

“Effectiveness of Air Purifiers in Mitigating Indoor Air Pollution: A Narrative Review”

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Abstract

Introduction: Air pollution poses significant threat to public health and the environment. Household air pollution was responsible for an estimated 3.2 million deaths per year in 2020, including 237,000 deaths of children under the age of 5 world-wide. Household air pollution exposure leads to Non-communicable diseases including stroke, ischaemic heart disease, chronic obstructive pulmonary disease (COPD) and lung cancer. The impact of indoor air pollution on impact of health, economic burden and quality of life suggests the importance of further investigation and discussions on this topic.

Material and Methods: Literature search using MeSH terms and keywords in PubMed and Google Scholar was done. Inclusion criteria: Freely available English articles. Following concept was used. ((Effectiveness OR Intervention)) AND (Air Purifiers OR Air Filters*[MeSH] OR HEPA filter)) AND (Air Pollution OR Air Pollution,Indoor/analysis[MeSH] OR Particulate Matter/analysis[MeSH] OR PM) AND India. Similar concept was used in Advanced Google Scholar “Effectiveness of air purifiers”. The search resulted in 33 (PubMed),9 (Google Scholar). After thoroughly scrutinising all abstracts, only 18 fulfilled the inclusion criteria. The full texts were downloaded and included in the review. After screening for duplication and going through the title and abstracts, 5 relevant articles were obtained.

Results: This review critically examines the effectiveness of air purifiers in reducing indoor air pollution. We have obtained a mean reduction of PM 2.5, PM 10 to be 50.51% & 54.6% respectively. We also assess the limitations of purifiers and potential health benefits associated with its use.

Conclusion: Air cleaners (with HEPA filters) placed in the room chamber effectively reduced the PM concentration to a large extent. Still, PM concentrations were much higher than standards prescribed by WHO. More research needs be done in this which will help the policymakers and Implementing Agencies to Formulate benchmark limits.