UNIVERSITI TEKNOLOGI MARA

A STUDY ON NOISE AND BLOOD PRESSURE CHANGES AMONG WORKERS AT A PLYWOOD MANUFACTURING PLANT

SAFWA BINTI ROSLI

Dissertation submitted in partial of fulfillment of the requirements for the degree of Environmental Health and Safety

Faculty of Health Sciences

May 2010

DECLARATION

I declare that this thesis entitled "A Study on Noise and Blood Pressure Changes among Workers at a Plywood Manufacturing Plant" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree program and is not concurrently submitted in candidature of any other degree program.

Signature : .....

Name : SAFWA BT ROSLI

Date : 27 MAY 2010

ACKNOWLEDGEMENT

Alhamdulillah. Thanks to Allah SWT, whom with His willing giving me this opportunity to complete this Final Year Project, basically for student in final year to complete the undergraduate program that leads to the degree of Environmental Health and Safety.

First and foremost, I would like to express my deepest thanks to, Madam Nadiatul Syima Binti Mohd Shahid, as my supervisor who had guided me a lot along this way and inspired me greatly to work in this project. Besides, I would like to thank to Mister K. Subramaniam, as my co-supervisor for his valuable guidance and advice.

Deepest thanks and appreciation to my parents, family and special mate of mine for their support and never-ending encouragement from the beginning untill the end of this journey. Also thanks to all of my friends, lecturers and everyone, that have been contributed by supporting my work and help me during the final year project progress untill it is fully completed.

Last but not least, my thanks to everyone that involved in my study. A debt of thanks for their great commitment and cooperation.

May God bless all of us.

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Abstract

A Study on Noise and Blood Pressure Changes among Workers at a Plywood Manufacturing Plant

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Introduction: A cross-sectional comparative study of occupational noise exposure and blood pressure changes was conducted among workers at a plywood manufacturing plant. There were 30 workers (n=30) consist of 22 male (n=22) and 8 female (n=8) who performed their jobs in higher noise environment [>85 dB(A)] at the manufacturing plant were selected as study group and another 30 workers (n=30) from office area who are unexposed to noise were selected as control group.
Objective: The aim of this study is to identify the association between high level of noise and blood pressure changes among workers at a plywood manufacturing plant. Other objectives are to identify the noise level in manufacturing plant and control area, to determine the blood pressure level in the study group the control group, and also to identify the association between increase in blood pressure and other study factors.
Methodology: Dose of noise exposure and the average of noise level (LAVG) at the workplace were measured. The blood pressure level were measured before working and after working or before exposed to noise and after exposed to noise. The inclusive criteria included: Age ranging from 18 to 39 years old, had been employed for at least 1 year, and exposed to >85 dB(A) of noise during working for respondents in the study group. The exclusive criteria were such as persons with disease history of hypertension, diabetes, kidney disorder and obesity, smoking habit, pregnancy, persons with alcohol, caffeine and high cholesterol consumption and also persons who consumed medications which can affect the blood pressure level. Questionnaire were distributed to all of the respondents to identify their demographical data, use of hearing protection device, other health effects due to noise exposure and other study factors that can affect their blood pressure level.
Results: There was a significant difference (p-value <0.05) between noise level in manufacturing plant [87.2 ± 4.3 dB(A)] and control area [52.03 ± 6.4 dB(A)]. There was a significant difference (p-value <0.05) for blood pressure level between study group and control group. The systolic and diastolic blood pressure levels among study group were increased after exposed to noise (systolic = from 127.13 ± 9.291 mmHg to 134.7 ± 9.285 mmHg; diastolic = from 79.63 ± 8.564 mmHg to 87.8 ± 5.404 mmHg). Therefore, there was a significant association [p-value <0.05; x^2 value = 6.857 (systolic), 5.188 (diastolic)] between high noise level and increase in blood pressure. Other than that, there were also significant association (p-value <0.05) between high noise level and tinnitus, headache, nervous problem and sleep disturbance. On the other hand, increase in blood pressure was significantly associated (p-value <0.05) with other study factors which is working duration per day and living near factory.
Conclusion: The results suggest that there was a positive association between high noise level and blood pressure changes.