

SUMMARY

Faktors Related to Lung Function Status of Worker in PT.X

The animal feed industry uses grain raw materials to produce feed. The feed production process consists of a mechanical process that allows workers to be exposed to dust. Grain dust is an organic material that is potentially contaminated with microorganisms such as bacteria and fungi. The dust and microorganism enter into the respiratory tract can cause inflammatory reactions, infections and cause decrease in lung physiology. Based on the preliminary survey, found problems related to workers' health about 60% of workers feel respiratory complaints, including coughing 29.6%, colds (40.7%), sneezing (37%), chest pain 3.7%, and tightness breath 22%, sore throat 14.8%. The results of the implementation of spirometry in 2018 showed that there were 27% of workers experiencing impaired lung function both restrictive, obstructive and mixed in the production worker.

The purpose of this study was to analyze differences in individual, occupational, and environmental factors in exposed and unexposed groups, analyzing factors that affect lung function status of all worker. This research is observational with cross sectional research design. The sample of this study were 24 exposed groups namely production workers and 10 unexposed group workers namely administrative workers.

This research variable were divided into independent variables and the dependent variable. The independent variables in this study were individual factors (age, degree of smoker, respiratory protective equipment usage, exercise habits, nutritional status), occupational factor was years of service, environmental factors (workplace temperature, and humidity, concentration of dust, bacteria, and fungus). The dependent variable in this study was lung physiology status.

The results of the bivariable test showed that there were differences between the groups exposed and not exposed to the variable respiratory protective equipment usage ($p = 0.000$), degree of smoker ($p = 0,008$), temperature ($p = 0.018$), dust concentration ($p = 0,000$), bacteria concentration ($p = 0.004$), and fungal concentrations ($p = 0.000$).

The test results of differences in the influence of the dependent variable on the independent variables in each production and administration group, showed that age ($p = 0,007$), years of service ($p = 0,002$), degree of smokers ($p = 0,001$), variable respiratory protective equipment usage ($p = 0.008$), dust ($p = 0,000$), bacterial ($p = 0,001$) and fungal ($p = 0,004$) concentrations affected the lung physiology status of the production group workers only.

The test results of the influence of the dependent variable on all groups, showed that age ($p = 0,008$), years of service ($p = 0,008$), respiratory protective equipment usage ($p = 0,000$), degree of smokers ($p = 0,001$), dust ($p = 0,000$), bacterial ($p = 0,001$) and fungal ($p = 0,002$) concentrations affected the lung physiology status of the production group workers only.

In the analysis of the simultaneous effect of all variables is obtained the result that dust concentration (p -value = 0.049) has significant effect to lung physiology status.

Based of these result, it is expected that company may consider more about isolating by creating barrier that separates the production area from other areas so as to reduce dust exposure from outside the production area, increase ventilation to reduce heat, provide adequate respiratory protection, increase supervision on the use of respiratory protection, after rotating employees, rotating employees who have already experienced lung physiology. workers should raise awareness of wearing respiratory protection, hygiene, and environmental sanitation and reduce smoking.

RINGKASAN

Faktor Yang Berpengaruh Terhadap Status Faal Paru Pekerja PT.X

Industri pakan ternak menggunakan bahan baku biji-bijian untuk memproduksi pakan. Proses produksi pakan terdiri atas proses mekanik yang memungkinkan pekerja terpapar debu. Debu biji-bijian merupakan bahan organik yang berpotensi terkontaminasi mikroorganisme seperti bakteri dan jamur. Masuknya debu dan mikroorganisme ke saluran pernapasan dapat menyebabkan reaksi radang dan infeksi serta menimbulkan gangguan faal paru.

Berdasarkan survey pendahuluan, ditemukan permasalahan terkait kesehatan pekerja sekitar 60% pekerja merasakan keluhan pernapasan, antara lain batuk 29,6%, pilek (40,7%), bersin-bersin (37%), sakit dada 3,7%, dan sesak napas 22%, sakit tenggorokan 14,8%. Hasil pelaksanaan spirometri tahun 2018 menunjukkan terdapat 27% pekerja yang mengalami gangguan fungsi paru baik restriktif, obstruktif maupun campuran pada pekerja di area produksi PT. X.

Tujuan penelitian ini adalah menganalisis perbedaan faktor individu, pekerjaan dan lingkungan pada kelompok terpapar dan tidak terpapar, menganalisis faktor yang berpengaruh pada status faal paru seluruh pekerja. Jenis penelitian ini adalah observasional dengan rancang bangun penelitian *cross sectional*. Sampel penelitian ini adalah 24 orang kelompok terpapar yaitu pekerja produksi dan 10 orang pekerja kelompok tidak terpapar yaitu pekerja administrasi.

