Braz J Otorhinolaryngol. 2014;80(5):441–447

Brazilian Journal of
OTORHINOLARYNGOLOGY
www.bjorl.org

REVIEW ARTICLE

Systematic review of evidence on the association between personality and tinnitus☆,☆☆

Samantha Mucci[a,*], Luciana Geocze[a], Denise Caluta Abranches[a], Andrés Eduardo Aguirre Antúnez[b], Norma de Oliveira Penido[c]

[a] *Department of Psychiatry, Escola Paulista de Medicina, Universidade Federal de São Paulo (UNIFESP-EPM), São Paulo, SP, Brazil*
[b] *Instituto de Psicologia da Universidade de São Paulo (USP), São Paulo, SP, Brazil*
[c] *Department of Otorhinolaryngology and Head and Neck Surgery, Escola Paulista de Medicina, Universidade Federal de São Paulo (UNIFESP-EPM), São Paulo, SP, Brazil*

Received 5 August 2013; accepted 7 November 2013
Available online 4 July 2014

KEYWORDS
Personality;
Tinnitus;
MMPI;
Review

Abstract
Introduction: The scientific literature demonstrates that personality traits are associated with the individual's adaptation to chronic diseases, and can be an important factor in the etiology and prognosis of physical illness. Some studies indicate that personality characteristics may influence the perception of tinnitus.
Objective: To assess the scientific evidence of the association between tinnitus and personality.
Methods: A systematic review of the following databases: PubMed, SciELO, LILACS, and Web of Knowledge. Only studies of patients older than 18 years published in English, Portuguese, or Spanish that established an association between tinnitus and personality were selected.
Results: Seventeen of the 77 articles found were selected: 13 cross-sectional studies, two longitudinal studies, one validation study, and one birth cohort study. The samples ranged from 27 to 970 patients.
Conclusion: Some personality traits, especially neuroticism, psychasthenia, and schizoid aspects, may be associated with tinnitus perception and with the annoyance due to this symptom.
© 2014 Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial. Published by Elsevier Editora Ltda. All rights reserved.

☆ Please cite this article as: Mucci S, Geocze L, Abranches DC, Antúnez AE, Penido NO. Systematic review of evidence on the association between personality and tinnitus. Braz J Otorhinolaryngol. 2014;80:441–7.
☆☆ Institution: Department of Otorhinolaryngology and Head and Neck Surgery, Universidade Federal de São Paulo (UNIFESP-EPM), São Paulo, SP, Brazil.
* Corresponding author.
E-mail: sammucci@gmail.com (S. Mucci).

http://dx.doi.org/10.1016/j.bjorl.2014.05.031
1808-8694/© 2014 Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial. Published by Elsevier Editora Ltda. All rights reserved.

PALAVRAS-CHAVE
Personalidade;
Zumbido;
MMPI;
Revisão

Revisão sistemática sobre as evidências da associação entre personalidade e zumbido

Resumo
Introdução: Sabe-se, na literatura científica, que características de personalidade estão associadas à adaptação do indivíduo a doenças crônicas, tornando-se um fator importante na etiologia e prognóstico de doenças físicas. Alguns estudos apontam que características de personalidade podem influenciar na percepção do zumbido.
Objetivo: Verificar as evidências científicas da associação entre zumbido e personalidade.
Método: Estudo de revisão sistemática nas seguintes bases de dados: *Pubmed*, *Scielo*, *Lilacs* e *Web of knowledge*. Foram selecionados apenas os estudos com pacientes maiores de 18 anos, publicados em inglês, português ou espanhol e que estabeleceram uma associação entre zumbido e personalidade.
Resultados: Dos 77 artigos encontrados, 17 foram selecionados: 13 estudos transversais, dois estudos longitudinais, um estudo de validação e um estudo de coorte de nascimento. As amostras variaram de 27 a 970 pacientes.
Conclusão: Algumas características de personalidade, especialmente neuroticismo, psicastenia e aspectos esquizoides, podem estar associados à percepção e ao incômodo do zumbido.
© 2014 Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial. Publicado por Elsevier Editora Ltda. Todos os direitos reservados.

