

Awareness alert: adverse effects of hearing loss on mental and physical health

Introduction

Hearing loss

More than 40 million Americans suffer from various degrees of hearing loss. The clear majority of these also have associated tinnitus annoyance. There are more people under the age of 60 with hearing loss than there are over the age of 60, albeit the per capita concentration of hearing loss is much higher in the over 65 age group.

Hence, incidence of hearing loss is steadily growing in the general population, and, at least in the United States, is increasing into the younger ages. Hearing loss occurs because of congenital stressors, developmental delays, early ear infections, acoustic trauma, food additives, tooth/jaw sepsis migrating to the external auditory canal, ototoxic prescription drugs, and environmental toxicity, and as a consequence of chronic diseases, such as diabetes, neuropathies osteoarthritis, and cardiovascular disease.¹

What may be even less recognized to many is that when hearing loss is corrected, remarkable health improvements are likewise noted. Children perform better in school, possess more in control of emotions, sleep better, and experience better mental and physical development.² Those of working age are significantly more productive, make higher wages, and are promoted more often.³ Older adults with optimized hearing are healthier, take far fewer medications, need fewer medical services, and retain memory and mental acuity better.⁴

This paper briefly reviews recent research findings in hearing loss and tinnitus effects on general health, cognition, and quality of life. For those in denial, which is easily the biggest deterrent for seeking hearing of their hearing loss help,⁵ the truth has come out: Better hearing means a better you in every way!

Tinnitus, Sensorineural Hearing Loss, and 4,000 Hz

Of all species of living creatures, humans hear the high pitch tone of 4000 Hz best of all. Hence, when humans lose that region of frequencies of 3,000-4,000 Hz, in their hearing ability, a number of important health issues may transpire: the heart's pericardial sac becomes stressed, blood pressure elevates, and stress levels rise, and sleep disorders occur.⁶ Notice, in figure 1 (above) that the most notable change as hearing acuity decreases over time is the notch at 4KHz. This region is also associated with loss of consonantal of speech clarity and speech-in-noise ability, spatial function, chronic depression, anxiety, learning, short-term memory and cognitive health. Hearing loss of this type affects men at least 2.8:1 over women.⁷

For those with long-term tinnitus associated with their hearing loss, the 3000-4000Hz region is often described as a "high pitch ring" and is heard by millions of hearing impaired individuals in the U.S. Invariably, this means the cochlear hair cell degeneration of the frequency region around 3,000-4000 Hz (and above) is causing a sympathetic tone not unlike the "phantom limb effect". This researcher has described tinnitus in this range as "the search party sent in search of the missing hearing; once found—through amplification and/or

Volume 10 Issue 3 - 2018

Max Stanley Chartrand

Managing Director at DigiCare® Behavioral Research, USA

Correspondence: Max Stanley Chartrand, Managing Director at DigiCare® Behavioral Research, USA, Email chartrandmax@aol.com

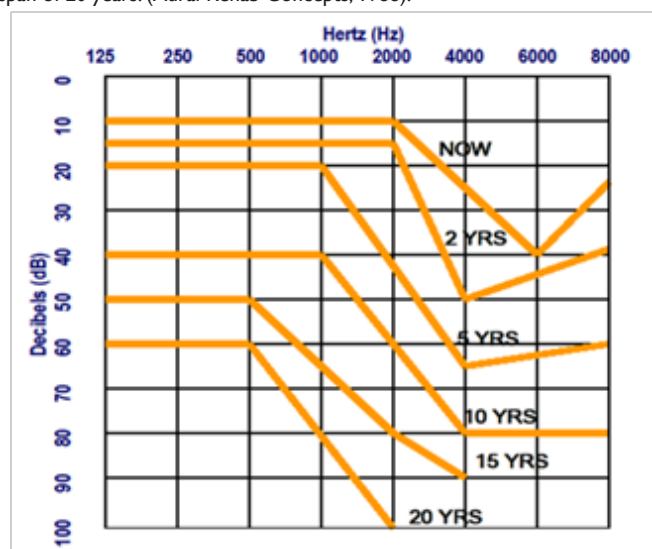
Received: April 25, 2017 | Published: May 25, 2018

medical treatment--the search party is called off and the intensity of the sound decreases and annoyance is reduced".⁸

It just happens that this pitch is also near or at the sinus node tone of the human heart. This explains the strong correlation between long-standing sensorineural hearing loss and hypertension, as well as the number of medications being prescribed to control the hypertension.⁹

Such artifacts are usually caused by an advancing high frequency hearing loss that needs attention, decrease in understanding consonant sounds of speech, speech defects, difficulty hearing in noise. These set up the hearing loss sufferer for psychological and psychosocial challenges to their quality of life and in social relationships.¹⁰ consequently, it is vital that the correction of high frequency loss through amplification be considered to be vitally important for your lifestyle, social, occupational, and communicative well-being.

Figure 1 The typical pattern of progressive sensorineural hearing loss over a span of 20 years. (Aural Rehab Concepts, 1988).



