

Urinary cortisol levels in workers of the noisy factory of isfahan sepahan laye textile factory

Ardeshir Kalantari¹, Maliheh Ranjbar² and Farbood Kalantari³

¹Islamic Azad University, Iran

²Kerman University of Medical Sciences, Iran

³Tehran University of Medical Sciences, Iran

Objectives: Noise is one of the most harmful agents in the workplace and it has an important role in disturbing the physiological balance of the body. Research shows that the main problem of workers in the workplace is noise pollution. In addition to adverse effects of noise on auditory system, as a stressor it may cause hypertension, cardiovascular disease, anxiety and impaired secretion of hormones, especially cortisol. The purpose of this study was assessment of sound effect on urinary cortisol levels in workers.

Methods: This is an experimental and analytical prospective study. The population was Sepahan Layeh factory workers. Twenty cases were selected among healthy male morning-shift workers without any hearing loss.

Urine samples were collected three times a day (9 am, 11.30 am, and 3 pm) for two days. During the first day, workers did not use any hearing protection device, but on the second day they were asked to use earmuffs. Urinary cortisol levels were measured by RIA system and urinary Creatinine was measured by an auto analyzer system (JAFFE method).

Results: The mean urinary cortisol levels on the first and second days were 0.105 µg/mg creatinine 0.076 µg/mg creatinine, respectively. The mean urinary cortisol at 9 am, 11.30 am, 3 pm on the first day of the study were 0.142, 0.119, and 0.052, respectively. These levels and in the were 0.103, 0.086 and 0.041 on the second day.

Conclusion: Paired t-test results showed significant differences between the mean urinary cortisol levels in the two days of study, as well as at different times during the same day ($P < 0.05$). In this study, no modifications were made except noise reduction in the second day. The results show that a significant decrease in cortisol level and consequently stress reaction occurred due to noise reduction of about 29.3 dB (by using earmuffs). Thus, the results of this study indicate that using hearing protection devices such as earmuffs is beneficial in reducing adverse effects of noise on chronic increment of cortisol levels.

kalan25@yahoo.com