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Housing conditions, health and health inequalities

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The title of this section of Frontiers in Environmental Health “**Housing conditions and public health**” reflects the topic of the section because precisely these conditions have been associated to physical and mental health. The macro policies, the housing system, the neighborhood, and the physical, and social conditions can have an impact on health. These conditions have different impact on health according to the dimensions of inequalities. The [Figure 1](#) below summarizes the relationship between housing and health (1).

The macro-structural conditions include the political context, the welfare state, income policies, labor market policies and environmental policies. These macro-structural conditions include government and political tradition, economic and social actors (such as large multinationals, wars, etc.). Increasingly, these policies depend on higher instances of the country, such as other countries of the European Union. There are some studies that relate the political context with the health and health inequalities of the population and show the influence of political tradition on health, in the sense that countries with a social democratic tradition promote a more extensive welfare state, promote more progressive fiscal policies, with fewer income inequalities and full employment policies, offering better results in some health indicators (2). However, political actors are influenced by many forces, some of them related with the interests of social actors or enterprises that act as a lobby, especially powerful in the case of housing, where the lucrative aspects are very important. Moreover, environmental policies may influence housing policies in order to promote environmentally sound housing construction and maintenance to address the effects of climate change.

The housing system: Housing is a social right, as stated in the Universal Declaration of Human Rights of the United Nations (article 25). Government’s housing policy (taxation, social housing) can increase access to high quality affordable housing, especially among low-income households, which can improve residents’ health and reduce health inequalities (3). Public social housing can heavily influence income distribution by offering housing at a relatively cheap or moderate price. In some cities, this type of housing can represent more than half of the total housing stock. However, the housing system is regulated not only by the governments but also by the market, which can lead to a speculative use of housing. In countries where the market is predominant, adequate housing is a commodity difficult to access, especially among low-income population. For example, during the economic recession many people lost their house

because they were not able to pay their mortgage. From a health and health inequalities perspective, housing policies should focus on improving housing affordability, stability and quality, with a special focus on low-income populations, as well as neighborhood and environmental design, to maximize the health benefits (4, 5). Although there are recognized barriers to implementing housing policies from a health perspective (6), there are also some facilitators. For instance, housing policies can benefit different sectors, including health and well-being as well as environmental sustainability. A more systemic approach in housing policies can address the complex interaction that exists between housing, environment and health (7).

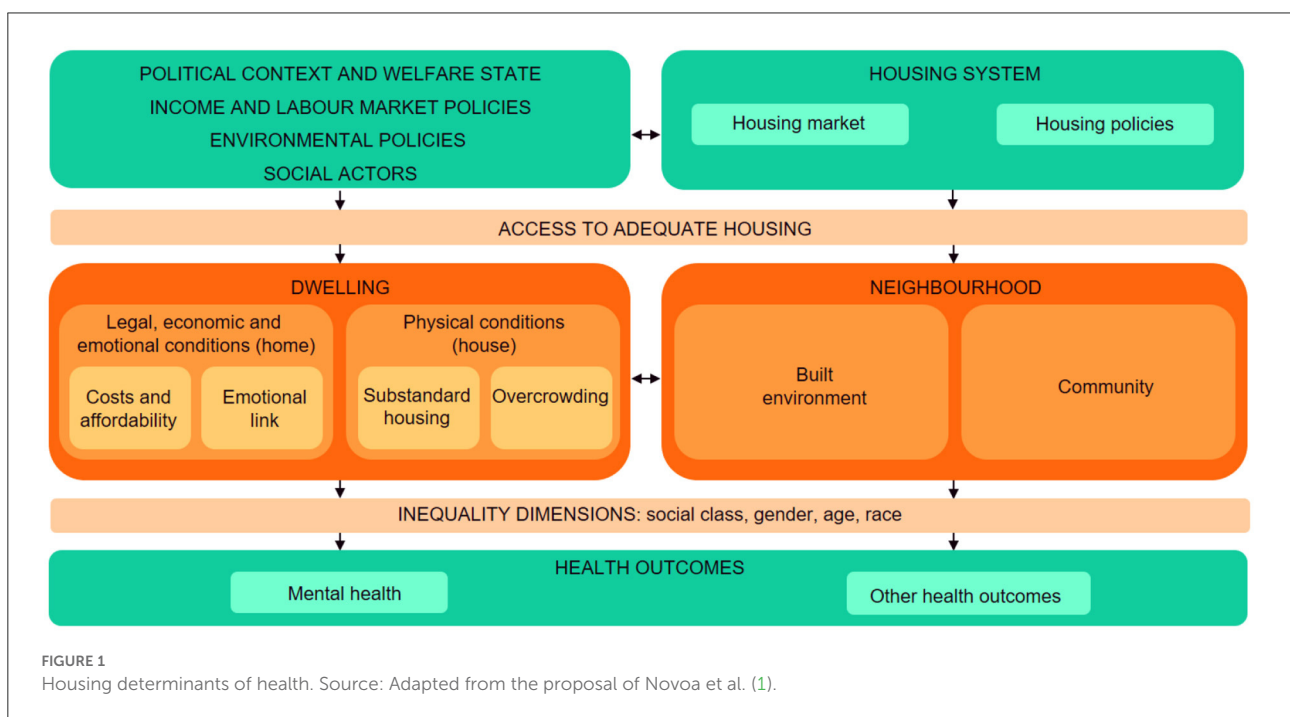
The legal, economic and emotional conditions (the home): Included in this dimension there are several aspects. One is housing affordability, which refers to the ability to pay the rent or mortgage as well as other housing-related costs such as energy or water supplies. Housing affordability issues have been related to both poor physical and mental health (8–15), and can reduce the available budget to attain other basic needs, such as food, clothing or medications. It can also eventually end in foreclosure and eviction, situations which have been related to very poor health conditions, much worse than that of the general population (16). Another aspect is tenure security, a concept very closely related to ontological security, which implies being able to develop a stable life project in the same place, which reduces uncertainty and anxiety, generates peace of mind and allows to develop feelings of rootedness and belonging (17, 18). The concept of housing insecurity (sometimes used in the literature as housing instability) includes

