ESSS Outline

Housing, wellbeing and COVID-19

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Introduction

This evidence summary seeks to address the following questions relating to the dynamic between housing and wellbeing: How does housing affect wellbeing overall? How has housing impacted wellbeing during COVID-19?

About the evidence presented below

We looked for evidence on Google Scholar, SCIE and SSKS databases. Search terms included: *housing quality and wellbeing, housing design and wellbeing, housing quality.* The evidence below includes a mix of grey literature (reports and research conducted by third sector organisations) and academic sources.

Accessing resources

We have provided links to the materials referenced in the summary. Some materials are paywalled, which means they are published in academic journals and are only available with a subscription. Some of these are available through The Knowledge Network with an NHS Scotland OpenAthens username. The Knowledge Network offers accounts to everyone who helps provide health and social care in Scotland in conjunction with the NHS and Scottish Local Authorities, including many in the third and independent sectors. You can register here. Where resources are identified as 'available through document delivery', these have been provided to the original enquirer and may be requested through NHS Scotland's fetch item service (subject to eligibility).

Where possible we identify where evidence is published open access, which means the author has chosen to publish their work in a way that makes it freely available to the public. Some are identified as author repository copies, manuscripts, or other copies, which means the author has made a version of the otherwise paywalled publication available to the public. Other referenced sources are pdfs and websites that are available publicly.

Background

The link between housing and wellbeing has been proven extensively over the years. Poor-quality housing is seen to have a profound impact on health. The condition of homes, insecure tenure, and wider neighbourhood characteristics all have a considerable effect on health and wellbeing (Centre for Aging Better, 2020). Research over the last thirty years has focused on investigating: 1) the mechanisms through which specific elements of the built environment, such as indoor air quality, influence the health of occupants and 2) the relationship between the wider living context such as a neighborhood, inequality and health. The link between housing quality and wellbeing is often considered in research from two perspectives: physical health and psychological wellbeing.

Housing, physical and psychological health and wellbeing

Physical wellbeing and health are influenced by the indoor environment in various ways. The article below considers some of the ways physical environments can affect physical health:

Wilkie S, Townshend T, Thompson E, Ling J (2018) Restructuring the built environment to change adult health behaviours: A scoping review integrated with behaviour change frameworks. Cities Health, 2, 198–211, doi:10.1080/23748834.2019.1574954. WHO Regional Office for Europe 2013.

This study is a systematic review of literature and project reports (after 2005, English only) on the risks to health that can exist in indoor build environments. The review covered safety threats and injuries, indoor air pollution, use of household chemicals, noise, damp and mould, thermal

conditions, crowding, inadequate hygiene standards, and harmful building and equipment/furnishing materials.

They found the most common risks to health in indoor environments, according to the literature reviewed, are chemical mixtures of pollutants. These are associated with emissions from building materials such as carpet lining and vinyl flooring, and emissions from consumer products — electronic goods and other inflammation-prone electric equipment.

The second most frequent health risk includes the simultaneous and multiple exposure to air pollutant mixtures and biological stressors, such as mould/dampness and mite allergens, or physical stressors such as noise and thermal (dis)comfort.

The third most frequent stressor combination concerns the multiple presence of and interaction between physical and biological stressors, such as noise, thermal conditions and/or mould, and adverse indoor conditions such as crowding or substandard hygiene.

Rautio N, Filatova S, Lehtiniemi H, Miettunen J (2018) Living environment and its relationship to depressive mood: A systematic review. Int. J. Soc. Psychiatry, 64, 92–103, doi:10.1177/0020764017744582.

The review found that houses and built environments with, for example, poor housing quality and non-functioning, lack of green areas, noise and air pollution were more clearly related to depressive mood. On the contrary, the results in relation to population density, aesthetics and walkability of living environment, and availability of services and depressive mood were more inconsistent.

They conclude that adverse house/built environments, including poor housing quality and non-functioning, lack of green spaces, noise and air pollution are related to depressive mood and should be taken into account during planning.

