

Urban Public Health, a Multidisciplinary Approach



Daniela D'Alessandro

Abstract Urban environment is a highly complex interactive socio-physical system, with competing expectations and priorities. Public health interventions have always had a fundamental role in the control of diseases in cities. WHO considers urbanization as one of the key challenges for public health in the twenty-first century, since cities offer significant opportunities to improve public health if health-enhancing policies and actions are promoted. A multidisciplinary approach is required, but the basic differences existing between technical and health disciplines make the interaction difficult. The multidisciplinary collaboration is still at a very early stage of development, and needs to be further understood and planned. The author concludes stressing the need for a transversal training, but also for sharing knowledge, instruments and methods, involving all the actors in the planning process, to develop a real multidisciplinary approach.

Keywords Urban health · Public health · Planning · Multidisciplinary · Cities

1 Introduction

Public Health interventions have always had a fundamental role in the control of diseases in cities [1–3]. A growing body of research has documented that the action of urban environment in shaping health and disease is itself of interest. Understanding which are the urban factors relevant for health can enrich the positive aspects of urban living and lead to develop appropriate behaviours and to identify preventive measures. This is also the pivotal topic in many documents produced by WHO [4–10].

Actually, we know that the urban environment is a highly complex interactive socio-physical system, with competing expectations and priorities [11]. Several factors, related to the built environment, are directly responsible for health impacts [12]. They include air quality, both indoor and outdoor, climate, water quality and quantity, noise and traffic-related injuries. Much of the evidence concerning direct

D. D'Alessandro (✉)

Full Professor of Environmental Health, Department of Civil Building Environmental Engineering, Sapienza University of Rome, Rome, Italy
e-mail: daniela.dalessandro@uniroma1.it

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impacts is quantifiable and causal effects can precisely be attributed [12, 13]. Other factors, including the ways in which built environment features and their design (housing, neighbourhoods, social environments, connectivity, density, land use mix, accessibility, amenities and decision-making processes), have an indirect impact, because they are able to influence the feeling and behaviour of individuals and population [12]. For most of these impacts in recent years several evidences have been collected, documenting their relationship with health and these results are fundamental in the definition of salutogenic cities [8, 9, 14].

This is nothing of new. In the past, the disciplines of public health and urban planning were tightly intertwined. With the introduction of a deeper knowledge of microorganisms, infectious diseases and vaccinations, however, the focus of public health moved away from community engineering and urban design and going towards a model based only on strict medical principles [15].

These discoveries opened the way to targeted medical interventions aimed at preventing and curing communicable diseases. It was thus possible to control most of them diseases, at least in developed countries [16]. Consequently, from 1850 to 2000 infant mortality rate has been massively reduced. In Italy, for example it dropped from 220 to 5‰. On the contrary, in the same period, life expectancy at birth passed from about 44 to 79.6 years and the natality rate decreased from 33‰ to 9‰ live births, with an acceleration of this decline after the early 1960s. The mortality from all causes decreased from 22‰ to about 10‰ (crude rates), with a cross between natality and mortality curves in 1993 [16]. The fall in mortality for communicable diseases and the exceptional life prolongation explain why chronic diseases became the predominant cause of death during the twentieth century. In fact, the incidence of this kind of diseases grows exponentially with age. At the same time, after smallpox, other epidemiologically important infectious diseases are close to disappearing, but new epidemics are occurring in recent years, mainly related to climate change and to instability, poverty and conflict in many parts of the world. Both chronic diseases and new infections find the cities the place of their most expression.

As argued by WHO [15], following this shift, public health and urban planning became separated across the world. For long time, mainly during the period of economic prosperity and improvements in medical technology, the urban inequalities in health persisted, the divary increased and the dialog among them became more difficult, because objectives and interest felt far one from the other. Those who mostly suffered this dichotomy and the health consequences (both chronic and communicable diseases) were the members of poorer social class and economically disadvantaged urban population [3, 17–22].

In the 1988 the Institute of Medicine published the report “The Future of Public Health”, in which leaders in the field agreed that the nation’s Public Health activities were in confusion and that the field needed to refocus its efforts to address growing inequalities in health across population groups [10, 17]. By the 1990s, Public Health researchers of some Western Countries began to reconceptualise the risk factors for the uneven distribution of diseases across populations in order to explain health disparities, energizing the field of *social epidemiology* [23]. This discipline, by emphasizing distribution as distinct from causation, pushed Public Health

scholars to reconsider how and why poverty, economic inequality, stress, discrimination, and social capital become “*biologically embodied*” and help explain persistent patterns of inequitable distributions of disease and well-being across different population groups and geographic areas [24]. The *Commission on Social Determinants of Health* drew attention to how transport patterns, access to green spaces, pollution effects, housing quality, community participation, and social isolation were all structured by social inequality [3, 10, 17].

