ABSTRACT

Household Smoke Exposure and Acute Respiratory Infection in Mulawarman Village, Tenggarong Seberang, East Kalimantan: A Student-Led Household Survey

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Acute respiratory infection (ARI) is a major cause of illness in Indonesia. Mulawarman Village, Tenggarong Seberang, is reported to border coal mines, with residents describing dust and respiratory complaints. Household tobacco smoke and waste burning are modifiable exposures, yet household-level evidence from this setting is scarce, and student-led surveys are rarely audited for data quality.

Objective : To estimate ARI burden and household smoke exposure in Mulawarman Village, examine their association, and assess the quality of student-collected data.

Research Methods/ Implementation Methods : Cross-sectional survey of 72 households in 18 neighbourhood units (RT) of Mulawarman Village, Tenggarong Seberang, Kutai Kartanegara, June 2026, using structured student interviews. Outcomes: ARI symptoms in respondents (past month) and diagnosed ARI in any member (past year). We estimated prevalences (95% CI) and prevalence ratios (PR) using Fisher's exact test, Mantel-Haenszel and robust Poisson regression, adjusted for interview batch.

Results : ARI symptom prevalence was 18.6% (95% CI 11.2–29.2); 38.6% of households reported diagnosed ARI in a member. Smoking inside the home (65.7%) and waste burning (77.1%) were common. After adjustment, neither exposure was significantly associated with either outcome (indoor smoking, symptoms: PR 0.58, 95% CI 0.10–3.17). An audit showed batch differences (household ARI 15.2% vs 83.3%), producing an apparent ventilation–ARI association (crude PR 3.32) that vanished after adjustment (PR 1.22).

Conclusion/Lesson Learned : Household smoke exposure is prevalent and supports smoke-free-home interventions, although this small sample detects only large associations (PR ≥3). Batch effects can create false findings in student-collected data; standardised interviewer training, interviewer identifiers and routine audits are needed. Findings are exploratory.

Keyword : acute respiratory infection; secondhand smoke; household survey; East Kalimantan; problem-based learning; data quality