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Literature review: Household Mold and Risks of Asthma in Children.

Abstract - last to be written, don't introduce the articles

Understanding the correlation between household mold exposure and the increased risk of asthma development in children is significant for safeguarding their respiratory health. Household mold, a common issue in many homes, releases spores that can trigger allergic reactions and exacerbate respiratory conditions such as asthma in children (Shorter et al., 2017; Vesper et al., 2022; Xiao, 2021). Key terms to consider include APIC (Asthma Phenotypes in the Inner-City), DTC (Difficult-to-control), ERMI (Environmental Relative Moldiness Index), ETC (Easy-to-control) (Shorter et al., 2017). Shedding light on how household mold exposure affects children's health, specifically the risk of developing asthma, and will help parents and caregivers take proactive measures to create healthier living environments. This literature review aims to examine existing research and evidence regarding the relationship between household mold exposure, and the risk of asthma in children. This review aims to consolidate learning, identify gaps in understanding, and guide future research and interventions aimed at mitigating asthma risks associated with mold exposure. Current research indicates conflicting findings regarding the relationship between mold exposure and asthma risk in children, suggesting that the study is inconclusive and a need for further investigation to clarify the impact of mold on pediatric asthma.

Demographic differences

New Zealand: A study conducting an incident case-control study involving 150 children with new-onset wheeze and matched control children, the researchers examined each participant's home for moisture damage, condensation, and mold growth (Shorter et al. 2017). They also analyzed airborne microbes using qPCR and conducted skin prick tests for aeroallergens to establish atopy (Shorter et al. 2017). The findings revealed strong positive associations between visible mold and new-onset wheezing in children, with adjusted odds ratios indicating a dose-dependent relationship (Shorter et al. 2017). Surprisingly, measurements of microbial levels, temperature, and humidity did not show significant associations with wheezing (Shorter et al. 2017; Vesper et al. 2022). Notably, the association between mold exposure and wheezing was consistent across atopic and non-atopic children, suggesting a non-allergic mechanism (Shorter et al. 2017). This study underscores the importance of addressing indoor mold exposure as a significant risk factor for asthma development in children, particularly in regions like New Zealand with high rates of both asthma and indoor mold. Further research is warranted to indicate the underlying mechanisms and to inform targeted interventions aimed at reducing mold exposure and mitigating asthma risks in vulnerable populations (Shorter et al. 2017).

Urban areas in the U.S: In urban areas, where environmental factors and living conditions can differ significantly from other regions, understanding the relationship between mold exposure and asthma control difficulty is crucial. A study utilizing Student t-tests to compare mold levels and ERMI values in homes of children with difficult-to-control (DTC) asthma versus easy-to-control (ETC) asthma found no significant differences (Vesper et al. 2022). This suggests that total mold contamination was not a distinguishing factor in asthma control difficulty (Vesper et al. 2022). These findings align with previous research indicating

that "dampness in the home" was not associated with DTC asthma. Interestingly, these results parallel findings from studies conducted in New Zealand, a region known for its high rates of both asthma and indoor mold. Despite differing urban environments, the lack of association between mold exposure and asthma control difficulty underscores the complexity of asthma management and the need for multifaceted approaches to address urban asthma challenges.

Nationwide in U.S: In Nationwide in the U.S., children aged 3–17 years from diverse geographical and sociodemographic backgrounds, household mold exposure emerged as a significant risk factor for current asthma (Xiao 2021). This finding resonates with research conducted in both urban settings and regions like New Zealand, where mold exposure has been implicated in asthma development (Shorter et al. 2017; Xiao 2021). Interestingly, while household pesticide use showed no association with current asthma (Shorter et al. 2017; Vesper et al. 2022; Xiao 2021), sex differences were observed, with household mold exposure significantly associated with asthma only among boys, not girls (Xiao 2021). The impact of mold exposure on asthma risk was consistent across atopic and non-atopic children, suggesting a non-allergic association (Shorter et al. 2017; Xiao 2021). Moreover, the study revealed disparities in asthma risk, with non-Hispanic White children showing a more pronounced association between household mold exposure and asthma compared to racial/ethnic minority children, although sample sizes in minority groups may have influenced these findings (Xiao 2021). These results underscore the importance of mitigating household mold to address childhood asthma, emphasizing the need for targeted interventions across various demographic groups. However, further large-scale prospective studies are warranted to confirm these findings and inform effective asthma prevention strategies.

Gender differences

Male: It was observed that a strong association between mold exposure and asthma onset in children, irrespective of atopic status (Shorter et al. 2017; Xiao 2021). This aligns with the results from the nationally representative U.S. study. Revealing a significant association between household mold exposure and current asthma, particularly among boys (Xiao 2021). Interestingly, this trend contrasts with the lack of significant associations observed in household pesticide use. The disparity in asthma risk between boys and girls highlights the complexity of asthma and the need for further exploration into potential sex-specific vulnerabilities to environmental exposures (Xiao 2021). These findings suggest that boys may be more susceptible to the respiratory effects of mold exposure, emphasizing the importance of more focused measures and interventions to mitigate asthma risks (Xiao 2021).

Female: Collectively the nuanced relationship was illuminated between household mold exposure and asthma risk, particularly among girls (Shorter et al. 2017; Vesper et al. 2022; Xiao 2021). While the New Zealand study did not specifically examine sex differences, it demonstrated a significant association between mold exposure and asthma onset in children, regardless of sex. The divergence highlighted the importance of considering sex-specific vulnerabilities and responses to environmental exposures. Interestingly, household pesticide use showed no significant associations with asthma across both sexes (Shorter et al. 2017; Vesper et al. 2022; Xiao 2021). The different impact of mold exposure on asthma risk between boys and girls underscores the complexity of asthma and the needed specific interventions to address sex-specific vulnerabilities.

Racial and Ethnicity

White:

POC:

Conclusion

- Restate your claim and summarize main points and make connections
- What questions come out for future research, what were the limitations.
- Can you generalize

Needs to be 1300-1500

References

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Vesper S, Wymer L, Kroner J, Pongracic J, Zoratti E, Little, F, Wood R, Kercksmar C, Gruchalla R, Gill M, et al. 2022, Association of mold levels in urban children's homes with difficult-to-control asthma. *J Allergy Clin Immunol*. doi:[10.1016/j.jaci.2022.04.011](https://doi.org/10.1016/j.jaci.2022.04.011). Accessed, 2024.

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