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ABSTRACT
THESIS

OCCUPATIONAL HEALTH RESEARCH ON ARTERIAL HYPERTENSION AS A WORK RELATED DISEASE IN A COMPANY WITH INTENSE NOISE EXPOSURE

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SUMMARY

1. In this paper, I had as my purpose the study of the correlation between the professional exposure to a noise level of over 87 dB and the high blood pressure.

2. The studied population had comprised a group of 150 male workers, who had been exposed to professional noise levels which exceed the admissible limit of 87 dB, and a group of 50 individuals without significant professional exposure to noise (administrative personnel).

3. The professional noise represents an important noxious agent which affects the health condition of the workers and leads to the increase in the risk for occupational diseases and work-related accidents.

4. The analysis had demonstrated that the high blood pressure can be a disease which is related to the occupation in the conditions of exposure to noise whenever at the workplace there are exposures which exceed the admissible limits.

5. It had been observed that the noise, as is the case for all sensory stimuli, exerts specific and non-specific effects on the central nervous structures which control the behaviors.

6. The noise which had reached a certain degree of intensity, if it acts for a prolonged period of time, causes a hearing loss which evolves progressively towards complete deafness.

7. In the present study, we had started from the assumption that the exposure to an intense professional noise, besides the specific local effects, can cause general effects, particularly the increase in the long term prevalence of the high blood pressure.

8. The hypothesis according to which the exposure to noise levels which exceed the maximum permissible level (MPL) is a risk factor for high blood pressure is a subject matter for which there is scarce clear epidemiological evidence available.

The large international studies had showed that there is an increase in the relative risk for high blood pressure in the individuals who are exposed to a noise level which exceeds 85 dB.

9. The analysis of the health status affected by chronic diseases had paid a special attention to the high blood pressure influenced by the exposure to intense noise.

10. It had been observed that the noise levels in the analyzed industrial unit reach values which exceed the maximum permissible level of 87 dB.

11. Both the latter value and the highest value of the blood pressure are significantly higher (p = 0,000) for the workers with various degrees of hearing loss compared with those with deafness, or with those who have neither deafness, nor hearing loss.

12. The values of the blood pressure in the study population which had been exposed to intense noise are significantly higher compared with the blood pressure values in the control group, without exposure to noise.

13. There had been significant differences in the blood pressure values between the control group and the study population only for the workers with a professional length of service of more than 25 years.

14. Irrespective of the duration of the exposure to noise, the blood pressure values at the beginning of the work shift are lower than those at the end of the work shift.

15. There is a significant, positive correlation between the serum glucose and cholesterol levels, in that when the values of the serum glucose are low, the cholesterol values are also reduced, while for increased values of the serum glucose there are corresponding increased levels of the serum cholesterol ($r = 0,487$, $p = 0,000$).

16. There is a significant, positive correlation ($r = 0,618$, $p = 0,000$) between the serum glucose and triglycerides levels, thus, when the values of the serum glucose are low, the triglycerides values are also reduced, while for increased values of the serum glucose there are corresponding increased values of the serum triglycerides levels.

17. There is a significant, positive correlation ($r = 0,446$, $p = 0,000$), between the serum triglycerides and cholesterol, in that when the values of the triglycerides are low, the cholesterol values are also reduced, while for increased values of the triglycerides there are corresponding increased levels of the serum cholesterol.

18. There is a significant, positive correlation ($p = 0,000$) between both the systolic blood pressure (SBP) values at the beginning of the work shift and the serum glucose, cholesterol and triglycerides levels, and the systolic blood pressure values at the end of the work shift and the same parameters.

19. There is a significant, positive correlation ($p = 0,000$) between both the diastolic blood pressure (DBP) values at the beginning of the work shift and the serum glucose, cholesterol and triglycerides levels, and the diastolic blood pressure values at the end of the work shift and the same parameters.

20. There had been observed slightly lower values of the correlation values for the diastolic blood pressure values at the end of the work shift compared with the diastolic blood pressure values at the beginning of the work shift.

21. For the individuals with high blood pressure, at an older age there are observed changes in the values of the serum glucose, while in the subjects without high blood pressure there are no changes in the values of the serum glucose, irrespective of their age.

22. The values of the serum glucose in the study population had been higher than those in the control group.

23. The cholesterol values in the study population had been significantly higher (p = 0,000) than those in the control group.

24. The triglycerides values in the study population had been significantly higher than those in the control group (p = 0,002).

25. It had been ascertained that in all the sections of the research population there had been significantly lower values of the vanilmandelic acid in the individuals without high blood pressure compared with those with high blood pressure (p = 0,000).

24. The exposure to intense noise causes an effect of masking both the voices and the various acoustic and verbal signals during the performance of the work processes, thus leading to increased, tiresome attention and concentration efforts which reduce the efficiency of one of the most important functions of hearing, that is, the informative function.

25. The intense noise causes the reduction of the work capacity through the development of a state of stress, the reduction of the capabilities for the concentration of the attention, for the coordination of a series of professional technical movements, as well as of the capacity for the critical judgment of certain situations.

26. The inefficient reception of the acoustic warning signals, the prolongation of the motor reaction time and the existence of a more or less severe fatigue syndrome can favor the occurrence of work-related accidents in the sectors of activity with an intense noise pollution.

26. The percentage of the individuals who had developed deafness and do not have high blood pressure is significantly higher than that of those affected by deafness and with high blood pressure.

27. The noise acts on the entire body, including the inner ear, thus exerting a major influence on the blood pressure.

28. If the high blood pressure is present in the absence of the deafness and of the hearing loss, or in the presence of the hearing loss and the absence of the deafness, in an environment with a high level of noise, after the development of the occupational sensorineural deafness with

the damage of the inner ear (the organ of Corti, the spiral ganglion of Corti), as well as, possibly, of the afferent cerebral structures, the blood pressure values usually decrease, sometimes even to normal levels. This is due to the fact that the nervous influx does not pass anymore beyond the level of the inner ear, which acts as a barrier in the transmission of noise.

29. Finally, we can draw the conclusion that in the present paper, the novelty character is represented firstly by the fact that after the development of deafness, there is a decrease of the blood pressure values.

30. These observations become very important because they have a character of novelty, as, according to our knowledge, this problem had been scarcely studied in our country.