Pengaruh bising dan getaran pada fungsi keseimbangan dan pendengaran = Noise and vibration induced hearing and balance disturbances

Jenny Bashiruddin, author

Abstrak

<i>ABSTRACT

INTRODUCTION : Based on Indonesian Constitution, article 2712 mention that every Indonesian citizen has the right of having a job and wages in accordance to humanity. Bajaj as an model in this study is public transportation vehicle which is noisy and vibrating and potential to induce hearing and balance disturbances which could be dangerous to himself or to others. General Objectives of this study : To investigate the risks of noise and vibration in bajaj's drivers and to find the solutions to prevent them from hearing loss and balance disturbances.

Specific objectives : To determine : 1, hearing and balance functions induced by noise and vibration by audiometric and posturography tests 2. To find other physiologic factors such as age, blood pressure, blood glucose level, smoking habit and body mass index which could influence those functions ; 3, To determine the threshold of noise frequencies, intensity and also acceleration of vibration which contributed to noise.

Setting : Subdivision of Neurotology of ENT Department of Cipto Mangunkusumo Hospital, Jakarta, Study subjects : Bajaj drivers.

METHODS: The study was carried out from March 2000 until October 2001.Noise and vibration were measured using octave band analyzer and vibration meter. Clinical ENT examination, height and body weight for body mass index, blood pressure and blood glucose level tests were performed. The subjects were divided into four groups : the normal one, only hearing or balance problem group, group of both disturbances. The risk factors were calculated by bivariate and multivariate or logistic regression analyses.

RESULTS : Mean of bajaj's intensity level was 91 dBA, with minimum intensity 64 dBA, maximum intensity 96 dBA, mean acceleration of vibration was 4,2 misec2. Those results showed that noise and vibration of bajajs were over safety threshold, which has been established by OSHA. The rate of normal subjects was 27.72 %, whereas that of those who suffered from hearing and balance problems was 27,43%, and only 17.14% had hearing problems and 27,71 % had balance problems. The total was 72,28 % of disturbance. From the multivariate analysis, hearing and balance problems were influenced by age more than 40 years old, working periods more than 9 years, daily working hours more than 8 hours, history of heavy smoking habit and obesity. Balance problems were influenced by the same factors. But the working period was 5.9 years and hearing problems were only influenced by age more than 40 years old. It was concluded that balance function was more sensitive than hearing one. For prevention, this study also introduced risk scores for hearing and balance functions based on those physiological factors for workers who worked in noisy and vibrating areas, low risk for scores 0-5, moderate risk for scares 6-10 and high risk

for scores more than 11. The sensitivity level was 70,83% and specificity was 73,20 %.

CONCLUSIONS : Mean of bajaj's intensity level was 91 dBA, with minimum intensity 64 dBA, maximum intensity 96 dBA. mean acceleration of vibration was 4,2 misec2, which are over the safety threshold. Noise and vibration could induce hearing and balance problems in 72,28% of drivers. Those problems are influenced by several factors such as age, working periods, daily working hours, smoking habit and obesity.</i>