Hoisington A J, Stearns-Yoder K A, Schuldt S J, Beemer CJ, Maestre J P, Kinney K A, Postolache T T, Lowry C A, Brenner L A (2019) Ten questions concerning the built environment and mental health. Build Environ, 155, 58–69, doi:10.1016/j.buildenv.2019.03.036

This review provides an assessment that integrates historical research across disciplines. They offer several questions that highlight the importance of current lessons learned regarding the built environment and mental health, including a potential role for the microbiome of the built environment to influence mental health. Suggested areas for future investigation are also highlighted.

Their questions:

> *Do design- and occupant-controlled parameters in the built environment influence mental health?*
>
> *What is the impact of indoor air pollution, or outdoor air pollution that accesses the indoor environment, on mental health?*
>
> *Does the microbiome of the built environment influence mental health?*
>
> *What are the known biological mechanisms for indoor air pollution, or outdoor air pollution that accesses the indoor environment, to influence mental health?*
>
> *Does an increase in urbanization influence mental health?*
>
> *Does socioeconomic status change the built environment to influence mental health?*
>
> *What are actions that can be taken in the design and operation of built environments to improve mental health?*

Light is another example of a building factor that influences physical and mental health. The resource argues that building occupants prefer:

1. natural over artificial light
2. windows within their work space and,
3. natural views over built or urban ones

These preferences affect mental health. Data from a WHO survey suggested that inadequate daylighting or bad window views increased the probability of depression by 60% and 40%, respectively. Well-designed lighting is directly and in-directly associated with positive physical, physiological, and psycho-logical health outcomes, as demonstrated by empirical studies across several building types, including schools, offices, hospitals, and retail stores. These positive outcomes include higher test scores, improved health, reduced absenteeism, and increased worker productivity. Conversely, poorly designed lighting can cause glare and thermal discomfort or a loss of privacy, leading to reduced productivity, increased absenteeism, and self-selected reduction of daylight exposure by moving offices or using window coverings.

Housing, nature and wellbeing

Jo H, Song C, Miyazaki Y (2019) Physiological benefits of viewing nature: A systematic review of indoor experiments. Int. J. Environ. Res. Public Health, 16, 4739, doi:10.3390/ijerph16234739.

Contact with nature has been proposed as a solution to achieve physiological relaxation and stress recovery.

In this systematic review, they examined current peer-reviewed articles regarding the physiological effects of visual stimulation from elements or representations of nature in an indoor setting. Thirty-seven articles presenting evidence of the physiological effects of viewing nature were selected. Most of the studies that used display stimuli, such as photos, 3D images, virtual reality, and videos of natural landscapes, confirmed that viewing natural scenery led to more relaxed body responses than viewing the

control. Studies that used real nature stimuli reported that visual contact with flowers, green plants, and wooden materials had positive effects on cerebral and autonomic nervous activities compared with the control. Accumulation of scientific evidence of the physiological relaxation associated with viewing elements of nature would be useful for preventive medicine, specifically nature therapy.

Roe J J, Thompson W C, Aspinall P A, Brewer MJ, Duff E I, Miller D, Mitchell R, Clow A (2013) Green space and stress: Evidence from cortisol measures in deprived urban communities. Int. J. Environ. Res. Public Health, 10, 4086–4103, doi:10.3390/ijerph10094086.

This study extends an earlier exploratory study showing that more green space in deprived urban neighbourhoods in Scotland is linked to lower levels of perceived stress and improved physiological stress. Participants (n = 106) were men and women not in work aged between 35–55 years, resident in socially disadvantaged districts from a Scottish, UK, urban context. Results showed a significant and negative relationship between higher green space levels and stress levels, indicating living in areas with a higher percentage of green space is associated with lower stress. This study shows significant gender differences in stress patterns by levels of green space, with women in lower green space areas showing higher levels of stress.

They conclude that higher levels of green space in residential neighbourhoods, for this deprived urban population of middle-aged men and women not in work, are linked with lower perceived stress and a steeper (healthier) diurnal cortisol decline.

