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THE DETERMINATION OF INDOOR AIR QUALITY (IAQ) AND RELATED HEALTH RISK AMONG USERS IN GYMNASIUM CENTRE UITM SHAH ALAM

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Structured Abstract

Background: This study focusses on Indoor Air Quality (IAQ) at Gymnasium Centre UiTM Shah Alam. Sport facilities such as gymnasium centre have already been the subject of IAQ studies by another researcher. Although engaging in physical activities is helpful to one's health, the indoor environment that is present in sports facilities may also lead to health hazards that are not present in surroundings that are found outside. The study aims to determine the Indoor Air Quality (IAQ) parameters (physical, chemical, biological) in Gymnasium Centre UiTM Shah Alam. The study also aimed to evaluate the health risk symptoms experience by the occupants in Gymnasium Cntre UiTM Shah Alam and to compare IAQ parameters between different sampling location.

Methods: The study utilized the guidelines from the Indoor Air Quality Code of Practice (ICOP) 2010 for sampling point selection. Sampling for biological contaminants was conducted using an Andersen 2-stage Cascade Impactor and Culture media such as Tryptic Soy Agar (TSA) for bacteria and Malt Extract Agar (MEA) for fungi. Physical and chemical parameters were sampling using Quest EVM-7 at six different sampling location inside gymnasium centre. The sampling volume and duration are consistent across all study locations, with equipment cleaned between collections.

Results: The study reveals most of parameters were within acceptable limits, except for elevated levels of carbon dioxide and bacteria, which exceeded the recommended thresholds of 1000 ppm and 500 CFU/m^3, respectively. This suggests inadequate ventilation and potential microbial contamination in certain areas. Occupants reported symptoms such as fatigue, headaches, and drowsiness, which were associated with IAQ issues. An ANOVA test identified significant differences in bacteria, fungi, air temperature, and CO_2 levels across the sampling points, indicating the need for location-specific IAQ management.

Conclusion: In conclusion, the findings of this study revealed concerns with elevated carbon dioxide and bacteria level. Despite the result, study proves that there is a comparison in IAQ parameters between different sampling location, where the ANOVA results across six sampling points indicate significant differences in bacteria, fungi, air temperature, and CO2 levels, suggesting that these indoor air quality (IAQ) parameters vary between different locations.

Keywords: Indoor Air Quality, Gymnasium, Temperature, Carbon Dioxide, Bacteria

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