Introduction

Tinnitus is defined as a perception of sound in the absence of an external sound source.[1,2] It is a symptom that may be related to a number of biological, pharmacological, nutritional, and psychological etiologies, and most often multiple etiologic factors are involved.[3] Pavan[4] reported that approximately 20% of the general population suffers from some form of tinnitus. Other studies have reported incidences of 10–32% of the population.[1,5]

In most cases, tinnitus is a symptom perceived only by the patient, and it is not possible to measure it objectively. The discomfort from tinnitus is subjective and variable with respect to intensity and frequency, and can significantly impact the patient's life and cause adverse personal, professional, social, and family consequences. Twenty percent of patients with chronic tinnitus report it to be severe and disabling.[1,6]

Tinnitus is a symptom that has physical and psychological dimensions and a comprehensive approach requires a multidisciplinary team to provide appropriate assessment and treatment for the affected patients.[7,8]

Many researchers suggest that psychological characteristics may be related to the impact of tinnitus on the lives of patients. Patients with severe tinnitus may have hysterical defenses, depressive and/or anxiety symptoms, stress, irritability, difficulty concentrating and sleeping, negative effects in mood, and impairment in performing daily activities.[7–11]

Personality can be defined as an aggregate of characteristics that distinguish one individual from all others. Some theorists consider that personality is the essence of the human condition.[12] Personality involves the totality of psychic dynamics, and its formation evolves from the interaction of genetic, physiological, emotional, cognitive, social, and cultural factors. It is the personality that determines thinking, attitudes, beliefs, the way of perceiving the world and relating to other people, and it also has an impact on health and disease processes.[13,14] In the realm of personality, conscious and unconscious aspects, behaviors, affective-emotional experiences, intrapsychic conflicts, thoughts, and feelings are all considered. The structure of personality is relatively stable and predictable, and the dynamics of personality determine how the individual relates to the environment.

The assessment of personality can be conducted by mental health professionals by means of structured or semi-structured clinical interviews based on DSM-IV-TR,[15] or by psychologists using psychological assessment instruments. There are a variety of psychological assessment instruments able to assess personality structure and dynamics; these can be objective instruments (even self-administered) or projective expressive methods.[16,17] The use of these instruments is restricted to psychologists.[18,19]

In the scientific literature, there are many articles studying the association of personality to health and disease process. The articles describe the characteristics of personality as an important factor in the etiology and prognosis of physical illnesses when associated with other factors.[20] Welch and Dawes[21] comment that personality characteristics may influence the perception of tinnitus. There is scant literature regarding studies of the personality characteristics of tinnitus patients. To date, no research on the subject has been published in Brazil.

The objective of this study was to assess the scientific evidence of the association between tinnitus and personality.

Method

A systematic review of published articles on tinnitus and personality indexed in the databases PubMed, Web of Knowledge, SciELO, and LILACS was performed.

The inclusion criteria were studies published in English, Portuguese, or Spanish until 2013 with patients older than 18 years that established an association between tinnitus and personality. Studies that correlated symptoms of anxiety and/or depressive symptoms with tinnitus, studies on personality characteristics in patients with dizziness or chronic disease, letters to the editor, and theoretical studies were excluded.

In the search strategy for PubMed, descriptors of the Medical Subject Headings (MeSH terms) were used and the strategy chosen was as follows: *Tinnitus* [Mesh] AND (*Personality* [Mesh] OR *Personality Disorders* [Mesh] OR *MMPI* [Mesh]) AND (*English* [lang] OR *Spanish* [lang] OR *Portuguese* [lang]) AND *adult* [MeSH Terms].

In the Web of Knowledge database, the strategy was (TS = (*personality*) AND TS = (*Tinnitus*)) AND *Language* = (*English* OR *Portuguese* OR *Spanish*) AND *Document Types* = (*Article* OR *Review*) *Databases* = SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH *Timespan* = *All years*.

In the SciELO and LILACS databases, indexed descriptors in the Health Sciences Descriptors Headings (MeSH terms) were used, and the following strategy was implemented: *tinnitus* AND *personality* OR *personality determination* OR *personality disorders* OR *personality tests* OR *MMPI* (Minnesota Multiphasic Personality Inventory).

Results

Access to the articles was performed by online distribution via the CAPES Portal; and by the attendance of researchers to BIREME to access printed journals and purchase items from the public health library.

