

Why do so many people experience hearing loss? It's not just a matter of growing older

Have you ever observed hearing damage in action? How many times have you seen someone on the street or public transit wearing earbuds where you can make out the lyrics to the song they're listening to?

By David Hayes, The National Post, December 14, 2019

About a dozen years ago, I saw an ear, nose and throat specialist at Mt. Sinai Hospital in Toronto. After taking a battery of hearing tests, I laid on a gurney while the specialist peered in my ears. He was a little older than me, in his early 60s, and like many specialists he had a no-nonsense attitude that suggested he wasn't interested in small talk.

Still, looking at my test results, he said, "Your ability to hear higher frequencies is significantly compromised. Judging by your age, let me hazard a guess: Back in the '60s and '70s, you went to a lot of really loud rock concerts?"

"Yep," I said, "and in my late teens into my 20s I played in rock bands. Night after night, I stood eight feet in front of a high-powered bass amp the size of a refrigerator and loud enough to fill a high school gymnasium."

The specialist raised both eyebrows. "Hmm, that could explain it," he said dryly, turning away to jot some notes on my file. He was no more than three feet away when I asked, "Do you feel your hearing was affected by loud concerts as well?"

There was a long pause before he glanced over his shoulder and said, "Pardon?"

• • •

According to the Hearing Foundation of Canada, I'm one of around three-million Canadians experiencing hearing loss, and among the 50 per cent of that number who are 65 or older. Oh, and I'm not among the only one in six who wear hearing aids. These statistics may be conservative, as hearing loss is considered a chronically under-reported health issue.

When our teeth hurt, we go to a dentist because to ignore them usually leads to a painful medical crisis. If we need glasses, we usually get them, in part because so many people wear them and because glasses can be a fashion statement. To most people, though, hearing aids are profoundly unfashionable and a public statement to the world that "I'm old." That's why people who notice they're having trouble hearing typically wait more than 10 years before they do more than turn up the volume on the TV and say "huh?" a lot to their family members, friends, and co-workers.

While we tend to associate it with age, that's only partly accurate. Hearing loss that isn't congenital or the result of an illness or injury does tend to emerge when we're older. But we've been doing the damage for years. All those rock concerts and standing in front of loud amplifiers in my 20s was damaging my ears; it just took a while for the damage to become obvious.

Have you ever observed hearing damage in action? How many times have you seen someone on the street or public transit wearing earbuds where you can make out the lyrics to the song they're listening to? According to a Canadian Health Measures Survey of 2014-15, "53 per cent of Canadians aged three to 79 have used earbuds or headphones to listen to music, movies or other types of audio in the last 12 months. One-third of those individuals regularly listened at a volume that was at or above three-quarters of the maximum volume."

All of which makes *New Yorker* writer David Owen's new book, *Volume Control: Hearing in a Deafening World*, so timely. In the first pages, he sums up the problem, which includes his own behaviour, in one sentence: "Hearing problems are often aggravated by the human tendency to do nothing and hope for the best, usually while pretending that everything is fine."

And yet, he adds later, "there is no better time in all of human history to be a person with hearing loss." Where once the only solution was an ear trumpet, today digital hearing aids are better than ever and even over-the-counter headphones are available that can help. Owen is nothing if not thorough, talking to many top hearing experts, including several from the world-renowned Massachusetts Eye and Ear.

There he learns that "cochlear synaptopathy," or "hidden hearing loss," is linked to noisy environments, yet noise-related protections in U.S. workplaces "are wholly inadequate." He also learns that scientists at Mass Eye and Ear first discovered that stem cells found in the inner ear can be converted into sensory cells needed for hearing, a step toward the possibility of restoring a deaf person's ability to hear. (So far, scientists have managed to restore hearing in mice using this technique.)

