

Indoor Air Quality Assessment Among Children in Montessori School

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Structured Abstract

Background: Indoor air quality (IAQ) is defined as the quality of the air within and around buildings and other structures with a focus on how it affects the comfort and health of building people inside. The probability of experiencing indoor health issues can be decreased by being aware of and taking control of prevalent indoor contaminants. IAQ plays a significant role in the health and well-being of building occupants. This study aims to assess the IAQ and its potential impact on the health of occupants in a Montessori school located in Bandar Tropicana Aman. The objectives were to measure selected chemical, physical, and biological IAQ parameters, identify symptoms of Sick Building Syndrome (SBS) among the occupants, and determine the relationships between parameters that exceeded the acceptable limits.

Methods: IAQ assessment was conducted using selected instruments including QuickTake 30 Sample Pump, EVM-7 Air Quality Monitors and Temptop P600 Air Quality Laser Particle Detector to measure the indoor air parameters, while a questionnaire survey was distributed to document SBS symptoms among the school occupants. Data analysis including Spearman's correlation was used to evaluate the relationship between the exceeded IAQ parameters.

Results: The results revealed that carbon dioxide, temperature, and total bacteria count exceeded the acceptable limits set by the ICOP IAQ 2010. Among SBS symptoms, irritation, stuffy, and runny nose were the most commonly reported. Statistical analysis indicated that temperature and total bacteria count were significantly associated ($p < 0.05$), whereas carbon dioxide with temperature and carbon dioxide with total bacteria count were not statistically significant.

Conclusion: In conclusion, these findings underscore the need for effective IAQ management within educational institutions to ensure a healthy indoor environment. Poor IAQ marked by elevated levels of temperature, carbon dioxide, and bacterial contamination, may contribute to SBS symptoms, potentially affecting the health and productivity of occupants. By addressing these issues and maintaining optimal IAQ, educational facilities can reduce the prevalence of SBS symptoms, enhance occupants' productivity, minimize absenteeism, and promote overall well-being in indoor environments.

Keywords: Indoor Air Quality, Spearman's Correlation, Sick Building Syndrome, Pre-School

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