In all, 43 studies in PubMed and 45 studies in Web of Knowledge were found; 11 articles were common to both databases. No studies were found in the LILACS and SciELO databases. In total, 77 articles were collected for the period 1968–2012.

The selection of papers to be included in the review was performed by two reviewers after reading the 77 articles; 17[21–37] articles that met the inclusion criteria were selected, and 60 articles were excluded. Articles were excluded because they did not present an association between personality and tinnitus. Most of them associated psychopathological symptoms (such as anxiety and depression) to tinnitus. Ten articles were excluded because they studied an association among personality or psychological characteristics and non-otologic chronic diseases or otologic diseases except tinnitus; and one article was excluded because it was a theoretical study, not dealing with scientific research (Fig. 1).

Two reviewers tabulated data of selected articles using the following information: authors, year of publication, study type, sample size, instruments for personality assessment used, and main results of the association between tinnitus and personality (Table 1).

The 17 selected articles included 13 cross-sectional studies,[22–24,26–30,32,33,35–37] two prospective longitudinal studies,[25,34] one validation study,[31] and one birth cohort study.[21] These studies[21–37] demonstrate that there are associations between some personality characteristics and tinnitus perception and the annoyance caused by this symptom. The samples ranged from 27 to 970 patients.

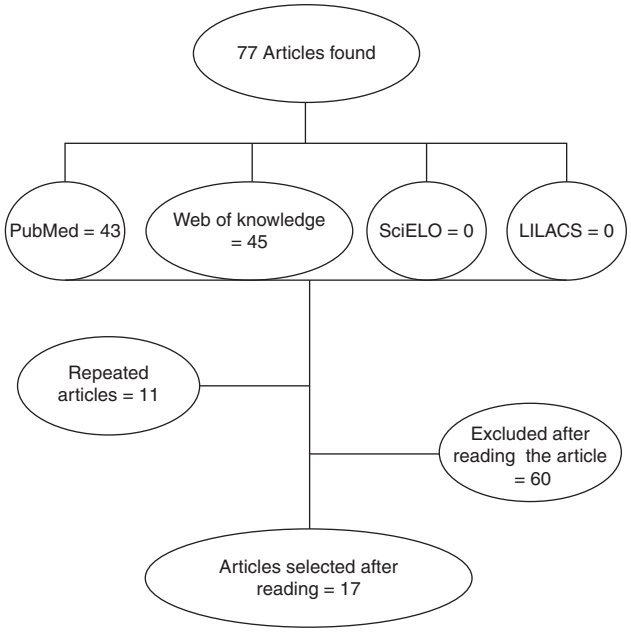

Figure 1 Results.

Studies have demonstrated that there is a predominance of certain personality characteristics in patients with tinnitus, such as neuroticism[22,24,27–31,34,35,37] (neurotic triad: hysteria,[22,27,33] hypochondria,[23,33] and depression),[23,25–27,32,35–37] psychasthenia,[25,26,33] and schizoid features.[22,25,33,34]

Neuroticism involves a broad range of negative personality characteristics due to the presence of psychological distress, anxiety, and behavioral cognitive impairment.[38] The affected subjects are anxious, prone to emotional instability and mood swings, and have a tendency to self-deprecation and exaggerated concerns, especially in relation to body and health, who tend to overreact to many different types of stimuli and to interpret situations more seriously than they are; they are likely to exhibit physical symptoms with no organic etiology, devitalization, and a tendency toward depression.[13,38]

Psychasthenia is associated with the presence of intense anxiety and a significant nervous breakdown. Psychasthenic people exhibit impulsive, obsessive, and phobic tendencies, mental rumination behavior, psychomotor agitation, diffuse or systematic fear, anxiety associated with physical symptoms, and a tendency to experience distressing feelings.[13,39]

Individuals with a high score of schizophrenia refer to the presence of schizoid aspects of their personality. They are solitary people with emotional vulnerability, who avoid social contact, feel threatened and persecuted, and have difficulty distinguishing fantasy from reality, have an affinity for strange and unusual things, and a tendency to hostility and wickedness.[13]

The most widely used instrument for assessing personality traits is the Minnesota Multiphasic Personality Inventory (MMPI)[22–26,29,32] (seven studies); this is a psychological test that can detect psychopathological and personality traits, and is widely used in the scientific literature. The other

Table 1 Description of papers showing an association between personality and tinnitus regarding the instruments used.

