Indoor air quality and housing conditions are related to ARIs incidence in Surabaya, Indonesia

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Abstract

Indoor air quality and housing conditions have been shown to affect resident's health. This study aimed to determine the relationship between indoor factors and ARI symptoms, considering factors such as indoor air quality and housing conditions. Used an observational design with a case-control approach, this study was involved 60 respondents. Cases were patients from the Gayungan Public Health Center with ARI, while controls were patients without such symptoms. Samples were randomly selected from the medical records of Gayungan patients in September 2024 in matching age. Respondent's characteristics data were collected through structured questionnaires. Luxmeter and indoor air quality detector (lowcost sensor) was used to measured indoor air quality by grab sampling method. Logistic regression was performed analyzed the data. Several indoor air quality parameters and housing conditions were significantly associated with resident's ARIs. Residents exposed to uncomfortable indoor temperatures (OR = 6.324; p=0.027), inadequate natural lighting (OR = 8.894; p=0.030), and high $PM_{2.5}$ concentration (OR = 27.579; p=0.005) were faced higher odds of ARIs. In addition, a separate analysis of housing conditions, residents from overcrowded households (OR = 44.727; p=0.002), those with inadequate house ventilation (OR = 8.168; p=0.016) and those with inadequate kitchen smoke ducts (OR=52,597; p=0,002) also faced higher odds of ARIs. The study indicates that improving housing conditions and in-house air quality are important to prevent residents suffering from ARIs.

Keywords: Acute respiratory infections, Case-control study, Housing conditions, Health risk, IAQ