

REPORT CARD 2023

TINNITUS: THE PHANTOM SOUND (PART I)

Michele Vargas Garcia,
Piotr Henryk Skarzynski
and Milaine Dominici Sanfins



Journal of
**Hearing
Science**

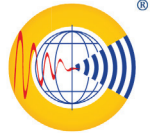


NEW MONTHLY BULLETIN 2023

Michele Vargas Garcia, Piotr Henryk Skarzynski and Milaine Dominici Sanfins

Tinnitus: The Phantom Sound (Part I)

Journal of
**Hearing
Science**[®]



We start 2023 with the launch of our monthly newsletter called **Medincus – Journal of Hearing Science**.

The aim of this project is to report on various subjects related to neuroaudiology, audiology, neuroscience, or otology and discuss them in an accessible manner. To this end, we will invite experts from different scientific areas who are interested in sharing their knowledge.

We invite each of you to join us on this journey.

For February, our theme is tinnitus. This interesting topic has many nuances, which will require periodic updates to our bulletins. But for now let us begin with the basics of tinnitus.

Good reading!





According to the

BRITISH TINNITUS ASSOCIATION (BTA),

tinnitus is the sensation of hearing a sound when there is no external source. The perception of tinnitus can be different for each person. The diversity of symptoms and the variability of its impact on the quality of life of each individual mean that many more studies and research will be needed to better understand the condition.

Eventually, scientists hope, there will be more helpful and appropriate interventions for each case.

A question often asked by people with tinnitus is about the sort of sound they hear.

[The main types of sounds people with tinnitus describe are:](#)

- Waterfall
- Bee or mosquito buzzing
- Chirping of cicadas
- Whistles
- Pressure cooker
- Frying
- Off-tune radio or TV
- Heartbeat
- Many others.

THE PRESENCE OF TINNITUS DOES NOT NECESSARILY IMPLY THAT THERE IS ANY ASSOCIATED SUFFERING OR DISCOMFORT,

although research has found that about 0.5–1.0% of tinnitus patients report that it severely impairs their quality of life. Tinnitus cases can therefore be classified as follows.

A) Tinnitus Disorder:

the perception of tinnitus but there is no impairment to the patient's quality of life.

B) Tinnitus:

the perception of tinnitus but there is no impairment to the patient's quality of life.

One way to quantify and analyze the impact of tinnitus on a patient's quality of life is through standardized and validated questionnaires. The use of questionnaires allows doctors and patients to monitor changes in the intensity of the condition. There are several validated questionnaires that can be applied to patients with tinnitus.

THE PRACTITIONER NEEDS TO EXAMINE EXISTING QUESTIONNAIRES AND CHECK WHETHER THERE IS AN INSTRUMENT THAT HAS BEEN TRANSLATED AND VALIDATED IN THEIR NATIVE LANGUAGE.

Some of the existing questionnaires are

(a) Tinnitus Functional Index, (b) Tinnitus Handicap Inventory, (c) Skarzynski Tinnitus Scale; (d) Tinnitus Questionnaire; (e) Tinnitus and Hearing Survey. There are also other good options available.

Individuals with tinnitus disorder face anguish and negative thoughts which require great cognitive effort to deal with. The person's suffering is invisible because their spouse, family members, work colleagues, or friends are unable to "hear" that unpleasant sound, and this can worsen the patient's psychological well-being. Since tinnitus is invisible, an effective health treatment will depend on the patient themselves taking action and increasing awareness of the condition.

A recent scientific report (Pryce et al. 2023) presented very interesting findings on how patients with tinnitus feel about their constant companion and how they deal with those feelings. The report describes the burden of the disease in people who live

with strong tinnitus every day, and we strongly recommend the paper to our readers **(see reference list)**.

Directed genetic studies are good tools for investigating the presence of hereditary conditions linked to tinnitus. London researchers have **investigated genetic risk factors among more than 90,000 patients with tinnitus** and identified one possible genetic component, the RCOR1 locus (Wells et al., 2021).

It is known that tinnitus can be an isolated symptom or be linked to other pathologies such as hearing loss; however, Wells and colleagues demonstrated that the gene was not linked to hearing loss, which leads one to suspect that there might be a unique link with tinnitus.

These studies and others like them can help elucidate the mechanisms responsible for the generation of tinnitus. In addition, the finding of a possible genetic relationship with the condition opens up a new diagnostic and conceptual perspective, since it strongly suggests that tinnitus

is not purely a symptom, but perhaps a disorder resulting from a genetic alteration.

Clearly, more studies are needed to confirm and extend these findings. Although the initial studies were carried out on patients with tinnitus disorder, in the future it may be possible to investigate patients with other clinical features, perhaps creating new options in the diagnosis and treatment of patients with tinnitus.