Authors and year	Study type	Sample	Personality assessment instruments	Major outcomes associated with tinnitus patients and conclusion
Reich GE and Jonhson RM, 1984.	Transversal	146	MMPI 168 (Minnesota Multiphasic Personality Inventory – 168 short version)	High scores of neuroticism (hysteria, hypochondria, and depression) and in the scales of schizophrenia and paranoia.
Gerber K, Nehemkis AM, Charter RA, Jones HC, 1985–1986.	Transversal	45	Minnesota Multiphasic Personality Inventory (MMPI)	Pathological levels in the scales of hypochondria and depression.
O'Connor S, Hawthorne MR, Britten SR, Webber P, 1987.	Transversal	105	Eysenck Personality Questionnaire (EPQ)	9.5% had high neuroticism scores, but no significant correlation with severe tinnitus annoyance.
Collet L, Moussu MF, Dubreuil C, Disant F, Ahami T, Chanal JM, Morgon A, 1987.	Longitudinal prospective	27	MMPI	There were statistically significant differences associated to scales of depression, schizophrenia, and psychasthenia.
Collet L, Moussu MF, Disant F, Ahami T, Morgon A, 1990.	Transversal	100	MMPI	Men showed high levels on the depression scale. Psychasthenia is associated with hearing loss, and hypochondria is associated with a long symptomatic period.
Mckee GJ, Stephens SDG, 1992.	Transversal	37	Crown-Crisp Experiential Index	High scores of neuroticism.
Russo J, Katon W, Sullivan M, Clark M, Buchwald D, 1994.	Transversal	224	Structured Psychiatric Diagnostic Interview Schedule based on DSM-III-R; Cloninger's Tridimensional Personality.	Higher scores of pessimism, worry, impulsivity, neuroticism, and negative affectivity.
Meric C, Gartner M, Collet L, Chéry-Croze S, 1998.	Transversal	281	MMPI	Scores of neuroticism stand out
Rutter DR, Stein MJ, 1999.	Transversal	248	EPQ	Higher scores for neuroticism, but not statistically significant when compared to patients with chronic diseases.
Zachariae R, Mirz F, Johansen LY, Andersen SE, Bjerring P, Pedersen CB, 2000.	Validation	50	EPQ	High scores of neuroticism.
Vallianatou NG, Christodoulou P, Nestoros JN, Helidonis E, 2001.	Transversal	80	MMPI	Scores within average. Only the depression scale was higher.
Bayar N, Oguztürk O, Koç C, 2002.	Transversal	56	MMPI	High scores on psychasthenia scale. Women also had higher scores on hypochondria, hysteria, schizophrenia, and social introversion scales.
Lagenbach M, Olderog M, Michel O, Albus C, Köhle K, 2005.	Longitudinal prospective	48	Symptom Checklist 90-Revised (SCL-90-R), Freibürger Persönlichkeitsinventar (FPI-R)	Statistically significant differences in scores of somatization, anxiety, and somatic complaints; and psychoticism, excitability, and tension.

Table 1 (*Continued*)

Authors and year	Study type	Sample	Personality assessment instruments	Major outcomes associated with tinnitus patients and conclusion
Langguth B, Kleinjung T, Fischer B, Hajak G, Eichhammer P, Sand PG, 2007.	Transversal	72	NEO-Five Factor Inventory (NEO-FFI),	The traits of anxiety and neuroticism are associated with the presence of depressive symptoms and the severity of tinnitus.
Welsh D, Dawes PJD, 2008.	Cohort Longitudinal prospective	970	MPQ (Multidimensional Personality Questionnaire)	Personality traits may be associated with tinnitus.
Bartels H, Pedersen SS, Van der Laan BF, Staal MJ, Albers FW, Middel B, 2010.	Transversal	265	DS-14 (Type D Scale - 14)	The prevalence of patients with a pessimistic personality (type D personality) was 35.5%.
Bartels H, Middel B, Pedersen SS, Staal MJ, Albers FWJ, 2010.	Transversal	530	EPQ, DS-14, FFPI (Five-Factor Personality Inventory).	The personality traits of neuroticism and pessimism (type D) are prevalent in patients with tinnitus.

