

IS9. THE RELATIONSHIP BETWEEN OXIDATIVE STRESS AND COGNITIVE NEUROPSYCHOLOGICAL STATE DUE TO ELECTROMAGNETIC FIELDS IN POWER PLANT WORKERS

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Oxidative stress due to EMFs may be a main contributing factor in metabolic reactions. The present study aimed to evaluate the effect of EMFs on oxidative stress and cognitive neuropsychological disorders in power plant workers in comparison with controls and determine the relationship between them.

This study designed as a cross-sectional study with a control group. The research sample was included 66 steel power plant workers who were exposed to EMFs more than five years and 35 well-matched workers with no EMFs exposure. The assessment was carried out by measuring serum level of biochemical parameters such as FBS (fasting blood sugar), triglyceride, cholesterol, HDL (high-density lipoprotein), LDL (low-density lipoprotein), AST (aspartate aminotransferase), ALT (alanine aminotransferase), and DNA damage. Additionally, all participants were assessed by cognitive neuropsychological and psychosocial questionnaires (SNI, SCL90). All data were analyzed by T-test, Multivariate analysis of variance and Mann-Whitney U test and Pearson's correlation coefficient.

The results revealed that FBS level among workers was significantly lower in comparison to control group. Additionally, AST and HDL were significantly higher in workers. According to cognitive subscales, non verbal memory, attention and executive functions were significantly lower in EMFs-exposed subjects. Moreover, the psychological subscales; somatization obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism were significantly increased in the exposed. There was a converse relationship between DNA damage and OBS, DEP, PAR and PSY and Positive Symptoms Total.

The EMFs exposure could reflect the oxidative stress increment resulting in a decrease in blood glucose level and the liver function markers. Furthermore, the neurocognitive parameters are influenced by EMFs that could be a consequence of oxidative stress in central nervous system. Also, DNA damage and marked neuropsychological disorders were evident in the workers. Hence it is necessary to consider the precise effect of EMFs on all living organisms in order to provide safety condition in the workplaces.

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