

Is Enough Attention Paid to the Health Effects of Low-Frequency Noise in Today's Society?

Low-frequency noise (LFN) is recognized as an environmental problem by the World Health Organization.^[1] LFN is emitted within the range of 20 to 500* Hz by a variety of sources such as heating, cooling, and ventilation systems for buildings; compressors; motorized vehicles; and wind turbines. Traffic noise, which is rich in LFN components, was ranked second among the selected environmental stressors, evaluated in terms of their public health impact in European countries.^[1-3]

Exposure to infrasonic (<20 Hz) and lower frequency airborne pressure waves can cause cellular and tissue damage depending on frequency, dB-level, and exposure time, while the viscoelastic properties inherent to biological tissues impart a nonlinear response to this type of acoustic stressor.^[4] Widespread vascular involvement was observed in palpebral and bulbar conjunctiva and retina, gastric mucosa, liver structures, lungs, pleura and tracheae, alveoli, pericardia, and coronary arteries. The whole-body response also elicits the immune system, affects organs of the reproductive system, changes receptor cells in the vestibular semicanals and auditory cochlea, and induces genotoxic effects, including teratogenesis.^[5]

At present, Infrasound and LFN (ILFN) are agents of disease that go unchecked. Vibroacoustic disease is a whole-body pathology that develops in individuals excessively exposed to ILFN. In exposure to LFN, significant problems such as depression and mental dysfunction are seen in 3% to 5% more than prevalence in general population. Other problems observed following exposure to low-frequency sound include an increase in heart rate and potentially related problems. People chronically exposed to this type of sound can develop significant health problems. Although there are thousands of articles on the relationship between hearing loss and speech intelligibility, it should be noted that not many studies have been done on the relationship between LFN exposure* and hearing loss.

Another serious consequence of ILFN exposure is the onset of mental stress, which can significantly affect all organs of the body and, more importantly, can have a considerably negative effect on the immune system. Feelings of discomfort, agitation, and restlessness when exposed to LFN have been observed in other patients,

which causes people to have difficulty in daily work and job performance. Known symptoms of ILFN include sleep disorders in various types, including changes in the quality and quantity of sleep.^[6] Researchers continue to investigate the destructive effects of ILFN on human body tissues. The most important point in dealing with ILFN is the possibility of detrimental interference with biological structures (not limited to the biological structures addressed * herein). However, more studies are needed to examine how ILFN affects body tissues from a biological and pathobiological point of view.

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Conflicts of interest

There are no conflicts of interest.

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