



Traffic Noise Combined with Mobile Phone Radiation: Serious Environmental Risk to Male Reproductive System

M. Aminur RAHMAN^{1,2}, *Rahim AHMADI³, Azam GOHARI³, Sahar ESHGHJOO^{4,5}

1. Department of Fisheries and Marine Bioscience, Faculty of Biological Science and Technology, Jessore University of Science and Technology, Jessore-7408, Bangladesh
2. World Fisheries University Pilot Programme, Pukyong National University (PKNUN), 365 Sinseon-ro, Nam-gu, Busan 48547, Republic of Korea
3. Department of Physiology, Faculty of Basic Science, Hamadan Branch, Islamic Azad University, Hamadan, Iran
4. Department of Biology, Faculty of Basic Sciences, Research and Sciences Branch, Islamic Azad University, Tebran, Iran
5. Department of Microbial Pathogenesis and Immunology, College of Medicine, Texas A&M Health Science Center, Texas, USA

*Corresponding Author: Email: drrahmadi@yahoo.com

(Received 14 Aug 2019; accepted 13 Sep 2019)

Dear Editor-in-Chief

Of all forms of environmental pollutants, traffic noise is the most dominant and underhand natural pollutant. It has been well documented that traffic noise exposure contributes to hearing loss, tinnitus, heart disease, stroke, anxiety, stress, depression, learning difficulties, sleep disorders, reduced cognitive abilities and endocrine system disorders (1). Cell phones also pose a serious burden on the environment. In the last 20 yr, wide-reaching portable phone subscriptions have grown up from 12.4 million to over 5.6 billion, penetrating about 70% of the inclusive population. Its custom has also become an imperative public health problem, as there have been reports of plenty of health hazards, both mental and physical, in people of entirely age groups (2). Noise exposure can induce physiological and mental impairments (3). Enduring disclosure to traffic noise has undesirable effects on reproductive system (4). It has also been reported that mobile phones may reduce serum male sex hormones (5); however, there are research data showing that electromagnetic field exposure due to mobile phone has no major health effects on endocrine system function (6, 7). The impact of

traffic noise and mobile phone radiation as major environmental pollutants on human health is subject of study worldwide, because of the significant increase in mobile phone usage and increased traffic noise pollution throughout the world.

The current study was exerted to inspect the outcome of traffic noise combined with mobile phone radiation on the serum testosterone and the testicular morphology in rats. The study was approved by the Ethics Committee of the IAU, Hamedan branch, Hamedan, Iran.

Our study revealed that exposure of animals to traffic noise or mobile phone for 1 h/day did not significantly change but for 6 h/day resulted in significantly reduced serum testosterone level. The greatest reduction in serum testosterone, and in seminiferous tubule diameter, spermatogonia and Sertoli cells count was also observed in rats exposed to traffic noise combined with mobile phone for 6 h/day. The consequences of this study indicated that long-standing exposure to cell phone radiation and/or traffic noise has the greatest negative effects on male reproductive



system leading to the reduction in serum testosterone level and impaired testicular tissue.

Acknowledgements

This research was supported by the grant awarded by Islamic Azad University, Hamedan Branch, Iran. We appreciate all who assisted us to exert this research.

Conflict of interest

The authors declare that there is no conflict of interest.

References

1. Dzhambov AM, Dimitrova DD (2016). Association between noise pollution and prevalent ischemic heart disease. *Folia Med (Plovdiv)*, 58: 273-281.
2. Gupta N, Goyal D, Sharma R, Arora KS (2015). Effect of prolonged use of mobile phone on brainstem auditory evoked potentials. *J Clin Diagn Res*, 9: CC07-CC09.
3. Shepherd D, Welch D, Dirks KN, Mathews R (2010). Exploring the relationship between noise sensitivity, annoyance and health-related quality of life in a sample of adults exposed to environmental noise. *Int J Environ Res Public Health*, 7: 3579-3594.
4. Fathollahi A, Jasemi M, Saki G (2013). Effect of noise stress on male rat fertility, and the protective effect of vitamins C and E on its potential effect. *Arab J Urol*, 11: 101-105.
5. Naeem Z (2014). Health risks associated with mobile phones use. *Int J Health Sci (Qassim)*, 8(4):V-VI.
6. Meo SA, Al-Drees AM, Husain S, Khan MM, Imran MB (2010). Effects of mobile phone radiation on serum testosterone in Wistar albino rats. *Saudi Med J*, 31: 869-873.
7. Bortkiewicz A (2001). A study on the biological effects of exposure mobile-phone frequency EMF. *Med Pr*, 52: 101-106.