Housing, deprivation and wellbeing

Bond, L., Kearns, A., Mason, P. et al. Exploring the relationships between housing, neighbourhoods and mental wellbeing for residents of deprived areas. BMC Public Health 12, 48 (2012). https://doi.org/10.1186/1471-2458-12-48

This study examined the relationship between the positive mental wellbeing of residents living in deprived areas and their perceptions of their housing and neighbourhoods.

Methods: A cross-sectional study of 3,911 residents in 15 deprived areas in Glasgow, Scotland. Positive mental wellbeing was measured using the Warwick-Edinburgh Mental Wellbeing Scale.

Conclusions: This study has shown that for people living in deprived areas, the quality and aesthetics of housing and neighbourhoods are associated with mental wellbeing, but so too are feelings of respect, status and progress that may be derived from how places are created, serviced and talked about by those who live there. The implication for regeneration activities undertaken to improve housing and neighbourhoods is that it is not just the delivery of improved housing that is important for mental wellbeing, but also the quality and manner of delivery.

Improving Health and Care through the home: A National Memorandum of Understanding (2018)

This a memorandum signed by several social care organisations, including Alzehimer's Society, Ministry of Housing, Communities and Local Government (MHCLG), Department of Health and Social Care NHS Providers (formerly Foundation Trust Network) and many others. This memorandum brings together key organisations, decision-makers and implementers from across the public and voluntary sector, to maximise opportunities to embed the role of housing in joined up action on improving health and better health and social care services. The documents highlights the following:

The right home environment can:

- Protect and improve health and wellbeing and prevent physical and mental ill-health;
- Enable people to manage their health and care needs, including long-term conditions, and ensure positive care experiences by integrating services in the home;
- Allow people to remain in their own home for as long as they choose. In doing so it can:
    - Delay and reduce the need for primary care and social care interventions, including admission to long-term care settings;
    - Prevent hospital admissions;
    - Enable timely discharge from hospital and prevent readmissions to hospital;
    - Enable rapid recovery from periods of ill-health or planned admissions.

Key features of the right home environment (both permanent and temporary) are:

- It is warm and affordable to heat and has adequate ventilation to support good air quality and thermal comfort in extreme conditions;
- It is free from hazards, safe from harm and promotes a sense of security;
- It enables movement around the home and is accessible, including to visitors;
- There is support from others if needed;
- Tenure that is stable and secure.

Garnham L and Rolfe S (2019) Housing as a social determinant of health: evidence from the Housing through Social Enterprise study, Glasgow Centre for Population Health

The importance of housing quality for health and wellbeing lies not just in the basics of a dry, warm, safe house. While these are a prerequisite, a number of aspects of appearance, comfort and functionality are also important for tenants.

Since the relative importance of different aspects varies from person to person, this emphasises the need for person-centred housing services based on good relationships. Housing organisations need to invest in understanding each tenant and their household at the very start of the housing process, well before they move into a property. This is particularly important because there is considerable variation in the degree to which tenants want the opportunity to make their home their own. While some have the capacity and resources to do so, others prefer to move into a property which requires just a few personal items and touches to feel homely. While there are clearly differences between the approaches taken in social and private rented sectors, which are shaped by differences in tenure and resources, there remains the potential for learning across the sectors and between organisations.

Finally, neighbourhood quality, in the sense of safety, friendliness, amenities, and social support networks, has also been highlighted as a key influence on health and wellbeing by this research. While both a suitable neighbourhood and social support are important in enabling tenants to gain a sense of home, there are substantial variations between tenants in what they need and expect from their local area. Again, this highlights the importance of housing organisations developing relationships with potential tenants and understanding their background and circumstances before the start of a tenancy, to help match them to the right area, where at all possible.

The link between housing and wellbeing is also considered from the perspective of the living space, neighbourhoods and the intersection of the two.