instruments used were as follows: Eysenck Personality Questionnaire[24,30,31,37] (EPQ, four studies), Type D Scale[36,37] (two studies), Structured Psychiatric Diagnostic Interview[28] (one study), NEO Five-Factor Inventory[35] (one study), Five-Factor Personality Inventory 37 (one study), Multidimensional Personality Questionnaire[21] (MPQ, one study), *Freibürger Persönlichkeitsinventar*[34] (one study), Crown-Crisp Experiential Index[27] (one study), and Cloninger's Tridimensional Personality Questionnaire[28] (one study), associating audiological and otological assessments with detailed questionnaires about tinnitus.

Discussion

The majority of studies selected were cross-sectional.[22–24,26–30,32,33,35–37] Cross-sectional and validation studies cannot establish predictive relationships between personality characteristics found in groups of tinnitus patients; however, they were able to detect that the groups of patients with tinnitus present more personality disorders such as neuroticism, psychasthenia, and schizoid features than the general population.[21–37] These characteristics may influence patients' perception of tinnitus, their discomfort, and the meaning that they assign to this annoyance, thereby making it difficult to live with chronic tinnitus and worsening its impact on their lives.

All individuals are exposed to the demands and pressures imposed by the events of ordinary life and, to cope with anxiety and concerns, utilize their emotional resources. Patients with tinnitus have fewer resources to cope with anxiety and affective distress, and tend to experience their distressing emotions more intensely. These patients have a personality structure less adapted and more susceptible to physical manifestations of their suffering, and an exacerbated concern about the body and the discomfort of tinnitus. These characteristics may be associated with the fact that tinnitus can cause the patient to suffer emotional overload and intense anxiety, just as occurs in other chronic diseases.

The most relevant retrieved studies were two prospective longitudinal studies[25,34] and one study of birth cohort.[21] Studies indicate some personality characteristics as predictors of increased suffering of tinnitus and poor patient compliance to their symptoms, defining the impact of tinnitus in their life, its severity, and annoyance.[21,25,34] Patients who report severe annoyance with tinnitus have specific personality traits and psychopathological symptoms that combine to lower the patients' satisfaction with their life and hinder their adaptation to chronic tinnitus.[25,34] The cohort study of Welsh and Dawes,[21] with 970 patients, assessed the personality characteristics of patients at 32 years of age, and found an association among personality characteristics and the presence of tinnitus. These data suggest that the treatment for these patients must rely on the help of mental health professionals, alleviating their psychological distress, the anxiety, and emotional, social, and relational injuries that certain personality traits may cause.

Only one study used a structured clinical interview for the diagnosis of the personality structure and dynamics.[28] The remaining studies used objective psychological tests to evaluate personality.[22–27,29–37] Projective psychological tests were not used. This fact may be related to the practicality of use and ease of application of objective tests. However, there are some limitations in the use of objective tests of personality, in association with the dependence on how the individual really perceives himself/herself; whether he/she is answering to what really matches his/her way of being, or instead in relation to what he/she would like it to be. Another important limitation of these tests is that objective tests can assess the general tendency of patients to respond to the environment where they live, but cannot distinguish between the structural features and the dynamic characteristics of personality. Carlson[40] manifested his concern about the personality researchers, when he chose to use objective instruments that restrict the personality to psychometric measures that disregard feelings, context of life, interpersonal relationships, intrapsychic conflicts, and the dynamics of the personality functioning.

It is important to mention that it is impossible to establish a specific personality profile of tinnitus patients; only the presence of certain personality characteristics can be detected in this population; these features are also found in patients with chronic diseases, such as chronic pain,[41] headache,[42,43] fibromyalgia,[43] and asthma.[44] Some studies show that patients with complaints of physical symptoms have higher neuroticism scores than healthy individuals.[45–47]

Conclusion

Most studies show a significant association between personality characteristics and tinnitus. These characteristics may be associated with the perception and annoyance of tinnitus, and contribute to the difficulty of patients' adaptation to the chronic symptom.

