

# Hazardous Noise Level Measured in a Dental Clinic: A Comprehensive Study

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## Objectives

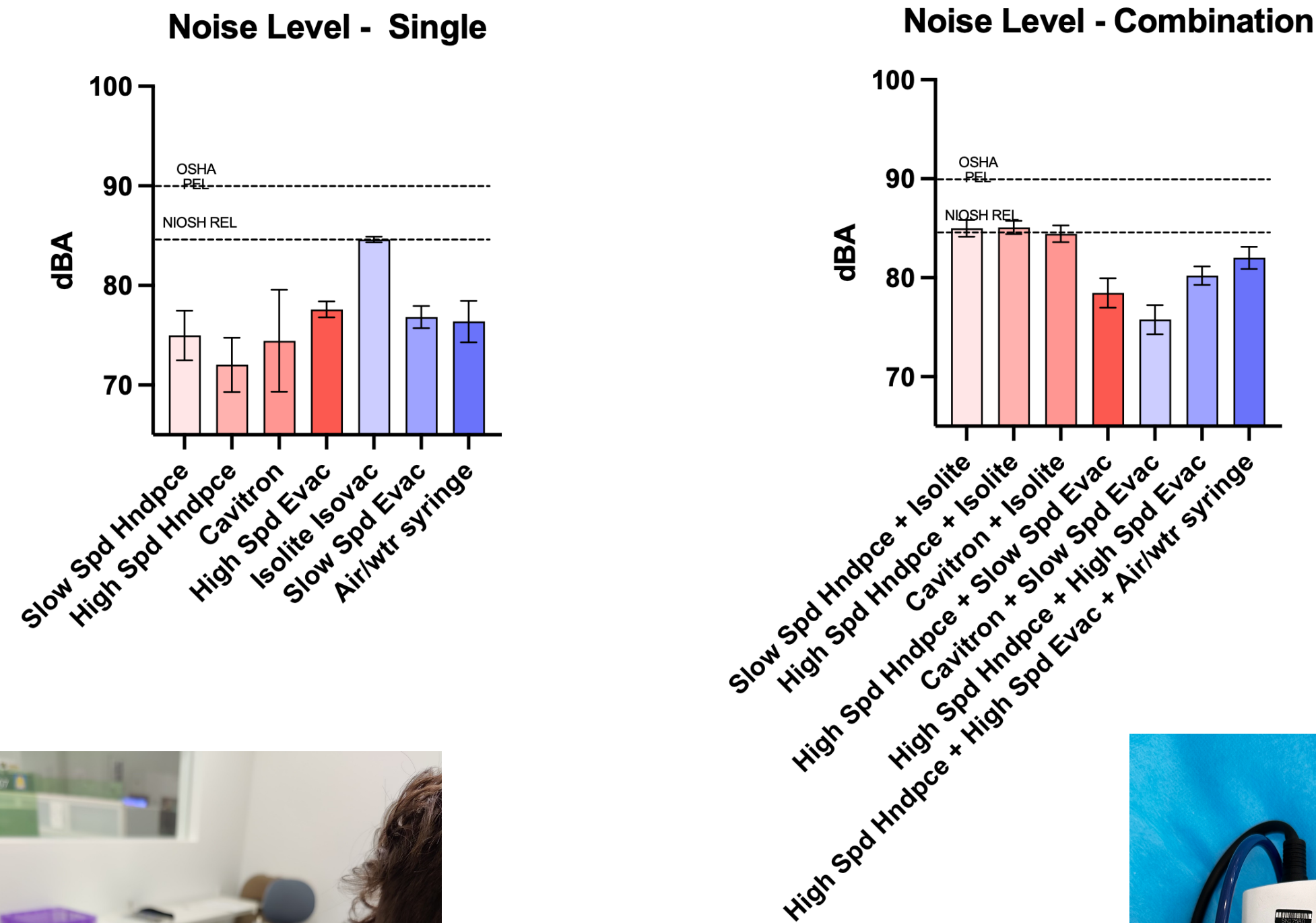
This project intends to determine the amount of long term noise exposure to dentists in the modern-day dental environment. By systematically conducting noise collection within a standard dental environment, the institution can identify ways to minimize the amount of noise within the dental environment. This will provide new instruments and or resources to dentists to mitigate the overall risk of dental health professionals in relation to hearing loss over time.