As already discussed in some previous papers [3, 17], by the end of the Twentieth century, a split emerged in Public Health between those emphasizing the biomedical model and focusing on fighting individual disease risk factors, and social epidemiologists, who emphasized the idea of improving neighbourhood conditions, eliminating poverty, and enhancing social resources for health.

To find something similar, it is necessary to go back to the second half of the Eighteenth century, when West European Countries understood that better living conditions would have increased city residents’ physical and mental health, but also boosted moral and economical status of the population [1, 26]. In the same period, in Germany, Rudolf Virchow, having understood that poverty and hunger lead to epidemics and that, in order to avoid them, political reforms were necessary [26], wrote “*Medicine is a social science, and politics is nothing else but medicine on a larger scale*” [27].

At the end of the second half of the twentieth century the drop of mortality for cardiovascular and cerebrovascular diseases is a reality in most countries in the world, which may be ascribed to important improvement in prevention, diagnosis and therapy, but also to changes in lifestyle and environmental conditions.

Past that era, a lot of things have changed. Today health can mean different things to different people. One of the most pertinent definitions of health is that from the 1948 Constitution of the World Health Organization [28]. This statement is the evidence that 70 years ago, public health moved progressively away from the medical model—focused on the individual and on interventions targeted to treat disease—back towards a social model, considering health as an outcome of the effects of socioeconomic status, culture, environmental conditions, housing, employment and community influences.

Today cities are energetic hubs of creativity and power, learning and culture. They are ecosystems that support growth and change, and are now home to more than half of the world’s population—a proportion expected to reach two thirds by 2050 [4].

The WHO has identified urbanization as one of the key challenges for public health in the twenty-first century [5], since cities offer significant opportunities to improve public health if health-enhancing policies and actions are promoted [6, 7].

However, as the World continues to become more complex, the challenge is to fight for a framework in which scholars from multiple disciplines can effectively work together with a common aim: creating healthy, sustainable and equitable cities.

2 Multidisciplinarity as a Response to Complex Problems

While it is true that health and urban planning were successful partners long time ago, this is more difficult to reach today, because rests on building a respectful relationship out of mutual understanding and practical engagement across these disciplines [29].

The theme of multidisciplinarity has been very much discussed along the last decade, since the complexity of problems and processes to be managed at various levels (e.g. research, local governance, policy), need a new approach and methods able to analyse more in depth the problems and to find integrated and effective solutions. In the research field, the importance of multidisciplinarity has been widely recognized. It occurred not only in emerging areas such as the new infectious diseases (e.g. HIV, Ebola, Sars-COV, studies), the nanotechnology applications, etc., but even in more traditional fields, such as physics or applied math.

Multidisciplinarity does not mean a simple cooperation for improvement, at least at academic level. Zuo and Zhao [30], in order to evaluate whether a higher level of multidisciplinarity within an academic institution was associated with true internal collaborations, revised 90,000 publications by 2500 faculty members in over 100 academic institutions belonging to three multidisciplinary areas (information, public policy, and neuroscience). They observed that many multidisciplinary institutions were not necessarily practicing true collaboration, although they did feature collaborations that are more interdisciplinary.

Speaking about urban environment, it is to be underlined that cities around the world face many health challenges, including air, water and soil pollution, traffic congestion and noise, and poor housing conditions, and all these situations are caused and worsened by unsustainable urban development and climate change.

A multidisciplinary assessment of these criticalities offers opportunities for integrated low carbon solutions in the urban environment, that can bring multiple benefits for public health [31]. For example, to achieve high walkability, it is crucial to involve town planners and health workers, but this is not enough; it is mandatory also to incorporate thoughts about health and health promotion into regulation plans, to stimulate cultural and commercial activities, and to ensure good maintenance and safety [8, 32, 33].

The efforts that combine the perspectives of different disciplines, that use quantitative and qualitative approaches when appropriate, are more likely to provide answers about both how and why the characteristics of urban living may affect health. Quantitative and qualitative methods may help each other to minimize the a priori decisions; however, the typical interdisciplinary practice involves people with disparate backgrounds and, frequently, for them, the sense of words assumes different meanings depending on which discipline is involved; and researchers and practitioners, schooled in different academic traditions, have to face considerable challenges when working together [34, 35]. In particular, as argued by Kent et al. [29], health and built environment professionals do not need to become technical experts in each other's field, but they simply must work together to capitalise on each other's particular skill. This requires understanding, and the development of this understanding should

be the focus of professional development, rather than the explicit development of a technical skill set.

