

# An Investigation of the Indoor Air Quality at Two Nursery Schools

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The quality of air in schools is vital because children spend approximately 5-8 hours in school daily. Based on the reviewed literature, most schools recorded poor indoor air quality due to elevated levels of bioaerosols and fine particulate matter (PM<sub>2.5</sub>) that contributed to severe illnesses in children. This research investigated the indoor air quality at two nursery schools. A quantitative design was employed using the data collection instruments *Airbeam2*, culture media plates, and observation checklists. The study duration was 4-hours, and revealed that children were exposed to PM<sub>2.5</sub> concentrations above and slightly below the World Health Organisation (WHO) 24-hour limit (i.e. 25 µg/m<sup>3</sup>). The ANOVA test showed statistically significant differences between the schools' PM<sub>2.5</sub> mean concentrations. Moreover, based on the WHO standards, the indoor air quality at both schools was unacceptable due to markedly high bacterial levels (>500 CFU/m<sup>3</sup>). Although fungi levels did not exceed the established WHO limit (<1000 CFU/m<sup>3</sup>) in most cases, substantial fungi were found within the indoor air of both schools, which can be harmful to children. The dominant bacteria genera were gram-positive cocci and gram-positive bacilli, while the dominant culturable fungal types were *Cladosporium herbarum* and *Chrysonilia sp.* School A (53.79%) and School B (59.09%) were moderately compliant to standards for a safe classroom environment; however, their compliance percentages fell within the low end of the scale (50-70%). These results indicated that children are exposed to elevated levels of indoor air pollutants, which may cause health implications such as cardiovascular diseases, respiratory and urinary tract infections.

**Keywords:** Indoor air quality; health implications, school children