

Perbandingan fungsi memori berdasarkan kadar kotinin darah pada pekerja pengolah logam = Comparison of memory function based on blood cotinine level among metal workers

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Abstrak

Perubahan fungsi memori dapat terjadi pada pekerja las akibat pajanan mangan dan aluminium. Efek nikotin pada rokok dapat meningkatkan fungsi memori dalam waktu singkat namun merusak pada pajanan lama. Terdapat juga kontribusi radikal bebas rokok terhadap gangguan memori. Penelitian ini bertujuan membandingkan fungsi memori pekerja pengolah logam berdasarkan kebiasaan merokok yang diukur kadar kotininnya.

Metode: Desain penelitian potong lintang, subyek penelitian 97 pengolah logam. Pajanan logam lingkungan diukur dengan Atomic Absorbance Spectrophotometry. Data dikumpulkan dengan kuesioner dan pemeriksaan neuropsikiatri Becks Depression Inventory II, digit span backward, dan Rey Osterrieth Complex Figure Test mengukur fungsi memori pada skor panggil tundanya. Pajanan rokok diukur dengan indeks Brinkmann dan kadar kotinin plasma subyek penelitian.

Hasil: Kadar logam berat di lingkungan adalah 4×10^{-6} mg/m³ untuk mangan dan 1×10^{-6} mg/ml³ untuk aluminium dan masih di bawah ambang batas nasional. Fungsi memori pekerja perokok sedang (median 10,7{8-13,5}) lebih rendah dibandingkan bukan perokok (median 23{7-34}) ($p=0,02$). Median skor fungsi memori kelompok kadar kotinin darah ≥ 14 mg/ml adalah 23(5-34) yang tidak berbeda bermakna dengan fungsi memori kelompok dengan kadar kotinin darah < 14 mg/ml yaitu 21(7-35) ($p=0,826$).

Kesimpulan: Ada perbedaan fungsi memori antara kelompok perokok sedang dan bukan perokok pada pekerja pengolah logam dengan kadar logam lingkungan di bawah ambang batas nasional, sedangkan berdasarkan pembagian kadar kotinin darah tidak ada perbedaan fungsi memori yang bermakna.

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Background and Objective: Changes in memory function as a result of manganese and aluminium exposure is a potential risk to metal workers. The effect of tobacco's nicotine can enhance memory in short term but damaging in long term. Tobacco's free radical is also a contributing factor in disrupting memory function. This study was conducted to compare the memory function of metal workers based on the metal fume exposure and their smoking habit.

Methods: This cross-sectional study consist of 97 metal workers. Metal fume exposure in the workplace measured using Atomic Absorbance Spectrophotometry. Data collected through interview, neuropsychiatric examination with Becks Depression Inventory II, Digit Span Backward, and Rey Osterrieth Complex Figure Test to measure memory function by means of the delayed recall score. Smoking exposure evaluated by Brinkmann Index and analyzing cotinine in blood.

Results: Metal exposure in the workplace are 4×10^{-6} mg/m³ for manganese and 1×10^{-6} mg/ml³ for aluminum, below national limit. Memory function of moderate smokers (10,7{8-13,5}) are lower than non smokers (23{7-34}) ($p=0,02$). Workers with blood cotinine level ≥ 14 mg/ml have memory function 23(5-34) not significantly different with those whose blood cotinine level < 14 mg/ml {21(7-35)} ($p=0,826$).

Conclusions: Exposed by metal fume below national exposure limit, there is a statistically significant

distinction between group of non smokers and moderate smokers metal workers in their median score of memory function which is not shown by comparison of memory function based on blood cotinine level.