



UNIVERSITAS ANDALAS
HUBUNGAN PAJANAN PM_{2.5} DENGAN KELUHAN PERNAPASAN
PADA TENAGA KERJA BONGKAR MUAT CURAH KERING
DI PELABUHAN TELUK BAYUR PADANG TAHUN 2026

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FAKULTAS KESEHATAN MASYARAKAT

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TENAGA KERJA BONGKAR MUAT CURAH KERING DI PELABUHAN
TELUK BAYUR PADANG TAHUN 2026**

xii + 161 halaman, 32 tabel, 15 gambar, 10 lampiran

ABSTRAK

Tujuan Penelitian

Particulate Matter 2.5 (PM_{2.5}) merupakan partikel udara tersuspensi berukuran $\leq 2,5$ mikrometer (μm) yang dapat mencapai alveolus paru dan berpotensi menimbulkan keluhan pernapasan. Pelabuhan merupakan lingkungan kerja dengan tingkat paparan PM_{2.5} yang tinggi akibat aktivitas bongkar muat dan operasional pelabuhan. Penelitian ini bertujuan untuk menganalisis hubungan konsentrasi PM_{2.5} dengan keluhan pernapasan pada tenaga kerja bongkar muat curah kering di Pelabuhan Teluk Bayur.

Metode

Penelitian kuantitatif *cross-sectional* dengan sampel 90 responden. Penelitian dilakukan pada bulan Mei - Juni 2026. Teknik pengambilan sampel menggunakan *simple random sampling*. Data dikumpulkan menggunakan kuesioner dari American Thoracic Society (ATS) dan dianalisis secara univariat, bivariat (regresi logistik sederhana dan *chi-square*), serta multivariat.

Hasil

Konsentrasi PM_{2.5} di Pelabuhan Teluk Bayur selama penelitian, yaitu 2,7-35,14 $\mu\text{g}/\text{m}^3$. Rata-rata konsentrasi PM_{2.5} di Titik 1 sebesar 13,68 $\mu\text{g}/\text{m}^3$, di Titik 2 sebesar 13,63 $\mu\text{g}/\text{m}^3$, dan di Titik 3 sebesar 13,26 $\mu\text{g}/\text{m}^3$. Sebanyak 75,6% pekerja mengalami setidaknya satu keluhan pernapasan dengan keluhan paling umum, yaitu dahak (45,6%). Tidak terdapat hubungan yang signifikan antara konsentrasi PM_{2.5} dengan seluruh keluhan ($p > 0,05$), bahkan setelah dikendalikan variabel perancu.

Kesimpulan

Rata-rata konsentrasi PM_{2.5} di Pelabuhan Teluk Bayur berada di bawah nilai ambang batas harian yang ditetapkan oleh WHO yaitu 15 $\mu\text{g}/\text{m}^3$. Kemudian, tidak terdapat hubungan signifikan antara konsentrasi PM_{2.5} dengan keluhan pernapasan pada TKBM curah kering di Pelabuhan Teluk Bayur, bahkan setelah dikendalikan variabel perancu.

Daftar Pustaka : 114 (1970-2026)

Kata Kunci : Pajanan PM_{2.5}, Keluhan Pernapasan, Pelabuhan, Bongkar Muat Curah Kering

**FACULTY OF PUBLIC HEALTH
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**ASSOCIATION BETWEEN PM_{2.5} EXPOSURE AND RESPIRATORY
SYMPTOMS AMONG DRY BULK CARGO HANDLING WORKERS AT
PORT OF TELUK BAYUR, PADANG, 2026**

xii + 161 pages, 32 tables, 15 figures, 10 appendices

ABSTRACT

Objective

Particulate Matter 2.5 (PM_{2.5}) is a suspended airborne particle with an aerodynamic diameter of ≤ 2.5 micrometers (μm) that can penetrate the pulmonary alveoli and potentially cause respiratory symptoms. Port areas are environments with high levels of PM_{2.5} exposure resulting from cargo handling activities and port operations. This study aimed to analyze the relationship between PM_{2.5} concentration and respiratory symptoms among dry bulk cargo handling workers at Port of Teluk Bayur.

Method

A quantitative cross-sectional study was conducted with a sample of 90 respondents. This study was conducted from May to June 2026. The sampling technique used was simple random sampling. Data were collected using the American Thoracic Society (ATS) questionnaire and analyzed using univariate, bivariate (simple logistic regression and chi-square), and multivariate analyses.

Result

The PM_{2.5} concentration at Port of Teluk Bayur during the study ranged from 2.7 to 35.14 $\mu\text{g}/\text{m}^3$. The average PM_{2.5} concentrations were 13.68 $\mu\text{g}/\text{m}^3$ at Point 1, 13.63 $\mu\text{g}/\text{m}^3$ at Point 2, and 13.26 $\mu\text{g}/\text{m}^3$ at Point 3. A total of 75.6% workers reported having at least one respiratory symptom, with phlegm being the most reported (45.6%). No statistically significant association was found between PM_{2.5} concentration with any respiratory symptoms ($p > 0.05$), even after connected with confounding variables.

Conclusion

The average PM_{2.5} concentrations at Port of Teluk Bayur was below the daily threshold value established by WHO (15 $\mu\text{g}/\text{m}^3$). Furthermore, there was no statistically significant association was found between PM_{2.5} concentration respiratory symptoms among dry bulk cargo handling workers at Port of Teluk Bayur, even after connected with confounding variables.

References : 114 (1970-2026)

Keywords : PM_{2.5} Exposure, Respiratory Symptoms, Port, Dry Bulk Cargo Handling