References consulted

- 1) McFerran DJ, Stockdale D, Holme R, Large CH, Baguley DM. (2019). Why Is There No Cure for Tinnitus? *Front. Neurosci.*, 13, 802;
- 2) De Ridder D, Schlee W, Vanneste S, Londero A, Weisz N, Kleinjung T, Shekhawat GS, Elgoyhen AB, Song JJ, Andersson G et al. (2021). Tinnitus and tinnitus disorder: Theoretical and operational definitions (an international multidisciplinary proposal). *Prog. Brain Res.*, 260, 1–25.
- 3) Beukes EW, Manchaiah V, Allen PM, Andersson G, Baguley DM. (2021). Exploring tinnitus heterogeneity. *Prog. Brain Res.* 260, 79–99. doi: 10.1016/bs.pbr.2020.05.022;
- 4) Henry JA, Griest S, Zaugg TL, Thielman E, Kaelin C, Galvez G, Carlson KF. (2015). Tinnitus and hearing survey: a screening tool to differentiate bothersome tinnitus from hearing difficulties. *Am J Audiol.* Mar;24(1):66-77. doi: 10.1044/2014_AJA-14-0042. PMID: 25551458; PMID: PMC4689225.
- 5) Skarżyński H, Gos E, Raj-Koziak D, Skarżyński PH. (2018). Skarzynski Tinnitus Scale: validation of a brief and robust tool for assessing tinnitus in a clinical population. *Eur J Med Res.* Nov 1;23(1):54. doi: 10.1186/s40001-018-0347-4. PMID: 30382881; PMID: PMC6211414;
- 6) Hallam RS, Jakes SC, Hinchcliffe R: Cognitive variables in tinnitus annoyance. *Brit J Clin Psychol/Brit Psychol Soc* 1988, 27(Pt 3):213–22.
- 7) Newman CW, Jacobson GP, Spitzer JB. (1996). Development of the tinnitus handicap inventory. *Arch. Otolaryngol – Head Neck Surg.*, 122, pp.143-148;
- 8) Henry JA, Griest S, Thielman E, McMillan G, Kaelin C, Carlson KF. (2016). Tinnitus Functional Index: development, validation, outcomes research and clinical application. *Hearing Research*; 334, pp. 58-64.
- 9) Pryce H, Dauman N, Burns-O’Connell G. (2023) What is the burden of tinnitus? *Front. Psychol.* 13:981776. doi: 10.3389/fpsyg.2022.981776;
- 10) Wells HRR, Abidin FNZ, Freidin MB, Williams FMK, Dawson SJ. (2021). Genome-wide association study suggests that variation at the RCOR1 locus is associated with tinnitus in UK Biobank. *Scientific Reports.*; 11:6470. <https://doi.org/10.1038/s41598-021-85871-6>

Authors



**PROF. DR. MICHELE
VARGAS GARCIA**

- Associate Professor in the undergraduate course in speech therapy and the graduate program in human communication disorders at the Federal University of Santa Maria (UFSM);
 - Master and PhD in sciences at the Federal University of São Paulo (UNIFESP);
 - Specialization in speech therapy with emphasis in audiology at the Federal University of Santa Maria (UFSM);
 - Speech therapist and audiologist at the Federal University of Santa Maria (UFSM);
- Coordinator of the Hearing Electrophysiology and Behavioral Assessment Group at the Federal University of Santa Maria (UFSM).



**PROF. DR. PIOTR HENRYK
SKARZYŃSKI**

- Professor, ENT, Master and Doctorate by Medical University of Warsaw;
- He realises scientific work, didactic, clinical and organizational work in World Hearing Center of Institute of Physiology and Pathology of Hearing, Institute of Sensory Organs and Medical University of Warsaw;
- Specialist in ENT, pediatric ENT, audiology and phoniatics, and public health. Participated in the 3rd Stakeholders Consultation meeting during which the World Hearing Forum of WHO was announced;
- Member of the Roster of Experts on Digital Health of WHO, Vice-President and Institutional Representative of ISfTeH;
- President-elect of International Advisory Board of AAO-HNS, member of Congress and Meeting Department of EAONO, Regional Representative of Europe of ISA, Vice-President of Hearing Group, Auditor of EFAS, member of the Facial Nerve Stimulation Steering Committee;
- Board Secretary of the Polish Society of Otorhinolaryngologists, Phoniaticists and Audiologists. Member of Hearing Committee (2018–2019);
- Goodwill Ambassador representing Poland at the AAO-HNSF 2021 Annual Meeting & OTO

- Experience, and since 2021 a member of Implantable Hearing Devices Committee and Otology & Neurotology Education Committee of AAO-HNS;
- Consultant Committee of International Experts of CPAM-VBMS (for special invitation), honorary member of ORL Danube Society, and honorary member of Société Française d'Oto-Rhino-Laryngologie;
 - Member of the Council of National Science Center;
 - Expert and member of numerous national organization.



**PROF. DR. MILAINE
DOMINICI SANFINS**

- Postdoc at the World Hearing Center, Warsaw, Poland;
- Sandwich Doctorate by School of Medical Sciences, State University of Campinas (FCM-UNICAMP) and by Università degli Studi di Ferrara/Italy;
- Expertise in Audiology by Federal Council of Speech Therapy and Audiology;
- Speech Therapist and Audiologist, Master by Medical School of University of São Paulo (FMUSP);
- Professor of the Post-graduate program in Clinical Audiology at the Albert Einstein Israelite Institute of research and teaching;
- Coordinator of the Specialization in Electroacoustics and Electrophysiology at Faculdade Inspirar;
- Invited professor in undergraduate, specialization and postgraduate courses;
- Reviewer of scientific articles in the area of Neuroaudiology, Neuroscience and Audiology;
- Research group member, Institute of Physiology and Pathology of Hearing, Kajetany, Poland.