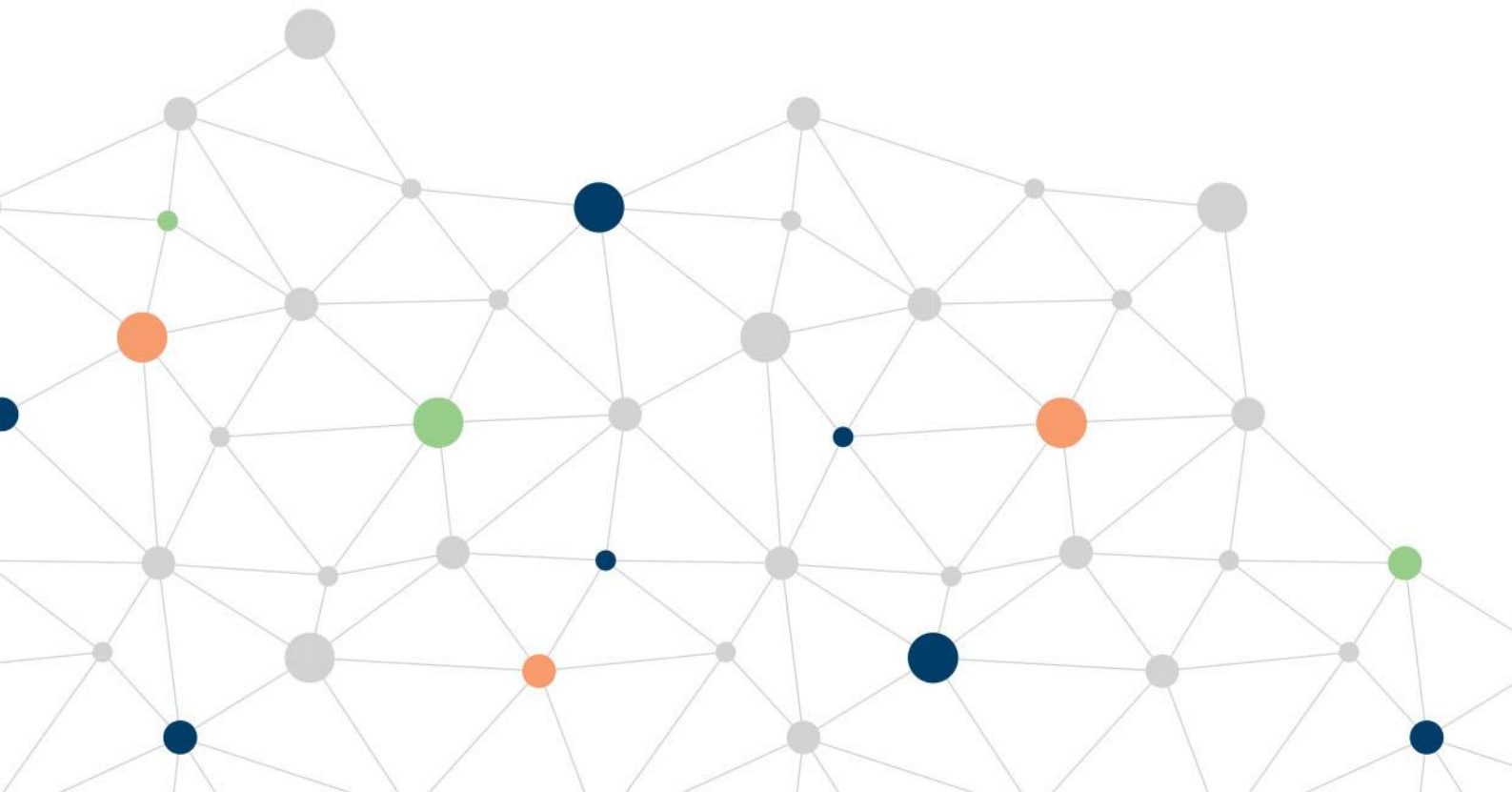


Housing and asthma

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Why did we do it?

