

## **A systematic review of the relation between guilt, depression and anxiety in patients with chronic tinnitus**

Uma revisão sobre a relação entre culpa, depressão e ansiedade em pacientes com zumbido crônico

Una revisión sistemática de la relación entre culpa, depresión y ansiedad en pacientes con tinnitus crónico

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### **Abstract**

Tinnitus is considered the third most frequent otorhinolaryngological symptom on the search for medical help. It is known that tinnitus has been associated with psychiatric conditions, mainly depression and anxiety. Furthermore, the difficulty of coping with the nuisance, negatively interferes on the life quality of these patients. In clinical practice, it is not uncommon patients to refer to chronic tinnitus as a penance. A penance presupposes guilt, a symptom also related to depression. This review was designed to track studies on role of guilt in the psychism of patients with tinnitus. In this sense a bibliographic survey was done in order to analyze the possible correlations of depression, anxiety and guilt in patients with chronic tinnitus. The review draws attention to health professionals for the importance of understanding the psychism of patients with tinnitus, and to clarify their perceptions of their condition as a kind of punishment.

**Keywords:** Anxiety; Depression; Guilt; Tinnitus.

### **Resumo**

O zumbido é considerado o terceiro sintoma otorrinolaringológico mais frequente na busca de ajuda médica. Sabe-se que o zumbido tem sido associado a condições psiquiátricas, principalmente depressão e ansiedade. Além disso, a dificuldade de lidar com o incômodo, interfere negativamente na qualidade de vida desses pacientes. Na prática clínica, não é incomum pacientes se referirem ao zumbido crônico como uma penitência. Uma penitência pressupõe

culpa, um sintoma também relacionado à depressão. Esta revisão tem como objetivo rastrear estudos sobre o papel da culpa no psiquismo de pacientes com zumbido. Nesse sentido, realizou-se uma pesquisa bibliográfica para analisar as possíveis correlações de depressão, ansiedade e culpa em pacientes com zumbido crônico. A revisão chama a atenção para os profissionais da saúde para a importância de compreender o psiquismo dos pacientes com zumbido e para esclarecer a percepção de sua condição como uma espécie de punição.

**Palavras-chave:** Ansiedade; Depressão; Culpa; Zumbido.

### Resumen

El acúfeno se considera el tercer síntoma otorrinolaringológico más frecuente a la hora de buscar ayuda médica. Se sabe que el tinnitus se ha asociado con afecciones psiquiátricas, especialmente depresión y ansiedad. Además, la dificultad de afrontar el malestar afecta negativamente a la calidad de vida de estos pacientes. En la práctica clínica, no es raro que los pacientes se refieran al tinnitus crónico como una penitencia. Una penitencia presupone culpa, un síntoma también relacionado con la depresión. Esta revisión tiene como objetivo realizar un seguimiento de los estudios sobre el papel de la culpa en la psique de los pacientes con tinnitus. En este sentido, se realizó una investigación bibliográfica para analizar las posibles correlaciones entre depresión, ansiedad y culpa en pacientes con acúfenos crónicos. La revisión llama la atención de los profesionales de la salud sobre la importancia de comprender la psique de los pacientes con tinnitus y aclarar la percepción de su condición como una especie de castigo.

**Palabras clave:** Ansiedad; Depresión; Culpa; Zumbido.

## 1. Introduction

The term tinnitus describes the conscious perception of an auditory sensation in the absence of an external source of sound, and it is (Baguley & MCFerran, 2013) described as the third most frequent otorhinolaryngological symptom in the search for medical help, it is overcome only by intractable intense pain and dizziness. It is estimated that 17% of the world's population has tinnitus. In Brazil, it is believed that 28 million individuals are tinnitus sufferers. The prevalence in the general population is 15% and this data increases to 33% in the population over 65 years of age. (Seidmann & Jacobsen, 1997; Sanchez & Miniti, 1997; Shargorodsky et al., 2010; Hain, 2016)

Evidence suggests the relationship, in varying degrees, between tinnitus and parts of the central nervous system (CNS). (Rosa, 2012; Henry, 2014; Salviati, 2014) It is currently accepted that non-auditory perceptual networks are relevant to the perception and annoyance of tinnitus. (Leaver, 2012)

