

Chapter 78

Environment for Healthy Living



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Abstract How do we build a healthy vision of the future? What interventions should architects promote to support human health and well-being, and from where do we start? The paper discusses the concept of health in a broader vision through international documents, focusing on the area of action for architects, and stressing the crucial role of collaborative, multisectoral, and transdisciplinary approaches to achieving optimal health balance. Moreover, it argues that the various contributions presented at the Conference link them to a unique vision.

Keywords Health · Environment · People · Technology

78.1 Introduction

The topic of people's health is relevant to the full range of potential ushered in by technological innovation and processes of ecological and digital transition, touching on all its component factors. In international conventions, the definition of health has evolved to “a state of complete physical, mental, and social well-being,” and not simply “an absence of illness or infirmity,” so that it becomes “a resource for everyday life” (WHO 1948).

Health is a proactive concept whose promotion is not relegated exclusively to the medical sector's ability to meet the population's needs, but rather represents the measures through which “an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment.” Moreover, health is “created and lived by people within the settings of their everyday life; where they learn, work, play, and love” (WHO 1986).

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Starting from its definition, health is the result of a complex system that is both adaptive and dynamic, and it evolves through interaction between the potential of individuals and the social and environmental determinants to which they are subjected (Meikirch Model). This interaction must be sufficient to respond satisfactorily to the demands of life, and it varies across individuals and contexts; for these reasons, the state of health is the result of the functioning of the system as a whole (Bircher and Hahn 2016, 2017).

The Meikirch model is an evolution of the one formulated by the northern European School of public health. The concentric model has at its center the individuals with their biological and genetic characteristics, as invariable factors. The focuses are the social determinants of health and the environmental determinants of health, and their “material manifestation,” namely the built environment, in the awareness that they affect or influence the demands of life and the individual determinants of health.

Social determinants of health (SDH) include the immediate social surroundings of each individual as well as the larger social context. According to Tarlov’s definition, they are “the social characteristics within which living takes place” (Tarlov 1996).

Environmental determinants of health (EDHs) include the whole biosphere, and the environment individuals need for nutrition and recreation, as well as the quality of water, air, and soil. Moreover, they include the place where we are born, live, work, move, and enjoy housing, workplaces, streets, schools, hospitals, open spaces, and more. In short, EDHs constitute the environment where people carry out their daily activities.

SDHs interact strongly with the demands of life and the potential of the individual. Equity and equality, social concerns, working conditions, autonomy, and social participation are all aspects that affect health and longevity. Likewise, EDHs influence living and working conditions and affect quality of life outcomes, and therefore a wide range of health issues, including risks. Both SDHs and EDHs also have a global and local impact on natural resources, catastrophes, population growth, and climate change. For these reasons, the topic of health must be considered as cutting across the other sessions presented at the Conference, underlying every anthropic action. Every design action has in itself the responsibility to create environments that promote the health and well-being of people or reduce the negative effects on their health.

Over the past twenty years, the topic of health has gained increasing relevance with a particular focus on the “city,” because of the very large number of inhabitants in urban areas. The COVID-19 pandemic proclaimed by the World Health Organization on 11 March 2020, and still ongoing, impacts intensively built and extended cities, reinforcing the debate on how to rethink and reshape their social, cultural, economic, and environmental sustainability (UNESCO 2020). In fact, continued world urbanization and the population’s demographic characteristics have a great impact on the city, putting it under pressure in terms of the consumption of natural resources, organization of physical and virtual infrastructure, demand for public services, and social relations. This scenario produces significant differences among

the world's countries and brings negative effects on the health of the city inhabitants, as confirmed by several studies (Rydin et al. 2012).

Among the seventeen Sustainable Development Goals (SDGs) in the 2030 Agenda, the third one, "Ensure healthy lives and promote well-being for all at all ages," and the eleventh, "Make cities and human settlements inclusive, safe, resilient, and sustainable," highlights the importance of planning and managing these processes within the city as well (UN 2015). In detail, the 11th Goal is articulated in seven primary targets that relate to different dimensions and elements, as follows: housing and basic services; transport systems; urbanization; cultural and natural heritage; natural disaster; environmental impact; and green and public spaces. In 2030, the world's countries must reach the targets for developing and investing in safe and affordable housing, basic services, and transport systems; inclusive and sustainable urbanization; protecting and safeguarding cultural and natural heritage; reducing the negative effects of natural disasters, and preventing them; reducing the environmental impact of cities; and guaranteeing universal access to green and public spaces that must be safe and inclusive.

