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► To cite this version:

S Salim, G Diallo, P Morita. Low-cost IoT sensors reveal adverse health outcomes associated with air pollution exposure. *European Journal of Public Health*, 2023, 33 (Suppl. 2), <10.1093/eurpub/ckad160.1187>. <hal-04383073>

HAL Id: hal-04383073

<https://hal.science/hal-04383073v1>

Submitted on 28 May 2024

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unadjusted odds ratio for PM_{2.5} exposure was 1.2; decreasing to 1.2 and 1.1 respectively after adjusting for age and sex ($p < 0.05$). These findings are consistent with previous studies and highlight the significant impact of air pollution on the occurrence of acute respiratory illnesses. The use of IoT sensors allowed for accurate assessment of air pollution exposure in the study population.

Conclusions:

This study provides further evidence of the detrimental effects of air pollution on human health, particularly on the occurrence of acute respiratory illnesses. These findings highlight the importance of continued efforts to reduce air pollution levels. Accurate measurement of exposure rates using IoT sensors can aid in identifying and addressing sources of air pollution to improve the quality of life for individuals and communities affected by this health threat.

Key messages:

- This study shows the significant impact of air pollution on acute respiratory illnesses, highlighting the importance of reducing air pollution levels.
- Accurate measurement of air pollution exposure using IoT sensors can aid in identifying and addressing sources of air pollution to improve public health.

Abstract citation ID: ckad160.1187

Low-cost IoT sensors reveal adverse health outcomes associated with air pollution exposure

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Background:

Air pollution is a major public health threat and has been linked to various adverse health effects including respiratory and cardiovascular diseases. Fine particulate matter (PM_{2.5}) and coarse particulate matter (PM₁₀) are two major components of air pollution that are significant contributors to these health outcomes. With the advent of low-cost sensors, accurate measurement of exposure has become possible, allowing for better assessment of the impact of air pollution exposure on human health.

Methods:

To investigate the association between air pollution exposure and illnesses resulting in hospital visits, IoT sensors were deployed in Ulaanbaatar, Mongolia, to measure PM_{2.5} and PM₁₀ levels from 2018-2021. Health data was obtained from the Mongolian National Center for Public Health. Multivariable logistic regression models were used to estimate overall odds ratios for the associations between daily PM_{2.5} and PM₁₀ exposure and the occurrence of illnesses, adjusting for age and sex.

Results:

The unadjusted odds ratio for the association between PM₁₀ exposure and acute respiratory illnesses was 1.3, while the