Background

Asthma is a chronic disease with multifactorial genetic and environmental triggers such as allergens, chemicals, cold air and exercise. While it can be controlled using medication, avoidance of triggers plays an important role in reducing exacerbations. The prevalence of asthma is higher in regional Victoria (14.2%) compared with the Greater Melbourne Region (11.2%) with the Latrobe Valley being one of three regions with the highest asthma prevalence in Victoria (Estrada and Ownby 2017). Findings from 'The quality of children's living space' in the US shows that housing quality is one of the most important environmental factors that directly relates to asthma outcomes (Bryant-Stephens et al. 2021). Housing quality factors include air filtration, carpet removal, pest removal and mould. Thus, environmental management is an important part of asthma management.

What did we do?

We conducted a grey and academic literature review on the impact of housing on asthma and conducted interviews with a local housing agency and a local government planner to understand the link between housing and asthma and how to address housing as a social determinant of health affecting the incidence, prevalence and exacerbation of asthma in children.

What did we find?

Literature summary

Over two thirds of rural families live in rental properties that are single family/ small multi-family dwellings that are older and more susceptible to dust, mould and pollutants, increasing the risk of asthma exacerbations and severity of episodes in children living in these situations (Bryant-Stephens et al. 2021). In Gippsland, there has been an approximate 50% reduction (48.4%) in availability of rental housing in the last 12 months. The number of affordable houses decreased from 1053 to 543 from June 2020 to June 2021 (One Gippsland 2021). Renters also have limited resources and ability to manage these environmental exposures and depend on the landlord's adherence to state regulations to fix issues.

A study conducted in the United States (US) estimated that the removal of residential asthma triggers would result in a 39% reduction of asthma in the country (Bryant-Stephens et al 2021). It found that:

- Exposure to indoor allergens in poor quality housing can increase the incidence of asthma in children who are genetically susceptible to the disease. Continued exposure leads to acute exacerbations and an increased risk of fatality.
- Indoor allergens including exposure to mouse allergens, cockroach antigen and house dust increased rates of hospitalisations and visits to the emergency department, while exposure to high concentrations of mould associated with water-damage as an infant was linked to an increased likelihood of developing asthma when they reached school age.
- The burden of asthma is greater in low income and minority communities where poor housing quality remains an issue due to exclusionary zoning and structural racism.

- Urban housing policies and practices are important factors that have contributed to substandard housing for children from minority communities.

For Aboriginal and Torres Strait Islander People, asthma represents the second most frequent chronic condition affecting 17.5% of the population and 14.6% of Indigenous children aged 0-14 years (Estrada and Ownby 2017). Housing is a concurrent issue as 80% of Indigenous people live in a non-remote area, a known risk factor for developing asthma. Indigenous families of a lower socioeconomic status often reside in substandard houses in highly industrialised areas or near major roads. This increases their exposure to vehicular and industrial pollutants e.g., diesel particular matter and nitrogen dioxide – known respiratory irritants and triggers for asthma (Brock and McGuane 2022).

Other triggers of asthma

- Increased psychological stress was linked to early onset of asthma and wheezing. Housing characteristics including overcrowding, noise and the presence of pests, perceived housing dissatisfaction, lack of control over housing conditions, financial stress, loss of social support and other housing hardships can contribute to psychological stress (Sandel and Wright 2006).
- Thunderstorm asthma is a specific trigger that increases the severity of acute exacerbations and can be fatal (South Gippsland Hospital, 2019).

Barriers to high quality asthma care in rural areas

- A US study indicated that children living with asthma often do not receive enough information and care regarding their condition. Barriers to care included an inability to access primary care providers, knowledge deficits, a lack of access to pulmonary specialists, and lack of culturally suitable asthma interventions (Estrada and Ownby 2017).
- Landlords are required to rent out properties that meet a minimum required standard according to the Residential Tenancies Amendment Act (2018) (Law library Victoria 2022). While renters can access organisations such as Consumer Affairs Victoria and Tenants Victoria to understand their rights, it is vital that these rights are explained prior to, during and after renting the property. One study showed that despite laws to protect tenant rights, barriers to exerting their rights included being unaware of their rights, difficulty managing the legal system, landlords requiring tenants to pay for repair costs, fear of losing their accommodation if they asserted their rights with some preferring to move out rather than act on a requested repair (Chisholm et al. 2018)

Enablers to high quality asthma care

- Asthma Australia: Educating people with evidence-based prevention and treatment services.
- Increased coverage of thunderstorm event alerts on short notice to include vulnerable families.
- Housing evaluations for patients with asthma to help them understand what their triggers are, how to manage them and any repairs required are performed promptly.
- Landlords are held to account by codes that dictate the frequency of carpet changes, heater replacement and other risk factors identified by research to decrease exposure to triggers.