Neighbourhood design

Zuniga-Teran A A, Orr B J, Gimblett R H, Chalfoun N V, Guertin D P, Marsh S E (2017) Neighborhood Design, Physical Activity, and Wellbeing: Applying the Walkability Model. Int. J. Environ. Res. Public Health, 14, 76. https://www.mdpi.com/1660-4601/14/1/76

Neighbourhood design affects lifestyle physical activity, and ultimately human wellbeing. There are, however, a limited number of studies that examine neighbourhood design types. This research examines four types of neighbourhood designs: traditional development, suburban development, enclosed community, and cluster housing development, and assess their level of walkability and their effects on physical activity and wellbeing. Among the tested neighbourhood design types, traditional development showed significant associations and the highest value for walkability, as well as for each of the two types of walking (recreation and transportation) representing physical activity. Suburban development showed significant associations and the highest mean values for mental health and wellbeing. Cluster housing showed significant associations and the highest mean value for social interactions with neighbours and for perceived safety from crime. Enclosed community did not obtain the highest means for any wellbeing benefit. This study provides empirical evidence of the importance of including vegetation, particularly trees, throughout neighbourhoods in order to increase physical activity and wellbeing. Likewise, the results suggest that regular maintenance is an important strategy to improve mental health and overall wellbeing in cities.

Thompson C W (2013) Activity, exercise and the planning and design of outdoor spaces. J. Environ. Psychol, 34, 79–96, doi:10.1016/j.jenvp.2013.01.003

This paper reviews research into the relationships between attributes of outdoor environments and levels of activity and exercise in populations using those environments. It takes an environmental designer's view of relevant and effective research and research approaches that can provide evidence for policy and practice. If evidence is to lead to effective changes in our physical environment, then findings that translate readily into a design framework will be most beneficial.

Housing and community resilience

Social Life (2019) A new resilience model for Hounslow

This report describes the development of a model for assessing the resilience of local areas. It explores what the model tells us about change in the London Borough of Hounslow, and how it helps us understand the impact of population churn and new housing development on the resilience of local communities. The resilience model reveals the unexpected strengths and weaknesses of an area, highlighting neighbourhoods that may slip under the radar during more standard assessment processes. The major strength of this tool is its ability to flag areas where these vulnerabilities, and assets exist, allowing local authorities to target the areas that are most in need of their limited resources.

Condon P (2020) How Affordable Housing Design Strengthens Social Resilience

This website entry reflects on matters of urban resilience by comparison with the state of housing in the city of Vancouver, Canada. This piece articulates a definition of urban resilience:

> *"Urban resilience is the ability to efficiently adapt and change a city over time, as circumstances dictate. Urban resilience includes any number of types of resilience, such as economic, physical, social, and ecological resilience, to name a few. The concept of urban resilience is similar to the concept of urban sustainability but less static. A perfectly sustainable city is one where the three pillars of sustainability — equity, ecology, and economy — are in perfect balance, presumably forever. A resilient city, on the other hand, is one where the three pillars are largely in balance but continue to change in sometimes unexpected ways. Cities can and should be designed to be resilient in the face of profound changes such as the rural-to-urban migration, birth rate collapse, and vanishing middle class we will experience in the next four decades."*

He then explores how the city of Vancouver can develop its urban resilience through different strategies.

Bates L, Wiles J, Kearns R, Coleman T (2019) Precariously placed: Home, housing and wellbeing for older renters, Health & Place, Volume 58, 102152, ISSN 1353-8292, https://doi.org/10.1016/j.healthplace.2019.102152

Older renters may encounter a wide range of challenges and constraints in their experiences of ageing, housing and community life that influence their wellbeing. This study investigates how housing-related precarities may impact upon experiences of ageing and home during later life. The study is based on in-depth interviews with 13 older renters living in a particularly high-pressure housing market within the greater Auckland area. Results show that experiences of renting and ageing can be complicated and compromised in diverse ways by interrelated aspects related to housing, community, health, financial and personal circumstances. Distance or isolation from services and healthcare, tourism-related infrastructural pressures, and community changes can intensify precarious experiences of home, and can have implications for older people's wellbeing, as well as their ongoing

opportunities to age well in place. In addition to these potential precarities, older renters appear to draw strength from their familiarity with, attachment to, and enjoyment of, place and community. These responses demonstrate older renters' capacity for resilience to challenge and adversity when ageing in rented places.