## Methods

The population of interest for this study is dental professionals in a clinical setting. The goal was to determine the effects of noise exposure of dental tools used based on the distance to the dentist's ears. The tools chosen for this experiment are commonly used in everyday dental practice and can often be used in conjunction with another tool. Measurements were recorded by using a Type 2 sound level meter with a slow weighting setting in dBA adjacent to the tools while in use. The distance from the tool to the dentist's right ear and left ear was measured and averaged to be 22.75 inches. The sound level meter was placed by the dentist's ears in order to obtain accurate noise levels. Ten trials were taken per ear and the average sound measurement for each tool was recorded.

## RESULTS

When in use, single dental instruments, excluding Isolite Isodry, remain below the noise threshold determined by NIOSH. Yet, when using two or more of these instruments concurrently, the noise level rises to a level that poses a risk to the hearing of dental professionals and staff. The use of Isolite Isodry, alone or in use with another instrument, appears to act as a common denominator for risk of audiological injury. It is important to consider that the data was collected at moments in time, not accounting for the amount of time that each instrument would be employed in a single session.



## Conclusion

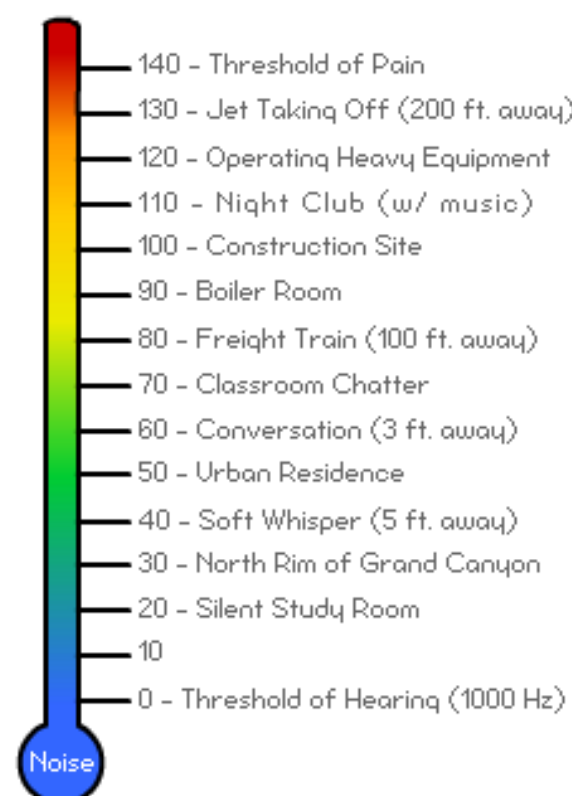
It is well understood that the dental environment is not one known for its tranquil ambience. Patients will often reference the high-pitched whirring of the drill as one of the more significant aversions when sharing their feelings about visiting the dentist. We must consider that while a patient experiences the amalgamation of noises of various dental instruments for an hour or two at a time, the dentist is exposed to this noise level for eight hours a day for about 260 days each year. It is no surprise that the threat of hearing impairment or loss may be an occupational risk of dentists and one that has not been neglected in research. By conducting research on how loud the overall dental environment is and recording specific quantitative values, we can better understand the long term effects of this environment on dental professionals.

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## Typical Sound Levels (dBA)



## Materials

- VLIKE LCD Digital Audio Decibel Meter Sound Level Meter
- Bien Air (NOVA 1:5 L) Electric Handpiece with a 330 Carbide Bur
- KAVO Intramatic 20E Slow Speed Handpiece with a #4 Round Latch Bur
- Cavitron (Cavitron® Select™ SPS™)
- Isolite Isodry
- HVE White Evacuation Suction
- Saliva Ejector
- Air/water syringe



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