

ABSTRACT

THE EFFECTS OF AIRCRAFT NOISE LEVEL ON INCREASED CORTISOL, DECREASED CD4 AND IgG, AND HEALTH COMPLAINTS AMONG GROUND HANDLING WORKERS

Aircraft noise exposure can lead to non-auditory effects such as job stress that is characterized by increased cortisol in blood. Increased cortisol is immunosuppressive effects. Objectives of this research was analyzing effects of aircraft noise level on increased cortisol, decreased CD4 and IgG, and health complaints among ground handling workers.

Methods of this research was analytical observational with cross sectional study. Research respondents were 12 workers in each group of ground handling workers and check-in workers. Aircraft noise level were measured with Sound Level Meter brand Svantex type 917. Serum cortisol and IgG were analyzed with Elisa method. Whereas CD4 in blood were analyzed with Flow Cytometry.

Results showed that noise level in apron area in Juanda Airport exceed NAB noisy workplace was 87,8 dBA, while noise level in check-in room is under NAB noisy workplace was 62,2 dBA. Aircraft noise and long working hours increasing levels cortisol (linear regression; $p=0,00$ and $p=0,00$). Aircraft noise decreased IgG (independent sample t test; $p=0,04$). Moreover, aircraft noise affect to nervous system complaints and hematology complaints (logistic regression; $p=0,00$ and $p=0,04$).

Conclusions of this research is aircraft noise and long working hours affect on cortisol levels. Aircraft noise can reduce IgG and cause health complaints, such as nervous system complaints and hematology complaints.

Keywords : Aircraft Noise, Cortisol, CD4, IgG, Health Complaints.

ABSTRAK

EFEK KEBISINGAN PESAWAT TERHADAP PENINGKATAN KADAR KORTISOL, PENURUNAN CD4 DAN IgG SERTA KELUHAN KESEHATAN PEKERJA GROUND HANDLING

Pajanan kebisingan pesawat dapat menyebabkan efek non auditori seperti stres kerja yang ditandai dengan peningkatan kadar kortisol dalam darah, diketahui mempunyai efek immunosupresif. Tujuan dari penelitian ini adalah untuk melihat efek kebisingan pesawat terhadap peningkatan kadar kortisol, penurunan CD4 dan IgG serta keluhan kesehatan pekerja ground handling.

Metode penelitian ini cross-sectional observasional analitik design. Reponden penelitian terdiri dari 12 orang pada masing-masing kelompok petugas ground handling dan petugas check in. Pengukuran kebisingan pesawat menggunakan Sound Level Meter Merk Svantek Type 917. Kadar kortisol dan IgG dianalisis menggunakan metode ELISA. CD4 dianalisis menggunakan metode Flow Cytometry.

Hasil pengukuran intensitas kebisingan di wilayah apron melebihi NAB bising di tempat kerja yakni 87,8 dBA, sedangkan untuk ruang check in masih dibawah NAB, 62,2dBA. Kebisingan pesawat dan masa kerja berpengaruh terhadap peningkatan kadar kortisol (regresi linear; $p=0,00$ dan $p=0,00$). Kebisingan pesawat berpengaruh terhadap penurunan IgG (independent sample t test; $p=0,04$). Kebisingan pesawat berpengaruh terhadap keluhan sistem syaraf dan keluhan hematologi (regresi logistik; $p=0,00$ dan $p=0,04$).

Kesimpulan penelitian ini adalah kebisingan pesawat dan masa kerja berpengaruh terhadap peningkatan kadar kortisol. Kebisingan pesawat dapat menurunkan IgG serta dapat menyebabkan meningkatkan keluhan kesehatan berupa keluhan sistem syaraf dan keluhan hematologi.

Kata kunci : Kebisingan Pesawat, Kortisol, CD4, IgG, Keluhan Kesehatan.