# ABSTRACT

## High Ergonomic Risk Burden and Musculoskeletal Complaints among Mining Operations Workers in East Kalimantan

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Background : Mining operations involve prolonged work duration, repetitive activities, and non-neutral postures that may increase the risk of musculoskeletal problems.

Objective : This study assessed ergonomic risk and musculoskeletal complaints among operational mining workers in East Kalimantan.

Research Methods/ Implementation Methods : An exploratory cross-sectional analysis was conducted using secondary ergonomic assessment data from 22 workers. Ergonomic risk was classified as hazardous or requiring further observation, while musculoskeletal outcomes were assessed based on the presence and severity of complaints. Data were analyzed descriptively and using Fisher's exact test.

Results : All participants were male, 86.4% worked 12-hour shifts, and 81.8% were classified as having hazardous ergonomic risk. Musculoskeletal complaints were reported by 63.6% of workers, while 59.1% had moderate complaint risk. Moderate complaint risk was observed in 66.7% of workers in the hazardous ergonomic category compared with 25.0% in the group requiring further observation. The association was not statistically significant (p=0.264), although effect estimates indicated a higher prevalence of moderate complaint risk in the hazardous group (PR=2.67; OR=6.00).

Conclusion/Lesson Learned : Ergonomic hazards and musculoskeletal complaints were common among mining workers. Task level ergonomic controls, work-rest management, and further studies with larger and more heterogeneous worker populations are warranted.

Keyword : ergonomics; musculoskeletal complaints; mining workers; occupational health; ergonomic risk

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