Somatic/Vegetative and Cognitive/Affective were extracted from Exploratory Factor Analysis (EFA) and were confirmed through Confirmatory Factor Analysis (CFA). Internal consistency (Cronbach’s) ranging from .71 to .91 and validity of the BDI-Malay were satisfactory (Beck et al., 1961; Beck et al., 1988). BDI-Malay has sound psychometric properties and is a reliable instrument for measuring levels of depression among Malays in Malaysia.

Materials and Methods

This cross-sectional study was performed on 12 tinnitus patients (9 males and 3 females) with age range from 29 to 55 years from Otorhinolaryngology (ORL) clinic, Hospital Universiti Sains Malaysia (HUSM). All subjects gave written consent in accordance with approval of the institutional ethics committee.
**Depression level measure**

Patient’s depression levels were assessed using Beck Depression Inventory (BDI) Malay. BDI–Malay contains 21 items that indicated the level of the depressed mood. The items of the BDI were divided into two subscales: a cognitive/affective subscale formed from the first 13 items, and a somatic/performance subscale formed from the last eight items. The full scale is considered to have strong psychometric properties, with mean alpha coefficient exceeding 0.90 and test-retest reliability of 0.80 (Beck et al., 1988).

**Tinnitus level measure**

BEST questionnaire by Jenny, 2010 was used in assessing the severity of tinnitus. The 25 items of BEST were divided into 3 subscales; emotional subscales - 7 items, functional response subscales – 8 to 21 items, and catastrophic response the last 4 items. The cronbach’s alpha value of 0.88 was obtained, indicating good internal consistency and test reliability. The questions were answered based on scale ranging from ‘0’ (never) to ‘4’ (all the time). Therefore, the range of scores can be from 0 to 100 points. A total score of 0-20 is was interpreted as a “slight” level of tinnitus, 21-40 as “mild”, 41-60 as “moderate”, 61-80 as “severe”, and 81-100 as “catastrophic.

**Statistical analysis**

The statistical package for Social Science (SPSS) version 20 was used to analyze the data. Univariate and multivariate analysis was used to explore each variable in a data set, separately. Spearman’s Rank Correlation is a technique used to test the direction and strength of the relationship between 2 variables.

**Results**

Among the 12 tinnitus patients, 3 had left-sided localization of tinnitus, 4 had right sided tinnitus and 5 had tinnitus equal in both ears. Duration of tinnitus experience ranged from 1 to 4 years. Univariate analysis on BEST questionnaire, 6 subjects categorized their tinnitus as moderate, 4 subjects as mild tinnitus and 2 subjects as slight tinnitus. Whereas on BDI-Malay, its showed 9 subjects categorized their level of depression as normal, followed by 2
subjects with mild mood disturbance and only 1 subject has borderline clinical depression. The Spearman’s correlation showed no correlation between BEST and BDI-Malay p=0.543 (r =0.068).

Discussion

Nowadays, there is an increasing and shifting of attention on the role of cognitive and psychological factors among tinnitus. Psychological treatments of tinnitus have received a great deal of interest in audiological research (Reynolds et al., 2004; Luciana et al., 2013). Tinnitus has been associated with several psychiatric disorders, however their association remains unclear (Denis et al., 2013). Depression is an example of psychiatric disorder that frequently seen in almost all chronic diseases which can affects the quality of life of the patients (Reynolds et al., 2004; Denis et al., 2013; Luciana et al., 2013). The ratio of depressive symptoms accompanied in tinnitus patients seems to vary, ranging between 45-60% (Reynolds et al., 2004; Belli et al., 2008; Chang et al., 2013). This study found only 25% of tinnitus patients with depressive symptom and showed no correlation between depression and tinnitus which is similar with Ooms et al. (2011). Only 3 out of 6 patients with moderate tinnitus showed mild depressive symptoms. Therefore, the severity of tinnitus did not correlate with the level of depression.

Conclusion

There are no tinnitus patients in this study with moderate to severe depressive symptoms despite among a small cross-sectional sample. Tinnitus does not appear to be a problem related to depression. However, further studies with a larger number of patient samples are necessary to confirm the findings and to further appreciate the correlation between depression and tinnitus.

References