I imagine some readers — let me guess, those most resistant to hearing aids — have stopped reading by now. (See David Owen's early statement.) For the rest of you, time to learn that you're not only damaging your hearing by going to rock concerts, walking by jackhammers breaking up the sidewalk, cranking the volume in your ear buds and using power tools, lawn mowers and leaf blowers. Owen explains that even small household appliances like food processors, blenders and hair dryers can generate noise at levels that will leave permanent damage.

And restaurants and bars are major offenders. Owners are known to crank up the volume of background music as the night goes on, encouraging less talking and more drinking as well as driving out older customers. (There is an iPhone app called SoundPrint, described as "Yelp for noise levels." The app's developers, Owen reports, say in New York City the quietest restaurants are Chinese, Indian and Japanese. The loudest: Mexican.)

Owen concludes: "What's remarkable is not that so many of us have trouble following conversations at cocktail parties but that anyone past adolescence can hear anything at all."

The book is divided into sections relating to either the mechanics of hearing and sound or technologies dealing with hearing loss. As a writer, Owen is gifted at explaining technical concepts in clear language: "The principal components of the auditory system are coiled inside a spiralling fluid-filled chamber about the size of a pea, yet a person whose ears are fully functional can hear vibrations so faint they displace the air molecules inside their ear canals by distances measured in trillionths of a meter."

He explains that the all-important "hair cells" are not, in fact, the embarrassing hairs that stick out of many old people's ears. They are submicroscopic cylindrical tubes deep inside the ear that translate sound waves into electrical signals that end up in the auditory centres of the brain. Finally, after describing the ear drum, the various tiny bones in the middle ear (one of them "similar in shape to a hummingbird's wishbone but roughly half the size"), the snail-shaped cochlea ("less than half the diameter of a dime") and the Eustachian tube that connects the ear to the throat, he notes "ears are a Rube Goldberg machine... and almost inconceivably sensitive."

• • •

If I think about it, sitting here at my keyboard, I can hear a faint sizzling sound. It's constantly there but I've grown accustomed to it. Like Owen, I suffer from tinnitus. What does it sound like? Describing his own symptoms, Owen wrote it's like "the hum of some high-tension power lines," or "the buzz of a ceiling full of dimmed halogen lamps" or "the drone of the cicadas I listened to on sweltering summer nights."

About 50-million U.S. adults experienced tinnitus over the past year, of which roughly 16-million have it constantly, or at least on a daily basis. The Canadian Hearing Society estimates that between 10 and 15 per cent of the population suffer from it. There are many possible causes, including a build up of wax (when removed, the tinnitus disappears), inner ear hair cell damage, or tumours. Tinnitus usually accompanies hearing loss, although it's not considered a cause of it. Owen reports that the increasingly accepted theory is that "tinnitus is analogous to phantom limb pain, the sometimes intense discomfort that many amputees perceive in parts of their body that are no longer there." So, the auditory centres in a tinnitus sufferer's brain are guessing at nerve signals they're not receiving.

In case you were wondering, there is little modern medicine can do to cure it. There is cognitive therapy and medications used to treat anxiety or depression. Some people use hearing aids to, with luck, make what they want to hear sound louder than the tinnitus. Some use devices or apps that play sounds meant to mask the buzzing. Owen quotes a distinguished professor of otology and laryngology at

Harvard Medical School who suggests that tinnitus sufferers “buy shoes one size too small, so they think about their feet instead.”

In the pre-Industrial world, life may have been nasty and brutish, but at least it was quieter. The loudest everyday sounds were thunder, church bells and the odd hunter using gunpowder (unless you were caught in the middle of a war). The first occupational casualties to hearing loss were blacksmiths (pounding on metal) and the ringers of church bells until the Industrial Revolution introduced large, loud machines including, by the early 19th century, automobiles. Flash forward to the early 1970s when I went shopping for a 400-watt Acoustic bass amplifier.

I agree with Owen; if I had to do it all over again, I’d have started wearing ear protection in my teens. Of course, only a very foolish man in his 60s would imagine his 18-year-old self would have been caught dead wearing ear plugs.