different combinations of housing unaffordability and tenure insecurity. Finally, another aspect included in this dimension is the emotional and social meaning of the home, according to which dwellings can provide feelings of security, stability and connection, and therefore enhance wellbeing (19–21). Feeling unsatisfied with one’s home can result in psychological distress, which can lead to physical and mental health problems (10, 22).

The physical conditions (the house): The physical aspects of the house are also important to promote a good health status (13, 14, 23–25). They can be classified according to 3 categories: thermal comfort, environmental quality, and space quality and functionality.

When referring to inadequate housing temperature, it is not only important to focus on the effect of cold temperatures because health impacts can be attributable to both cold and hot temperatures (26, 27). Fuel poverty has been defined as not being able to keep the house at an adequate temperature and it is caused by 3 aspects: (1) low incomes and not being able to pay the energy costs, (2) high energy prices, which are expected to continue increasing following the start of the Ukraine war in 2022; and (3) poor energy efficiency of housing due to the low quality of materials used in the construction (28, 29). The effects of dampness, moisture and mold on health are well known, they can result in allergic and respiratory problems, in addition to mental health problems, as well as general symptoms such as fatigue or headache (22, 23, 25, 30–33).

Other physical housing conditions that can have an impact on health include environmental quality such as exposure to indoor allergens and chemicals such as radon, lead, carbon



monoxide, emission of pollutants from cooking and heating with gas or solid fuels, volatile organic compounds from cleaning materials and solvents, as well as dust, pests and infestations and outside noise (30, 32, 34). These exposures are higher in low-income countries, which have lower quality housing.

Related with space quality, houses with overcrowding (to many people living in the house) can also result in poor physical health, including increased risk of infectious diseases. It has also been associated with higher rates of poor mental health among adults and children, and reduced school performance among children, in addition to interpersonal conflicts (10, 23, 25, 31, 33, 34).

The physical and social environment of the neighborhood:

The neighborhood where the dwelling is located also has an important influence on health and health inequalities (14, 35). Neighborhood characteristics are heavily influenced by urban planning, which determines the available public infrastructure (such as transport infrastructure and public transportation, or the sewerage system) and equipment (sport, health and education, among others) as well as more general regulations concerning aspects such as buildings and public space use. Urban planning can also influence a neighborhood's environmental characteristics, such as water and air quality and noise pollution, important health determinants, mainly in urban areas. Especially important in urban areas is air and noise pollution derived from motorized mobility, aspects that have been related with several negative health outcomes (36–38).

Health-promoting residential environments should provide access to appropriate commerce, education, employment, healthy food outlets, and healthcare within walking distance, and should also include adequate street design, green spaces and other places for leisure, all of which have been linked to positive mental health and physical activity (22, 32). On the contrary, an inadequate built environment can lead to psychological distress and mental health problems. Furthermore, higher rates of intentional injury, poor birth outcomes, cardiovascular disease, infectious diseases, physical inactivity and all-cause mortality have been observed in low-income neighborhoods (31).

Finally, how housing impacts on health will also depend on the different **inequality axes**. The social stratification of society is determined by the different axes of inequality, such as social class, gender, age, ethnicity or race, and territory of origin and/or residence. These axes determine hierarchies of power in society that have an impact on the opportunities to have good housing conditions and also good health. They are related with the existence of inequalities in health which have been defined as “the differences in health between socioeconomic groups that are systematic, socially produced and unfair” (39). Differences are systematic because they do not occur randomly, but have a persistent pattern in the population, affecting the most disadvantaged

social groups. They are socially produced because they are the consequence of the way society functions. And they are unjust because they violate people's fundamental rights. Many studies have shown inequalities in housing, being poor housing conditions more prevalent among less privileged populations, consequently showing worse health outcomes (14, 33, 40).

Aims of the section “housing conditions and public health”

This section of the Journal aims to receive manuscripts referred to the issues commented above as well as those that provide a deep understanding of the mechanisms that explain how housing conditions are related to health outcomes and also those that show and evaluate specific housing policies and interventions with the objective to improve health outcomes and to reduce health inequalities. Submissions can be any of the following article types: Case Report, Clinical Trial, Correction, Editorial, General Commentary, Hypothesis and Theory, Methods, Mini Review, Opinion, Original Research, Perspective, Policy and Practice Reviews, Review, Systematic Review, Technology and Code, Brief Research Report, Classification, Policy Brief, Study Protocol, Community Case Study, Curriculum, Instruction, and Pedagogy, Specialty Grand Challenge, Data Report, Conceptual Analysis and Clinical Study Protocol.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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