



National Association of School Nurses

POSITION STATEMENT

Noise Induced Hearing Loss

HISTORY:

The National Health and Nutrition Examination Interview Survey (2002) revealed that noise is the number one cause of impaired hearing. Noise induced hearing loss (NIHL) is a sensory neural type loss involving injury to the inner ear in which the severity of the loss depends on the intensity and the frequency of the sound exposure. Data shows that there is considerable variation in human sensitivity with respect to hearing impairment, and therefore the hazardous nature of a "noisy environment" is described in terms of "damage risk." Physical ear discomfort to noise exposure starts from sound pressure levels of 80-100 decibels (dB). A continuous noise level of 85 dB can result in hearing damage as well as create various other negative effects on health (League for the Hard of Hearing, 2002). Noise induced hearing loss occurs gradually and without pain. Often, by the time a person realizes that there is a hearing problem, it is too late to reverse its effects; permanent damage has occurred.

DESCRIPTION OF ISSUE:

Approximately 30 million Americans are affected by hearing loss. In addition, 50 million have tinnitus (a ringing sound in the ear). Niskar and colleagues estimated that 12.5% of all children in the United States aged 6 to 19 years have noise-induced threshold shifts in one or both ears (2001). Today's children are exposed to a variety of noisy situations at home, in school and during leisure activities. In the home there are stereos, TV, CDs, Walkmans[®], air conditioners, vacuum cleaners, hairdryers, dishwashers, and the general noise confusion from raised voices and yelling.

Chermak and Peters-McCarthy found that 43% of elementary students routinely listen to a personal stereo or TV at a loud volume (1991). While at school students may be in crowded classrooms, be involved in band, and attend shop classes where power tools are used. They are also subjected to overhead projectors and computer noise and are often housed in poorly acoustically constructed buildings. Some common outdoor and recreational noise exposures include street, rail, and airplane traffic, building construction, video arcades, dance halls, rock concerts, all terrain vehicles and dirt bikes without adequate muffler systems, and hunting with firearms. Very few students use any kind of hearing protection when exposed to these conditions.

A temporary hearing threshold shift is experienced immediately after exposure to a loud noise and is noted by a dullness in the ability to hear. A permanent shift may occur if individuals are exposed to excessive noise for longer periods and can continue to increase for up to 5 years after the exposure. With a mild hearing loss due to excessive noise, speech and language development can be delayed by age 5, affecting the student's ability to pay attention in the classroom, and progressing to a debilitating loss as the child grows older. Research shows that over the last 10 years the percentage of second graders with hearing loss has increased 2.8 times, while hearing loss for eighth graders has increased over 4 times. (Montgomery and Fujikawa, 1992)

Exposure to loud noise has been correlated with numerous physiological changes, sleep difficulties, digestive problems, delayed emotional development, stress related disorders, behavioral problems, body fatigue and possible immunological effects. (Bronzaft, 1997)

RATIONALE:

A primary role of the school nurse is to promote healthy lifestyles and practices (NASN, 2002). Addressing noise induced hearing loss should be an integral part of the school nurse's responsibility. Bess, Dodd-Murphy, and Parker report that those with minimal sensorineural hearing loss scored lower on the Comprehensive Test of Basic Skills, exhibited more behavioral problems, and tended to have lower self-esteem. (1998) Additionally, these authors report that 37% of students in this study failed at least one grade compared to those without identified hearing problems.

Many classrooms are unsuitable for tasks centered around learning to read, the development of listening skills, and the ability to understand unfamiliar sounds (Lubman, 2001). The Acoustical Society of America postulates that 25% of classroom information can be missed because of excessive noise or reverberation (2001). Deficits in reading and language skills due to poor classroom acoustics are cumulative and can be devastating to younger elementary students. Excessive noise has an impact not only on the student, but also the teacher, causing fatigue, frustration, and the need to shift teaching modes to compensate for conditions that hinder the learning process.

The daily noise exposure level has increased as the country has become more industrialized and advanced in communications, but little attention has been paid to this problem and its consequences. This is due, in large part, to the fact that the first stages of noise-induced hearing loss are often not recognized because they do not impair speech communication. School nurses need to be aware of this problem and be advocates for students concerning this preventable health concern.

CONCLUSION:

It is the position of the National Association of School Nurses that hearing loss affects communication and has a negative impact on the social, emotional, and educational development and well-being of students. School nurses can serve an important role in the prevention, education, identification, and intervention for students with noise induced hearing loss. Parents need to be educated on how to protect their children's hearing at home, and similar efforts need to be made to educate teachers about improving the school environment. In addition, efforts must be made to increase administrators' and school boards' awareness of this health hazard so they will ensure that efforts are made to promote classroom environments that are acoustically correct and conducive to learning. Denehy says that school nurses should seize this "golden opportunity" to promote health in the classroom and help reduce the prevalence of NIHL (1999). Students must also be educated, starting at the elementary level, about noise and how it can affect their hearing, their health, and their learning. School nurses providing hearing screenings and the referral process must continue with this service, intervene for those identified with problems, and advocate for the development and dissemination of hearing conservation programs in their school districts and their communities.

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