There is a need for further research using more comprehensive personality assessment instruments that can contribute to a better understanding of this phenomenon.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Coelho CCB, Sanchez TG, Bento RF. Tinnitus characteristics of patients attended in a tinnitus clinic. Int Arch Otorhinolaryngol. 2004;8:284–93.
2. Almeida TAS, Samelli AG, Mecca FDN, De Martino E, Paulino AM. Sensação subjetiva do zumbido pré e pós-intervenção nutricional em alterações metabólicas. Pro Fono. 2009;21:291–6.
3. Sanchez TG, Bento RF, Miniti A, Câmara J. Zumbido: características e epidemiologia. Rev Bras Otorrinolaringol. 1997;63:229–35.
4. Pavan JG. Zumbido. Sociedade Brasileira de Otologia; 2004 [cited 16 August 2010]. Available from http://www.saudeauditiva.org.br/perda_auditiva/perda_detalhe.asp?id=2
5. Azevedo AA, Figueiredo RR. Atualização em zumbido. Rev Bras Otorrinolaringol. 2004;70:27–40.
6. Jastrebroff PJ. Phantom auditory perception (tinnitus): mechanisms of generation and perception. Neurosci Res. 1990;8:221–54.
7. House PR. Personality of the tinnitus patients. J Laryngol Otol. 1984;98:233.
8. Andersson G, McKenna L. Tinnitus masking and depression. Audiology. 1998;37:174–82.
9. Hallam RS, Jakes SC, Chambers C, Hinchcliff R. A comparison of different methods for assessing the intensity of tinnitus. Acta Otolaryngol. 1985;99:501–8.
10. Andersson G. Psychological aspects of tinnitus and the application of cognitive-behavioral therapy. Clin Psychol Rev. 2002;22:977–90.
11. Marciano E, Carrabba L, Giannini P, Sementina C, Verde P, Bruno C, et al. Psychiatry comorbidity in population of outpatients affected by tinnitus. Int J Audiol. 2003;42:4–9.
12. Hall CS, Lindsey G, Campbell JB. Teorias da personalidade. Porto Alegre: Artmed; 2000. p. p.28–33.
13. Hall CS, Lindsey G, Campbell JB. Teorias da personalidade. Porto Alegre: Artmed; 2000. p. 117–28.
14. Dias AM. Personalidade e coronariopatia. Rev Millenium. 2004;30:191–201.
15. Cunha (org) JA. Psicodiagnóstico. V.5th edition Porto Alegre: Artmed; 2003. p. 75–97.
16. Trinca W. O pensamento clínico em diagnóstico da personalidade. Petrópolis: Vozes; 1983. p. 82–93.
17. Cunha JAJ(org). Psicodiagnóstico. V.5th edition Porto Alegre: Artmed; 2003. p. 341–2.
18. CFP (Conselho Federal de Psicologia). 2013 [cited 02 July 2013]. Available from http://site.cfp.org.br/campanha-do-cfp-quer-barrar-banalizacao-de-testes-psicologicos/
19. SATEPSI (Sistema de Avaliação de Testes Psicológicos). Lista de testes com parecer favorável; 2005 [cited 05 October 2010]. Available from: http://www2.pol.org.br/satepsi/sistema/admin.cfm?lista1=sim
20. Carvalho SPM, Trovisqueira AM. A personalidade na etiologia e progressão da doença física. [Monograph]; 2013 [cited February 2013]. Available from: http://www.psicologia.pt/artigos/textos/TL0176.pdf
21. Welch D, Dawes PJD. Personality and perception of tinnitus. Ear Hear. 2008;29:684–92.
22. Reich GE, Johson RM. Personality characteristics of tinnitus patients. J Laryngol Otol. 1984;98:228–32.
23. Gerber KE, Nehemkis AM, Charter RA, Jones HC. Is tinnitus a psychological disorder? Int J Psychiatry Med. 1985–1986;15:81–7.
24. O'Connor S, Hawthorne MR, Britten SR, Webber P. Identification of psychiatric morbidity in a population of tinnitus sufferers: Part II. J Laryngol Otol. 1987;101:791–4.
25. Collet L, Moussu MF, Drubreuil C, Disant F, Ahami T, Chanal JM, et al. Psychological factors affecting outcome of treatment after transcutaneous electrotherapy for persistent tinnitus. Arch Otorhinolaryngol. 1987;244:20–2.
26. Collet L, Moussu MF, Disant F, Ahami T, Morgon A. Minnesota multiphasic personality inventory in tinnitus disorders. Audiology. 1990;29:101–6.
27. Mckee GJ, Stephens SDG. An investigation of normally hearing subjects with tinnitus. Audiology. 1992;31:313–7.
28. Russo J, Katon W, Sullivan M, Clark M, Buchwald D. Severity of somatization and its relationship to psychiatric disorders and personality. Psychosomatics. 1994;35:546–56.
29. Méric C, Gartner M, Collet L, Chéry-Croze S. Psychopathological profile of tinnitus sufferers: evidence concerning the relationship between tinnitus features and impact on life. Audiol Neurootol. 1998;3:240–52.
30. Rutter DR, Stein MJ. Psychological aspects of tinnitus: a comparison with hearing loss and ear, nose and throat disorders. Psychol Health. 1999;14:711–8.
31. Zachariae R, Mirz F, Johansen LV, Andersen SE, Bjerring P, Pedersen CB. Reliability and validity of a Danish adaptation of the Tinnitus Handicap Inventory. Scand Audiol. 2000;29:37–43.
32. Vallianatou NG, Christodoulou P, Nestoros JN, Helidonis E. Audiologic and psychological profile of Greek patients with tinnitus. Am J Otolaryngol. 2001;22:33–7.
33. Bayar N, Oguztürk O, Koç C. Minnesota Multiphasic Personality Inventory profile of patients with subjective tinnitus. J Otolaryngol. 2002;31:317–22.
34. Langenbach M, Olderog M, Michel O, Albus C, Kfhle K. Psychosocial and personality predictors of tinnitus related distress. Gen Hosp Psychiatry. 2005;27:73–7.
35. Langguth B, Kleinjung B, Fischer G, Hajak P, Eichhammer P, Sand PG. Tinnitus severity, depression and the big five personality traits. Prog Brain Res. 2007;166:221–5.
36. Bartels H, Pedersen SS, Van der Laan BF, Staal MJ, Albers FW, Middel B. The impact of type D personality on the health related quality of life in tinnitus patients is mainly mediated by anxiety and depression. Otol Neurotol. 2010;31:11–8.
37. Bartels H, Middel B, Pedersen SS, Staal MJ, Albers FW. The distressed (type D) personality is independently associated with tinnitus: a case-control study. Psychosomatics. 2010;51:29–38.
38. Oliveira JHB, Neuroticismo:. algumas variáveis diferenciais. Aná Psicológica. 2002;4:647–55.