Although the SDGs have a universal character, the world's countries show inequalities in terms of living conditions, access to public services, transport, economy, and more. Consequently, meeting the targets will depend on the different specificities and capabilities of the Global South and the Global North; however, in both cases, there is still a strong need for investments and policies to achieve them.

"Rich and poor people live in very different epidemiological worlds, even within the same city. And such disparity occurs in both high-income and low-income countries" (Rydin et al. 2012). Given the above, it may be stated that each target considers in its achievement the positive impact on the health of the population that lives within the city, which becomes the locus of action, and strategies focused on people's needs and respect for the environment.

Moreover, in keeping with the global policies, the European Healthy Cities Network—launched by the WHO in 1986—plays a crucial role in promoting policies and strategies for urban areas, placing the principle of population health at its core.

The WHO defines the Healthy City as the "one that is continually creating and improving those physical and social environments, and expanding those community resources which enable people to mutually support each other, in performing all the functions of life and developing to their maximum potential" (WHO 1998).

The Healthy City aims to create a health-supportive environment: to achieve a good quality of life, provide basic sanitation and satisfy hygiene needs, and supply access to health care. The documents produced by the European Healthy Cities Network, and in particular the Zagreb Declaration (WHO 2009), are the starting point in defining intervention areas for urban planners, architects, and engineers, as well as for other professionals, because building a Healthy City requires interdisciplinary action.

According to these documents, the attention focuses on three core themes and illustrates their main aims.

- “Caring and supportive environments.” A healthy city must be a city for all its citizens, and must be inclusive, supportive, and responsive to the needs and expectations of the various age groups that inhabit the city, such as children, young adolescents, adults, and the elderly. Because of Europe’s ageing population, policies and universal action plans that address the health needs of this vulnerable group must be introduced, promoting participation, empowerment, independent living, supportive and safe physical and social environments, and accessible services.
- “Healthy living.” A healthy city must provide conditions and opportunities that support healthy lifestyles, enhancing active living, physical activity, and pedestrian mobility, as a strategic plan of urban environment development policies.
- “Healthy urban environment and design.” A healthy city must offer a physical and built environment supporting health, recreation and well-being, safety, social interaction, easy mobility, a sense of pride, and cultural identity, and it must meet the needs of all its citizens.

The three themes are strictly interconnected and suggest different kinds of interventions at different scales. Planning and design actions refer to various disciplines and different scales of interventions and, as mentioned above, they are all strictly connected and they all influence one another.

Nevertheless, it is important to consider that these actions and strategies extend their impacts beyond the boundaries of the city, and for this reason, the dichotomy between urban areas, which include the city itself, and rural areas must be overcome, and a multisectoral approach focusing on patterns of territorial continuity must be proposed. The features and development of urban and rural areas are interdependent (Cork.2 Declaration 2016) and linked to one another, and far more than being buildings, streets, open spaces, landscape, and agriculture, they embody a whole and complex system as a living, breathing organism, triggering an osmotic process. The 11th SDG highlights this interrelationship, underlining the need to “support positive economic, social, and environmental links between urban, peri-urban, and rural areas by strengthening national and regional development planning.”

The main question to “answer” is how urban designers, architects, engineers, and other researchers and practitioners from different disciplines take account, in the design or research process, of the strategies and solutions for improving health or minimizing health impacts on people, and of what their vision is. How spaces are planned, designed, managed, and dreamed can make a significant difference in the impact on their users’ health.

78.2 Vision for a Healthy Living Environment

The “Health | Environment for healthy living” conference session aimed to discuss how the environmental determinants of health, along with their “tangible manifestations,” can be characterized and examined within the framework of architectural technology, at the various working scales, as well as through an osmotic dialogue with

other disciplines. The challenge was to draw up visions of planning, decision-making, design, and execution that focus on people, foreseeing the short-/medium- and long-term impacts on their health. The tracks identified are public and urban health; inclusive designing; accessible environments; green and open spaces; designing for people with fragility; healthy individual buildings and building types; and the Internet of Things in healthcare and public buildings.