Tinnitus becomes clinically important when dynamic interactions occur in some CNS centers, including auditory and non-auditory pathways, especially limbic system (LS) and autonomic nervous system (ANS), responsible for triggering the negative emotional associations and nuisance reactions reported by patients with tinnitus. (Bauer, 1999; 2008)

From the audiological point of view there are no differences in the psychoacoustic properties of tinnitus (intensity, frequency and minimum level of masking) between individuals with and without tinnitus suffering. Contrary to the audiometric parameters, the perception and severity of tinnitus are related to general and psychological health. That explains why many individuals with tinnitus have a healthy and productive life while others feel miserable because of their symptom. (Rosa, 2012; Salviati, 2014; Hesser, 2015)

Chronic tinnitus has been proved to be associated with psychiatric comorbidities, especially depression and anxiety. Patients with tinnitus may also complain of insomnia and lack of concentration, and such manifestations interfere negatively on the life quality of these individuals. Their difficulty of coping with the discomfort caused by tinnitus contribute to the magnitude of their distress, and also to decreased quality of life. (Attias, 1995; Londero, 2004; Bauer, 2008)

Guilt is a feeling, not much studied by science. Initially, it was debated by religions as relating to remorse and regret. For Psychoanalysis, guilt was postulated as a symptom and epiphenomenon of the super ego's depression. Furthermore, Freud found guilt to be present in the contradictions and inhibitions of conditions as obsessive neurosis and melancholy, self deprecation, resistance to be treated and in the need to be punished. (Gellis & Hamud, 2001; Aquino, 2009; Shargorodsky, 2010)

This sense of guilt, as a punishment feeling, may be very intense and present in patients with chronic tinnitus. (Bauer, 2008; Aquino, 2009; Leaver, 2012; Rosa, 2012) assuming that patients with tinnitus present psychiatric comorbidities, a bibliographic survey was carried out in order to analyze the possible correlation of depression, anxiety and guilt in patients with chronic tinnitus.

## **2. Methodology**

A bibliographic review was conducted using electronic databases, such as PubMed, MedLine and Scielo. The search was performed in two moments with the following keywords:

1. "depression", "anxiety" and "tinnitus";
2. "depression", "anxiety", "guilt" and "tinnitus".

In the LILACS and SciELO database, the descriptors indexed in Descriptors in Health Sciences (DeCS) were used. From this, the following strategy was created: Depression, Anxiety, Tinnitus and Guilt. It was also used the basic research form with the word AND to relate the words (depression, anxiety, guilt and tinnitus). We researched articles written in Portuguese and English, published between 2012 and June 2021, selecting the most relevant articles on the themes. Letters to the editor and case reports were excluded. The selected articles were tabulated according to the following information: authorship, year of publication, sample size, type of study, main results of associations between tinnitus, anxiety, depression and guilt.

## **3. Results and Discussion**

In the search, a total of 51 articles were found, with 36 articles found in PubMed, eight in Lilacs and seven in SciELO; from the articles obtained in the Lilacs / SciELO databases, three articles were common to both bases and one was also found in Lilacs / PubMed. (Figure 1)

**Figure 1:** Article Search.

**51 articles**



29 - articles

Articles published before 2012

**29 articles**



21 – articles

Published articles that are not related to the subject addressed, or that were repeated in the databases

**7 articles**



Relevant articles with the subject studied

Source: Authors.

Seven of the studies reviewed verified a positive correlation between tinnitus, depression and anxiety. They supported the view that both depression and anxiety are somehow related to tinnitus, either predisposing to a poor coping or as being a consequence of its severity. (Leaver, 2012; Rosa, 2012; Bankstahl & Görtelmeyer, 2013; Weise, 2013; Salviati, 2014; Zeilgelboim, 2014; Hesser, 2015)

Three cross-sectional articles studied verified the aforementioned correlation between tinnitus, depression and anxiety. (Braga, 2010; Salviati, 2014; Hesser, 2015) Hesser *et al* (2015) found a positive correlation between the severity of tinnitus with symptoms of anxiety and depression. (Bankstahl US, Görtelmeyer, 2013) This correlation was found through multivariate regression, in which the relevant characteristics of the patients were controlled for anxiety and depression.