Recent research shows that hearing loss sufferers

- Utilize medical services approximately five times as much as normal hearing individuals.¹¹

- b. Suffer cardiovascular events and hypertension two to three times as often as their normal hearing counterparts.^{12,13}
- c. Older adults with uncorrected hearing loss suffer significant mis/over-diagnosis of Alzheimer's disease.¹⁴
- d. Mild hearing loss increases Alzheimer's risk 2x, moderate hearing loss 3x, and severe loss 5x.¹⁵
- e. Uncorrected hearing loss is associated with brain shrinkage of certain areas of the brain critical for memory and other cognitive functions.¹⁶
- f. Other significant health/hearing loss associations
- g. Brandeis University Study (2006) in a PETT scan/glucose study on short-term memory found that hearing loss causes the brain of hearing impaired individuals to burn so much glucose that simple tasks like responding in conversation or in classrooms become challenging.¹⁷
- h. National Council on Aging Study (2013) found that uncorrected hearing loss "significantly and negatively impacted quality of life for older adults."¹⁸
- i. Better Hearing Institute Study (2012) found that working age hearing loss sufferers make an average of \$12,000 less in annual wages than workers with normal hearing in the United States.¹⁹
- j. Brandeis University Study (2012) on tinnitus found that serious tinnitus can burn as much brain glucose during sleep as reading a book while awake, causing chronic fatigue syndrome-like symptoms.²⁰

Consumer Guidelines for Assessment, Remediation & Treatment

- i. Build personal case history by documenting past ear infections, exposure to loud noise (occupational and recreational), balance issues, and tinnitus.
- ii. Have your hearing tested annually, starting with a baseline audiogram and note when it reaches the type of audiogram noted at year 2 to 5 and ask for a trial of amplification to see if it improves your communication, health, and overall well-being.
- iii. If your hearing loss is quite significant (like year 10 above), inquire about assistive technologies & coping strategies that can assist in critical and large area listening situations.
- iv. If you develop ringing of the ears (tinnitus), inquire about available solutions, such as special digital hearing aid programming, dietary and medication changes, and necessary ear protection to try to make the tinnitus softer and less bothersome.
- v. Do not accept a mental health diagnoses for Alzheimer's/dementia as conclusive without addressing first the hearing loss. No mental health assessment in older adults is valid without first identifying and resolving the auditory component.
- vi. Locate a reputable hearing health clinic that knows you and respects your need to maintain your best hearing health and stay with them!

Author's note

This contribution to the literature is designed as a consumer education primer to increase awareness among consumers and their

primary medical professionals about the deleterious health effects of untreated hearing loss and tinnitus. Reprints for the otolaryngology practice are suggested for optimal dissemination of this vital information.

Acknowledgments

None.

Conflict of interest

None.

References

1. Hearing Link. *What is sensorineural hearing loss?* 2017.
2. CDC. *Hearing Loss in Children: Treatment and Intervention.* 2017.
3. Better Hearing Institute. *Address Hearing Loss in the Workplace and Reap the Rewards.* 2017.
4. Johns Hopkins Medicine. *Hidden Risks of Hearing Loss.* 2017.
5. Kochkin S (2007) *MarkeTrak VII: Obstacles to adult non-user adoption of hearing aids.* Better Hearing Institute. 2007;60(4):24–50.
6. Chartrand MS. *Tinnitus Retraining Therapy and Concepts of Amplification.* 2004.
7. Staab W. *Hearing in the Elderly, Part II.* Audicibel, Spring. 1990. p. 16–22.
8. Chartrand MS. *Tinnitus & Amplification.* DigiCare Behavioral Research, CE Seminar. 2017.
9. Mondelli MF, Lopez AC. Relation between Arterial Hypertension and Hearing Loss. *International Archives of Otolaryngology.* 2009;13(1):63–68.
10. Chartrand MS. *An Exploration of Psychological and Physiological Causes of Failure to Fit.* 2007.
11. Kochkin S. *The Impact of treated hearing loss on quality of life.* Better Hearing Institute. 2013.
12. Chartrand MS. *Hearing Instrument Counseling: Practical Applications in Counseling the Hearing Impaired, 2nd edition.* Livonia, MI: Intl Institute Hrg Instr Studies. 1999.
13. Science Daily. *Hearing Impairment News.* 2017.
14. Chartrand MS. *Undiagnosed Pre-Existing Hearing Loss in Alzheimer's disease Patients?* 2005.
15. Johns Hopkins Medicine. *Hearing Loss and Dementia Linked in Study.* 2011.
16. Johns Hopkins Medicine. *Hearing Loss Linked to Accelerated Brain Tissue Loss.* 2014.
17. Science Daily. *Brandeis Study: Poor Hearing May Cause Poor Memory.* 2005.
18. McCarthy P, Roeser R. *Hearing Loss Counseling (Auditory Rehabilitation).* 2013.
19. Better Hearing Institute. *Address Hearing Loss in the Workplace and Reap the Rewards.* 2007.
20. Vestibular Disorders Association. *Tinnitus: Ringing of the Ears, an Overview.* 2017. p. 11.