Two video interviews opened the session, held by experts with different expertise and belonging to different generations, who were asked to answer the following question: “What interventions should architects promote to support human health and well-being, and from where do we start?”.

Professor Ruzica Bozovic-Stamenovic¹ argues that despite the quick spread and potentiality of information technology, humans do not change, and their sensorial mechanisms remain the same; for that reason, she assumed, building “human well-being” requires starting from recognition of the human sensorial mechanisms, because “people, and not the system, are smart.” The Ph.D. student Giorgio Caprari² tackles different aspects, one of which being the importance of deep knowledge of the design context, considering it within its spatial and temporal dimension, and of the dialogue between designers and clients, or the local community, in order to meet their needs and reach health equity.

Professor Matteo Vitali³ was the discussant of the live session, focusing on the possibilities of finding a field of collaboration between research in the field of public health and infectious diseases, and design research, in a transdisciplinary way. He showed the importance of creating disciplines such as environmental hygiene (1854)—taught in the past within the Faculty of Architecture as well—and environmental chemistry (1962), which investigate the environment’s impact on human health.

Moreover, he showed several research results on outdoor and indoor living environments. The impacts of these research efforts on how the built environment is made⁴ brought up a new perspective for collaboration among those and other disciplines (i.e. technology of architecture, planning, etc.).

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⁴ For the outdoor environment, see: Guidotti, M., Stella, D., Dominici, C., Blasi, G., Owczarek, M., Vitali, M., Protano, C. (2009). Monitoring of traffic-related pollution in a province of central Italy with transplanted lichen *Pseudovernia furfuracea*. *Bulletin of Environmental Contamination and Toxicology*, 83(6), 852–858.

For the indoor environment, see: Manigrasso, M., Vitali, M., Protano, C., & Avino, P. (2017). Temporal evolution of ultrafine particles and of alveolar deposited surface area from main indoor combustion and non-combustion sources in a model room. *Science of the Total Environment*, 598, 1015–1026.

Fourteen papers have been selected for the conference and are published below. A matching of each paper's keywords shows their interrelated conceptualization: healthy leaving, quality of life, and human well-being. The papers assume that social and environmental determinants impact equity in human health and well-being. The words most frequently quoted by the authors are cohesion policies, social sustainability, accessibility, education, emergency, physical activity, and risk reduction. Each paper tackles different scales of intervention from citywide to neighbourhood and district, from local and natural environment to construction, and they discuss various "spaces" and "places" like housing, schools, healthcare facilities, nursing home, snoezelen rooms, sports facilities, ecclesiastical heritage, and artistic monuments. The presented research investigates the topic of the impact on human health and well-being of different "kinds" of people/users such as communities, children, pedestrians, the elderly, tourists, the homeless, users with intellectual disabilities, and healthcare professionals. Furthermore, two categories of the research method applied within the papers may be identified, as follows: observation method—through tools such as sustainability assessment, transit-oriented development, and evidence-based design—and experimental, simulation methods, using the Internet of Things, Advanced technology, ENVI-met (three-dimensional microclimate model), Environmental Modelling and Simulation, Environmental Sensing, and Advanced prefabrication.

It is interesting to note how research is moving more in the direction of the experimental simulation method through information technologies than towards applying the observation method. The papers offer a valuable contribution to understanding various points of view and identifying the areas of research interested in designing the built environment for healthy living.

78.3 Conclusion

To conclude, designing an environment for healthy living is a challenge that requires skills to make people's health needs the driving principle in the designing process, while remaining fully aware of the context under consideration, in an interdisciplinary way. However, people are not the only focus overcoming the vision of people's health; nowadays the challenge is "One health" as "a collaborative, multisectoral, and transdisciplinary approach—working at local, regional, national, and global levels—in order to achieve optimal health (and well-being) outcomes while recognizing the interconnections between people, animals, plants, and their shared environment" (OHHLEP 2022). This concept is also recalled in the Italian Recovery and Resilience Plan.

In this framework, the discipline of architectural technology plays a strategic role, as a "mediator" in connection with various disciplines such as engineering, the social, economic, and medical sciences, and others. Digital technology, artificial intelligence, and the metaverse will allow a vision of "One health" to be created

while not losing sight of the fact that they are tools used by humans and that people have to be involved in the processes of building “one” healthy future.

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