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STUDIES ON IAQ AND THE POTENTIAL RELATIONSHIP BETWEEN AIRBORNE MICROORGANISMS AND PARTICULATE MATTER IN A SCHOOL SETTING: A PROTOCOL FOR A SYSTEMATIC REVIEW

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Background: Indoor Air Quality (IAQ) encompasses a broad spectrum of chemical, physical, and biological agents that can have different impacts on vulnerable demographics, namely the elderly and children (Basińska *et al*., 2019; Mishra *et al*., 2015). The levels of pollutants can fluctuate based on their origins, potentially representing health risks. Enhancing IAQ requires a deep understanding of factors contributing to air quality (Mannan & Al-Ghamdi, 2021). This is especially critical in educational settings, where children, due to their sensitivity, spend significant periods indoors. Additionally, they are susceptible to the effects of pollutants such as particulate matter, bacteria, and fungi (Sadrizadeh *et al*., 2022).

Objective: This study aims to present a protocol for a systematic review that supports the potential relationship between airborne microorganisms (bacteria and fungi) and the particulate matter (PM10 and PM2,5) in schools, and its potential effects on children's health.

Methodology: The protocol must be described before the review to ensure that review methods are transparent and reproducible. For this systematic review, studies will be searched in the following databases: Pubmed and Web of Science, including experimental and observational studies. The search strategy developed will comprise the following terms (not an exhaustive list): "indoor air quality"; "classroom air quality", "schools"; "children"; "particulate matter", "biological pollutants"; "Bacteria"; "Fungi"; "indoor bacterial load"; "airborne microorganisms"; "ventilation"; "exposure risks"; "health effects; "symptoms". Results and Discussion: A narrative synthesis of the selected studies will be conducted, focusing on the association between the level and types of airborne microorganisms and the particulate matter quantified in the indoor air of primary schools, and their potential effects on children's health. The data analysis will emphasize the air sampling methods employed to assess microbial contamination and particulate matter, exploring potential correlations with health impacts on children. Moreover, this review aims to pinpoint any inconsistencies across studies while evaluating the strength and robustness of the retrieved data.

Conclusions: This systematic review aims to comprehensively identify and synthesize studies to deepen our understanding of the relationship between airborne microorganisms and particulate matter in primary schools. It will offer valuable insights for developing environmental management strategies and interventions aimed at enhancing IAQ in schools. Additionally, this review will highlight areas requiring further research in this field.

Keywords: Indoor Air Quality, School Environment, Air Pollution, Physical-chemical pollutants, Microorganisms**.**

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