Actually, there is little shared vocabulary among disciplines and this is a problem, because cities are multi-dimensional systems influenced by trends and processes operating at local, national or supranational levels [e.g. global initiatives that address urban issues, such as the Sustainable Development Goals (SDGs)] [36]. It follows that health and environmental issues, like climate change or the growing populations, need to be addressed using “holistic” approaches that require the development of multidisciplinary research synergies focused on urban health, accompanied by multidisciplinary sustainable interventions. For example, urban energy systems have interactions and influence wherein the socio-technical sphere is expanded to political, environmental and economic spheres as well. In addition to the inter-sectoral linkages, the diverse agents and multilevel governance trends of energy sustainability in the dynamic environment of cities make the urban energy landscape a complex puzzle [37].

A basic difference among technical and health disciplines, that can make interaction difficult, regards the “evidences”. For example, the nature of evidence that planners use to develop their policy is different from that used by public health workers (e.g. lack of standardisation in measurement of environmental and health variables). However, as noted by Kent et al. [29], “*it must be recognised that the way people live and move around a place cannot be subject to the methods employed to produce the standard of evidence traditionally used to underpin health policy decisions....*”. A more comprehensive way to explore and understand the complex issues needs to be embraced, including the use of case studies, in-depth observations, environmental and social impact assessment, etc.

Lawrence [38] argues that interdisciplinary contributions highlight the difference between disciplines and suggests to apply a *transdisciplinary* approach. This kind of contribution crosses the boundaries of scientific knowledge, to account for other types of knowledge (professional know-how, tacit knowledge, etc.). Transdisciplinary contributions create a knowledge domain broader than interdisciplinary contributions; they are based on the coproduction of knowledge by actors and institutions for socially accepted projects that are meant to impact on real world situations.

In conclusion, the multidisciplinary collaboration is still at a very early stage of development, and needs to be further studied, understood and planned.

3 How to Realize Multidisciplinarity in the Era of Complexity?

As argued by Grant et al. [39], today Public Health needs to add a fourth arm to its traditional remit of “(a) protecting and promoting health, (b) preventing ill-health and (c) prolonging life”: it has to actually “create health” by means of investigating and understanding how possible it is to create the conditions for good health and

wellbeing and equitable access to them. This concept is central in health promotion activities and it is an integral part of the “salutogenic city” definition [14]. At the same time, urban designers are grappling with a similar concept when they start to define their term *liveability*. To face up to complex issues, whose causes lie beyond the traditional remit of the health sector, it is necessary to share knowledge from many sectors for obtaining that this fourth arm could realize its goals. Nevertheless collaborative activities involving professionals trained in different cultural areas are still marginal.

More transdisciplinary contributions [38] are required in order to address the complexity of health-related problems at urban scale and implement effective responses to real-world situations. These kinds of contributions offer a broad integrated perspective, which should be part of the training in universities and of the professional training in today’s era of complexity.

Barton et al. [40] suggest that an ideal health-integrated planning system should have five key elements: (a) acceptance of interdepartmental and intersectorial collaboration to properly explore health implications and to integrate the solutions across institutional remits; (b) strong political support, to ensure a consistent approach and the resources needed; (c) full integration of health with other local policy: placing health at the heart of plan-making; (d) active involvement of stakeholders (e.g. citizens) in the policy process; (e) a planning approach that fully reflects health objectives and makes them explicit (quality-of-life monitoring, health impact assessment, strategic sustainability assessment, urban potential studies).

As argued by Ryden et al. [10], improving health in cities implies to realize numerous small-scale interventions, selecting those effective, encouraging self-organization by citizen, and constantly modifying approaches as the system continually changes and adapts. Obviously, the assessment of these various experiments is fundamental. Such assessment should be based on observation, dialogue, discussion and deliberation, rather than on a technical exercise done by external experts. For example, a regeneration project aimed at increasing social cohesion, must consider the values and the priorities of local dwellers. It could be useful to ask their contribution—involving *in vivo* actors and stakeholders—to understand whether this project contributes to, or hinders the change. In-depth consultation, mediation, and deliberation are all processes that can be used to engage stakeholders in detailed and problem-orientated argumentation, to deliver potential solutions in the policy-making process.

Transdisciplinary knowledge production has to move beyond conventional research agendas, to address real world concerns, to address societal challenges in many domains that require collective understanding, political commitment, and innovative responses.

As Lawrence argues, speaking about housing and health [38], today there is no shared understanding about an interdisciplinary and a transdisciplinary epistemology in this field. Therefore the formulation and application of shared conceptual and methodological frameworks (for research and action) should be an objective of this field of inquiry in the immediate future.

In conclusion, there is a transversal need of training, but also of sharing of knowledge, instruments and methods, for all the figures involved in the planning process, to develop a real multidisciplinary approach. The road is long, and we have just begun the journey.

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