39. Psicastenia RH. Hist Cienc Saude Manguinhos, vol. 17; 2010. p. 669–82.
40. Carlson R. Shrinking personality: one cheer for the big five. Contemp Psychol. 1992;37:644–5.
41. Shih ML, Li LM, Souza LFR. Uso do MMPI (minnesota multiphasic personality inventory) na avaliação de pacientes com síndrome de dor crônica. Arq Neuro-Psiquiatr. 1991;49:426–9 [cited 17 June 2013]. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0004-282X1991000400009&lng=en&nrm=iso
42. Petersen CS, Nunes MLT. Cefaléia tensional crônica e psicopatologia. Psic. 2002;3:30–43 [cited 17 June 2013]. Available from: http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1676-73142002000200005&lng=pt&nrm=iso
43. Sala I, Roig C, Amador-Campos JA, Garcia-Sanchez C, Rodriguez A, Diaz C, et al. Síntomas psicopatológicos en pacientes afectos de cefalea crónica con o sin fibromialgia. Rev Psicop Psicol Clínica. 2009;49:281–7.
44. Ayache DCG, Costa IP. Traços de personalidade e suas alterações em mulheres com lúpus. Rev Bras Reumatol. 2009;49:643–57.
45. Costa P, McCrae R. Neuroticism, somatic complaints, and disease: is the bark worse than the bite? J Pers. 1987;55:299–316.
46. Watson D, Pennebaker J. Health complains, stress, and distress: exploring the central role of negative affectivity. Psychol Rev. 1989;96:234–54.
47. Arbisi PA, Butcher JN. Relationship between personality and health symptoms: use of the MMPI-2 in medical assessments. Int J Clin Health Psychol. 2004;4:571–95.