Interventions

School based intervention

- Nurse service or asthma education program in rural areas.
- Provision of asthma related classes or day camps in the area addressing self-management behaviours with the option of telemedicine if an in-person visit is difficult to arrange (Estrada and Ownby 2017).

Multi-component, multi-trigger interventions (Bryant-Stephens et al. 2021).

- Reducing common triggers e.g., cockroaches, dust, mould and mice. For example, removal of old carpets, regular changing of bedding, targeted cleaning strategies.
- Integrated pest management strategies – cleaning and exclusion practices e.g., filling holes.
- To target mould- repair of leaks, dehumidifiers, and better ventilation.
- Community health workers that visit the house and suggest areas for repair.

Single trigger intervention- collaboration of partner organisations to support a home repair for children with asthma (Bryant-Stephens et al. 2021).

- **Eligibility-** community health worker assesses families for eligibility.
- **Engagement-** Home repair suggestions are made to the company by community health worker.
- **Repairs-** e.g., roof repair/replacement to eliminate leaks, carpet removal and vinyl plank flooring installation, sealing holes in the wall, repairing plumbing leaks to remove moisture. Post-repair home maintenance education is given.
- **Education-** Evaluation of repairs conducted to see whether they meet a certain standard.

Community Asthma Prevention Program. Philadelphia USA (Bryant-Stephens et al. 2021).

- Program partnered with repair agencies to conduct major structural repairs to reduce in-home asthma allergens. Families with a child diagnosed with asthma were eligible to register for the program which was funded by the health system.
- Following enrolment, a housing agency would inspect the house and review the required scope of repair with the homeowner and implement required repairs.
- Outcomes were measured by number of repairs, reduction in asthma triggers, asthma symptoms and utilisation of health care.

Interview results

Summary of an interview with a member of a local housing agency.

- *Many cases in their experience where housing is substandard according to health measures and landlord does not fix issues e.g., mould, temperature and climate regardless of whether these lead to asthma, they need to be addressed.*
- *GPs often ask about triggers in work environment rather than home environment with medication being the first line approach to treatment rather than prevention. Opportunity for GPs to be educated on and provide education to families on environmental triggers at home as part of asthma plan.*
- *Suggested Asthma foundation as a source of education. Advocated for education campaigns via television or other media that talks about risk factors for asthma, how it presents, its triggers, self-management techniques and awareness of environmental risk factors at home e.g., types of floor coverings.*
- *Parents often understand that living in poor housing leads to symptoms such as coughs and wheezing but they do not necessarily connect the dots and realise that it is a symptom of asthma attack or onset of asthma in their children.*
- *Acknowledged that repairs to housing were dependent on the landlord's financial situation and good will with increasing rent to pay for the repairs placing a burden on the renter.*
- *Suggested government subsidies for landlords to incentivise repairing rentals with the council lending money to landlord.*
- *Acknowledged challenges of finding affordable housing due to increased competition in the housing market.*

- *Commented that the benefits of the Big build project to increase public housing are long-term and do not provide an immediate solution for families.*

Summary of interview with a local government planner.

- *Local governments are involved with planning permits but this relates to external materials etc, not so much interior.*
- *Also involved if there is a report from community member related to anything acute such as overcrowding, house fires etc, but this is not frequent.*
- *Suggested looking into tenancy organisations and speaking to Salvation Army.*

Limitations

Research cited is limited to a US context and interventions may not be applicable to a rural Gippsland context. Time constraints prevented review of resources. Interviews were limited to a member of a local housing agency and a local government planner.

Conclusion

There is evidence to support a link between decreased quality of housing, increased exposure to allergens and other environmental factors in the home and the incidence of asthma in children. Interventions include advocating for improved standards of housing through assessing eligibility for home repairs, particularly for renters who have children with asthma. Increasing education around controlling indoor triggers of asthma and increasing the availability of affordable, higher quality housing for lower income families may also help alleviate the burden of asthma in these populations. Further research is required to understand the risk posed by the indoor environment in poor quality housing and ways to mitigate exposure and reduce the incidence of asthma.

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