The Non-Auditory Health Effects of Noise Exposure

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There are many noise sources that people are exposed to in their daily lives. Noise exposure includes occupational, residential/community, and recreational settings. All of these have been receiving increased attention in recent years, both for their effects on human hearing and for a variety of non-auditory, long-term somatic health effects. Research (especially field research) on these non-auditory health effects of noise is typically complex and technically difficult, expensive to conduct, and subject to misinterpretation due to statistical interactions between noise and other stressors. This situation has improved considerably in the past twenty years, and new data are now available on a variety of effects. Research on the non-auditory effects of noise has shown that environmental and occupational noise exposure acts as a stressor, and can result in stress-related health effects. Although reported health effects are weak effects occurring after long-term exposure, even a weak effect is cause for concern, especially if it affects large segments of the population or particularly vulnerable subpopulations. In spite of the research that has been conducted in many countries over the years, these efforts have still not been able to provide us with definitive answers to many of the more detailed scientific questions which need to be addressed.

Scientists from different countries use different definitions of which effects should be considered under the category of "non-auditory health effects". Using a broad definition of general health, such as that advocated by the World Health Organization, however, the following topics are generally considered the most important for non-auditory somatic health effects research at the present time:

- Direct somatic health effects: Adverse effects of noise are believed to result from the way the person responds to noise as a stressor, rather then to any direct damage to body tissues. The primary concerns are cardiovascular effects (including hypertension and ischemic heart disease), and possible immune system effects.

- Indirect effects on health: Sleep disturbance and impairment in reading acquisition in children are currently the major indirect effects of interest.

- Combinations of exposures and associations of effects (interaction effects): Somatic health effects and annoyance may be interlinked is such a way that annoyance leads to accumulated stress and increases the risk for direct, long-term somatic health effects, such as cardiovascular and other chronic physiological effects of noise exposure.

- Vulnerable Groups: Of primary concern are, inter alia, persons with hearing deficits, babies and young children, and people with particular diseases or medical problems (such as high blood pressure).

Besides increasing our understanding of these health effects of noise exposure, one of the major purposes of scientific research on these topics is to provide data which can form the basis of recommendations for government policy-makers to establish regulations and guidelines regarding noise exposure criteria for various environments. The members of this panel were selected because of their long-standing involvement in research on the effects of noise and their roles in providing noise exposure policy recommendations to national governments and international organizations.
This panel will discuss the various potential non-auditory human health effects of noise exposure and will address both occupational and residential/community settings. The members of the international panel for this session will each provide a short presentation describing their current involvement in relevant research programs and their national/international policy-making support efforts in these areas. These short presentations will be followed by a general panel discussion of recent health effects research data, selection of specific health effects (end points) for further investigation, issues regarding the choice of health effects research methodologies, data collection and analysis techniques, and the development of national/international noise exposure policies, regulations, and guidelines.

REFERENCES


