

Interview: “The world is becoming a noisier place each year”

By Kristin Hübner, DTI

Although noise exposure in dentistry may appear to be minimal, the potential for noise-induced hearing loss is an issue in the field. Various studies have shown that a significant number of dental professionals are affected each year. Aiming to address this matter is US dentist Dr Sam Shamardi, who developed noise reduction earplugs especially designed for use in the dental office. He recently introduced the product, first launched in 2014, at Dental Expo South in Christchurch in New Zealand, where the company signed a new distribution deal. Dental Tribune Online had the opportunity to talk with Shamardi about noise pollution in the dental practice and the unique technology used in the DI-15 earplugs.

Dr Shamardi, what sounds in the dental office are damaging to hearing?

All of them! We as dental professionals are exposed to constant dangerous levels of noise that have a long-term, permanent effect on

our hearing. Most usually identify with the high-speed handpiece, but high-speed suction, ultrasonic instruments and cleaners, laboratory machines and model trimmers all cause damage.

Sounds that are 85 dB and above result in hearing damage and are directly related to the duration and frequency of exposure, among other factors. Thus, extreme noise exposure for short periods can be as damaging as mild exposure for prolonged periods. Considering that as dental professionals our average careers are 35 years long and typically 40 hours a week, our exposure time spent in this chronic noise environment is substantial.

The dental literature shows values for dental equipment that clearly exceed 85 dB and in many cases even 100 dB. Noise standards further illustrate that, at these ranges, as little as 15 minutes per 2 hours of exposure daily can lead to permanent damage; thus, it is no surprise that we all know colleagues with hearing issues as a result.



It really is not a question of will our ability to hear be affected through occupational exposure to sound, but more a question of when and to what extent, and the best way of preventing this from occurring is by using hearing protection.

Is it important to protect one's ears at all times or just during noisy procedures?

It is always best to protect oneself at all times; do we wear gloves, masks, gowns and loupes during major procedures only or for all examinations and routine treatments?

Certainly, some procedures will have a greater noise output and exposure



Dr Sam Shamardi, developer of noise reduction dental earplugs DI-15, is a periodontic specialist at Boston Center for Oral Health and a part-time clinical instructor at the Harvard School of Dental Medicine, both in the US. (Photograph: private)

than others, but a dental office is in a constant state of action and there is always something noisy going on in another room even if one is not involved in a noisy procedure oneself.

You developed the DI-15 earplugs. How do they work?

The DI-15 high-fidelity electronic earplugs are revolutionary and the first of their kind in dentistry. They utilise patented advanced circuitry in a tiny microchip that provides protection against all damaging sounds in the dental environment, as needed, while still allowing for 100 per cent clear hearing. Thus, one's ability to communicate clearly with patients and staff is not compromised, and hearing damage is prevented.

Think of them almost as smart earplugs: damaging sounds are instantaneously identified, isolated and compressed to safer levels, while normal sounds pass through naturally, as if nothing is in one's ears. Imagine the sound of a blasting radio in the car: now picture turning the volume down to a comfortable setting; one still hears everything but without the strain!

What gave you the idea to develop them?

It was not long after starting to practise that I recognised the irritation and additional stress I experienced from the shrill of the handpiece and, even more, the high-pitched shrieks from the suction; it can truly drive one nuts. I also noticed how many of my colleagues complained of tinnitus symptoms and hearing difficulties, and I knew there was a serious problem that was not being recognised.

Once I started looking for solutions, I realised that nothing existed, and the only options, such as foam earplugs, were not practical because sounds were muffled and I could not speak with my patients or staff. Thus, I started looking into technologies that could address this issue

and wanted to tailor a product that would focus on the sounds and frequency exposures in dentistry. Fortunately, after much research and testing, I was able to team up with the pioneers of in-ear technology to create the DI-15.

Should dentists and their assistants start wearing the earplugs from early on?

Dentistry is known as the field of prevention, yet when it comes to protecting our hearing, we have completely ignored our motto. With iPods and other technologies, studies have conclusively shown that hearing loss is now starting at earlier ages than in previous generations, and even children are starting to experience permanent damage as well.

Dental professionals are bombarded from the first day of university when sitting with 35–150 of their classmates in a room practising for hours, not including regular noisy daily activities outside of the dental setting. Thus, the earlier one starts, the more of one's hearing can be preserved. The world is becoming a noisier place each year, so protection and prevention are essential. [DTI](#)

Thank you very much for the interview.

Editorial note: The DI-15 high-fidelity electronic earplugs can be ordered worldwide at a cost of US\$625, including a hard travelling case, all tips and accessories and a pack of ten batteries. More information can be found at www.dentalinnovationsllc.net.

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