Salviati and colleagues (2014) showed 114 out 299 tinnitus patients – 48% – to have a psychiatric comorbidity. Among these patients, a higher prevalence of depression, somatization, obsession and anxiety was found. Another striking finding was that more than 41% of patients with decompensated tinnitus reported a family history of psychiatric disorders. (Salviati, 2014)

A systematic review paper addressed the relation of anxiety with tinnitus and identified that this relationship may be associated with regulatory mechanisms of defensive behavior in the face of threatening stimuli or in dangerous situations, both of which have in common the involvement of the amygdaloid nucleus. As mentioned before, the incidence of anxiety and depression were positively related to the severity of tinnitus, further contributing to feelings of low self-esteem and to other damages. (Rosa, 2012)

A recent cohort study on CNS magnetic resonance imaging has sought for neural markers of tinnitus. The study aimed to clarify the relationship of tinnitus with hearing loss, depression, anxiety and other aspects such as sensitivity to sounds. The

objective of this study was to verify if these anatomic markers - especially non-auditory markers - would be related to tinnitus alone or to negative reactions associated with tinnitus. Tinnitus was positively correlated with cortical thickness in the anterior insula, while symptoms of anxiety and depression were negatively correlated with cortical thickness in the anterior subcutaneous cingulate cortex. Patients with tinnitus also exhibited increased dorsomedial prefrontal cortex, more pronounced in patients with constant tinnitus than in those with intermittent tinnitus. These data revealed that the neural systems associated with chronic tinnitus may be different from those involved in aversive or tormented reactions to tinnitus. The perception of tinnitus can be suppressed through neural plasticity. Brain centers activate thalamic filters that "turn off" the buzz signal regardless of the resolution of the condition underlying its emergence. The role of the ventromedial prefrontal cortical network in suppressing aberrant neural activity on the auditory system characterizes tinnitus as a "noise cancellation" problem. (Leaver, 2012)

The perception of the necessity of a questionnaire that evaluated the cognitive functions of tinnitus patients led a group to develop it through a prospective, non-interventionist, multicultural study. The Self-Assessment Scale of Attention and Performance validated linguistically in Germany, Mexico and the USA. This study allowed to select sub-scales which content and structure add value to the evaluation of the cognitive aspects of life quality and mental health in the population with subjective tinnitus. (Bankstahl & Görtelmeyer, 2013)

The idea of acceptance has lately received great attention due to the fact that the acceptance of tinnitus is a major target of several psychotherapeutic approaches. One study investigated the factorial structure of Tinnitus Acceptation Questionnaire (TAQ) and the role of tinnitus acceptance as a mediator between sound perception and tinnitus. In a multi-mediator model, the acceptance of tinnitus had a significantly stronger indirect effect than anxiety. In this study, which used the two-factor analysis method, in addition to first-order and tinnitus suppression, isolated acceptance proved to be important for the life quality of its patients. (Weise, 2013) In spite of the associations between depression, anxiety and tinnitus, no study analyzed, in the population with chronic tinnitus, the feeling of guilt, in the sense of punishment, and its relevance in the psychism of tinnitus sufferers was found.

Freud reported guilt to be a kind of anxiety and shame to be the consequence of that anxiety. Freud also reported on the phenomenon that a patient's clinical situation could worsen if he or she heard a compliment regarding their progress in treatment. The author believed that this worsening was motivated by an unconscious feeling of guilt. (Gellis & Hamud, 2001; Aquino & Medeiros, 2009)

#### **4. Conclusion**

The feeling of guilt can be evaluated in two situations: first the fear of authority and secondly the fear of the superego. The first shows us the renunciation of instinctual satisfaction, while the second demands renunciation and punishment, because the desire remains and can not be hidden from the superego. It is known that many patients with chronic tinnitus lack psychiatric comorbidities. Guilt may be related to psychiatric comorbidities and not to tinnitus itself, it would be wise to investigate whether tinnitus is perceived as a disease or as a penance. The clarification of this aspect may enable health professionals towards a more effective management of the psychic aspects of their chronic tinnitus patients.

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