Variabel penelitian ini terbagi menjadi variabel bebas (*independent*), dan variabel terikat (*dependent*). Variabel bebas dalam penelitian ini yaitu faktor individu (usia, derajat perokok, pemakaian alat pelindung pernapasan, kebiasaan olahraga, status gizi), faktor pekerjaan yaitu masa kerja, faktor lingkungan (konsentrasi debu, bakteri, dan jamur). Variabel terikat dalam penelitian ini yaitu status faal paru.

Hasil penelitian uji bivariabel menunjukkan bahwa terdapat perbedaan antara kelompok produksi dan administrasi terpapar pada variabel penggunaan alat pelindung pernapasan ($p = 0,000$), derajat perokok ($p = 0,008$), suhu ($p = 0,018$), konsentrasi debu ($p = 0,000$), konsentrasi bakteri ($p = 0,004$), dan konsentrasi jamur ($p = 0,000$).

Hasil uji pengaruh variabel dependen terhadap variabel independen pada masing-masing kelompok produksi dan administrasi menunjukkan bahwa usia ($p = 0,007$), masa kerja ($p = 0,002$), pemakaian alat pelindung pernapasan ($p = 0,000$), derajat perokok ($p = 0,001$), konsentrasi debu ($p = 0,000$), bakteri ($p = 0,001$) dan jamur ($p = 0,004$) berpengaruh terhadap status faal paru kelompok produksi saja.

Hasil uji pengaruh variabel dependen terhadap variabel independen pada seluruh kelompok pekerja menunjukkan bahwa usia ($p = 0,008$), derajat perokok ($p = 0,000$), pemakaian pelindung pernapasan ($p = 0,008$), masa kerja ($p = 0,008$), konsentrasi debu ($p = 0,000$), konsentrasi bakteri ($p = 0,001$), konsentrasi jamur ($p = 0,002$) berpengaruh terhadap status faal paru seluruh kelompok pekerja.

Hasil penelitian uji multivariable dengan uji regresi logistik menunjukkan hasil bahwa variabel konsentrasi debu, merupakan faktor yang berpengaruh pada

status faal paru pekerja dengan nilai signifikansi konsentrasi debu (p -value = 0,013).

Penelitian menunjukkan bahwa paparan debu, bakteri dan jamur merupakan faktor risiko penyebab gangguan faal paru pada pekerja PT.X. perusahaan sebaiknya membuat barrier yang memisahkan area produksi dengan area lain sehingga mengurangi paparan debu dari luar area produksi, menambah ventilasi untuk mengurangi panas, meningkatkan pengawasan pemakaian pelindung pernapasan, seta melakukan rotasi pegawai, merotasi pegawai yang sudah megalami gangguan faal paru. sebaiknya pekerja meningkatkan kesadaran memakai pelindung pernapasan, hygiene, dan sanitasi lingkungan serta mengurangi kebiasaan merokok.

ABSTRACT

**FACTORS RELATED TO LUNG FUNCTION STATUS OF WORKER IN
PT.X**

The animal feed industry uses grain raw materials to produce feed. The feed production process consists of a mechanical process that allows workers to be exposed to dust. Grain dust is an organic material that is potentially contaminated with microorganisms such as bacteria and fungi. The purpose of this study was to analyze differences in individual, occupational, and environmental factors in exposed and unexposed groups, analyzing factors that affect lung function status of all worker.

This research variables were divided into independent variables and the dependent variable. The independent variables in this study were individual factors (age, degree of smoker, respiratory protective equipment usage, exercise habits, nutritional status), occupational factor was years of service, environmental factors (concentration of dust, bacteria, and fungus). The dependent variable in this study was physiology status.

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Keyword: lung function, dust concentration, microorganism concentration

ABSTRAK

FAKTOR YANG BERHUBUNGAN DENGAN STATUS FAAL PARU PEKERJA PT.X

Industri pakan ternak menggunakan bahan baku biji-bijian untuk memproduksi pakan. Proses produksi pakan terdiri atas proses mekanik yang memungkinkan pekerja terpapar debu. Debu, bakteri, dan jamur yang masuk ke saluran pernapasan berisiko menyebabkan gangguan faal paru pada pekerja. Tujuan penelitian ini adalah menganalisis perbedaan faktor individu, pekerjaan dan lingkungan pada kelompok terpapar dan tidak terpapar, menganalisis faktor yang berpengaruh pada status faal paru seluruh pekerja.

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Kata kunci : status faal paru, konsentrasi debu, konsentrasi bakter, konsentrasi mikroorganisme