

The homes in the COVID-19 era. How their use and values are changing

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The long lockdown, the frequent adoption of smart working, the online lessons for both school and university students, and the home isolation of many people in order to stop the spread of the SARS-CoV-2, have changed the way millions of people lived their home spaces in the last few months. This also led to a backlash on real estate values, enhancing some characteristics and penalizing others.

This brief contribution comes from a group of university researchers expert in public health and in architecture & health who have been engaging from many years in addressing together the health problems arising from the life in today's cities and homes. This aim could be a stimulus for closer and wider scientific relationship between the components of medicine and architecture for better well-being of people in living environments, with particular reference to urban settings (1, 2).

The COVID-19 pandemic found most of the systems unprepared to this challenge, made worse by the unavailability of a specific vaccine and even of effective drugs (3, 4), and forced the Health Authorities to rely for the containment on traditional public health strategies, such as quarantine, physical distancing, passive protection by masks, Semmelweis-era hygiene practices such as hand washing and general cleaning of surfaces and furnishings. Due to the SARS-CoV-2 high diffusion rate, the fight against the pandemic has been mainly managed through containment and mitigation measures. Although with different degrees of rigidity, the home lockdown has been one of the most common strategies implemented worldwide by national and regional governments. This situation pro-

vided unexpected and prompt changes in the lifestyle of several people, but with the most serious effects to appear progressively only in a long-time period. Several basic concepts emerge as important in tackling the relationship between the home built environment and the occupants' health (5, 6). Let us discuss here a couple of them.

Point one. As the sudden lockdown to contain the spread of the COVID-19 pandemic has been launched, the homes of millions of people have been reorganized in several ways: bedrooms transformed into workstations, kitchens into web-meeting rooms, living rooms into web-classrooms, and balconies (if any) into the only break spaces. By the way, also staying at home was not risk-free: if one member of the family had been infected before the lockdown, the home was to become the starting place of a significant number of contagions (up to 30% during the lockdown), due to the close and continuous contacts between the occupants.

Recent trends in home design and lifestyles have been completely disrupted by this new challenge. Homes, that until a few months ago were used mainly as dormitories, are now hosting several and multiple daytime functions. If this could not be a problem in one-room apartments inhabited by a single, the situation becomes dramatic for small and medium-size apartments inhabited by many people. In such cases, the possibility of "digging" spaces for individual activity does not exist: impossible to have father and mother engaged separately in smart working, and the children attending their online lesson.

The average apartment size in Italy is 117 m², but with a very large range: Milan, the second-largest in size of the metropolitan cities, has only 88 m², but more than one-third of the Italian apartments is below 60 m². The crowding index nationwide shows that 20.7% of the apartments, housing more than 4 people, measure less than 80 m². In 2018, 28.8% of the population (16.8 million) lived in overcrowded apartments. A third of the Italian homes do not have even a balcony, 60% has a single bathroom and only 8% of the entire stock has been built in the XXI century (7). Although it is estimated that a contraction of the real estate values by 1.1–3.1% will take place in 2020–2021, homes with high-quality features will instead count on effective market leverages. These features include wider spaces, balconies with good quality views, green areas and separation of common settings (8). Usually, the above features are easier to obtain by building one-family houses with garden; but, contrary to what happens in the suburbs of US or UK cities, including the large ones, this is not the rule for the metropolitan cities of Italy, where – both downtown and in the residential peripheries, due to the cost of land – the building philosophy and the traditions are prone to realize apartment buildings. Then, the duty for our architects and city planners will be, shortly, to find solutions for housing projects which should offer the possibility for the members of the family to practice smart work, to attend digital classes, to have leisure time, to be physically active, in addition to all the tasks of modern family life in modern homes; and this, maintaining a reasonable size of the apartment and squeezing the costs! We believe that some of the activities could be moved to some common spaces of the building: an open space substituting the roof, or a green area around the building, for adult physical activities and/or children playground; a common laundry in the basement to save space in the home; and so on.

Point two. During the epidemic peak, domestic spaces hosted up to 100,000 infected or suspected people under isolation on a trust basis. Creating a true isolation area within individual homes is not an easy task and several points of attention must be considered, such as space and flow separation, cleaning provision, double bathrooms, waste disposal, and support

for family members. In this direction, telemedicine can provide important improvements. Lastly, it is renowned that the living condition is an important factor to decide between health or developing diseases, and also to create social inequalities (9, 10, 11). Additionally, several studies agree in showing that, albeit the undiscussable benefits of mandatory mass quarantine, home lockdown might have some negative effects on individual psycho-physical status such as fears of infection, frustration, and boredom, inadequate supplies and information, financial loss and stigma, along with a daily physical activity decay. Considering that built environment features such as dimension, views, natural lights, balconies, and indoor qualities can mediate mental health issues, the characteristics of homes assume an increasingly important role (12).

In conclusion, we can say that, despite the tragedy caused, the COVID-19 pandemic could be an opportunity to accelerate the process of promoting healthier, safer and more resilient homes and for improving the living conditions and favoring the use of homes that improve the well-being of the occupants, reduce the risk of contagion and allow uses consistent with the recent UN and WHO *Sustainable Development Goals* recommendations (13, 14).

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