Housing and COVID

Amerio A, Brambilla A, Morganti A, Aguglia A, Bianchi D, Santi F, Costantini L, Odone A, Costanza A, Signorelli C, Serafini G, Amore M, & Capolongo S (2020) COVID-19 Lockdown: Housing Built Environment's Effects on Mental Health. International journal of environmental research and public health, 17(16), 5973. https://doi.org/10.3390/ijerph17165973

This study conducted a large web-based survey on 8177 students from a university institute in Milan, Northern Italy, one of the regions most heavily hit by the pandemic in Europe. As emerged from their analysis, poor housing is associated with increased risk of depressive symptoms during lockdown. In particular, living in apartments <60 m2 with poor views and scarce indoor quality is associated with, respectively, 1.31, 1.368 and 2.253 times the risk of moderate–severe and severe depressive symptoms. Subjects reporting worsened working performance from home were over four times more likely to also report depression. Housing design strategies should focus on larger and more livable living spaces facing green areas. They argue that a strengthened multi-interdisciplinary approach, involving urban planning, public mental health, environmental health, epidemiology, and sociology, is needed to investigate the effects of the built environment on mental health, so as to inform welfare and housing policies centered on population well-being.

Centre for Aging Better (2020) Homes health and COVID

This report highlights the following:

- The COVID-19 pandemic has exposed and amplified housing-related health inequalities. Social distancing measures have meant that many people are spending more time in homes that are hazardous, unsafe and lack security of tenure. Inadequate housing conditions, such as overcrowding, can also lead to increased risk of viral transmission.
- Groups in the population who are more likely to live in poor housing are often the same groups who are vulnerable to COVID-19 and other health conditions, including older people, people with existing health conditions, those with lower incomes and people from ethnic minority groups.
- Living in a cold, damp home has a significant impact on health. In England,around one in five excess deaths during winter are attributed to cold housing. If social distancing measures continue into the winter months, the effects of fuel poverty on both physical and mental health may escalate. Spending extended periods exposed to damp and mould is likely to exacerbate or induce respiratory and cardiovascular conditions, in turn increasing the risk of contracting COVID-19.
- Overcrowded housing poses a significant health risk and is more common among ethnic minority groups including Bangladeshi, Pakistani and Black African households. People who live in homes where multiple generations are living together have been found to have poorer outcomes during the pandemic.
- One of the major causes of death, injury and decline among older adults is falls in the home, often a result of inadequate adaptation and maintenance. Social distancing measures and financial insecurity may have exacerbated these risks by leading to essential works to the home being delayed, particularly for shielded households.
- The quality of the built environment is associated with mental and physical health outcomes. Living in an area with more green space is linked to reduced mortality from cardiovascular conditions. During

lockdown, the effects from the lack of access to these spaces is already emerging.

- Interventions to improve housing quality, both in and outside of the home can be a highly cost-effective means of improving health outcomes. Every £1 spent on improving warmth in homes occupied by 'vulnerable' households can result in £4 of health benefits, while £1 spent on home improvement services to reduce falls is estimated to lead to savings of £7.50 to the health and care sector.

D'Alessandro D, Gola M, Appolloni L, Dettori M, Fara G M, Rebecchi A, Settimo G and Capolongo S (2020) "COVID-19 and Living space challenge. Well-being and Public Health recommendations for a healthy, safe, and sustainable housing.", Acta Bio Medica Atenei Parmensis, 91(9-S), pp. 61-75. doi: 10.23750/abm.v91i9-S.10115.

The Well-being and Public Health recommendations for a healthy, safe, and sustainable housing are framed into the following key points:

1. Visible and accessible green elements and spaces;
2. Flexibility, adaptability, sharing, and crowding of living spaces, and compliant functions located into the buildings;
3. Re-appropriation of the basic principles and archetypes of sustainable architecture, thermal comfort and Indoor Air Quality (IAQ);
4. Water consumption and Wastewater Management;
5. Urban Solid Waste Management;
6. Housing automation and electromagnetic fields;
7. Indoor building and finishing materials.

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There are two points where this design is wrong: the base is far too long, and the material is too weak.

Suggested reference: Bocioaga A (2020) ESSS Outline: Title. Iriss. https://doi.org/10.31583/esss.xxxxxxxx

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