

SESSION 4



INNOVATIVE APPROACHES TO HEALTHY INDOOR ENVIRONMENTS

Cooking, culture, and clean air: a participatory approach to improving indoor air quality in energy-efficient homes.

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Indoor air quality (IAQ) is a critical yet often overlooked determinant of health and wellbeing, particularly in energy-efficient homes where airtight construction can exacerbate the accumulation of pollutants. Previous research identified disproportionately high CO₂ and particulate matter levels in homes of British-Asian residents due to extended cooking durations and limited ventilation strategies. Recognising that standardised air quality solutions may not align with cultural lifestyles. This project adopts a participatory approach to engage residents, policymakers, and housing associations in developing tailored, community-driven interventions. A mixed methods approach was used to explore the intersection of cultural cooking practices, user behaviour, and IAQ within ethnic minority households in Cardiff, UK.

Residents were provided with air quality monitoring devices that enabled them to observe pollutant levels during everyday cooking activities, fostering self-reflection and data-driven behavioural change. Diary logs and qualitative interviews captured their lived experiences, while co-design sessions ensured that practical recommendations were embedded within residents' cultural contexts.

A key outcome of this project is the Good Practice Guide, which was developed using insights from the co-design process. Through an iterative, participatory approach, residents and stakeholders co-created a resource that translates scientific research into practical, culturally sensitive IAQ interventions. The guide promotes adaptive ventilation strategies that are responsive to both energy-efficient housing constraints and traditional cooking practices, offering pragmatic solutions for reducing indoor pollutant exposure without disrupting cultural norms. By integrating real-life experiences and monitoring data, the guide also outlines behaviour-driven modifications that empower residents to make informed decisions about their indoor environments. Furthermore, it provides housing associations with clear strategies to support IAQ improvements in social housing, while offering policy recommendations for embedding IAQ considerations into Welsh Housing Quality Standard (WHQS) across housing associations, ensuring that indoor air quality becomes a fundamental component of housing policy as we race towards net-zero built environment.