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Strengthening the health lens in urban resilience frameworks

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ABSTRACT

Health is an important element of city's resilience to various types of risks and threats. While rapid urbanization and climate change constitute growing threats to population health in cities, multiple factors, including social, political, economic, etc., can shape their health and capacity to withstand and recover from the effects of contemporary challenges in urban areas. By reviewing current dominant resilience-based urban planning approaches and policies, this paper identifies issues related to the overlooking of the multi-dimensionality of health issues in urban areas, and to treating health impacts as merely a dividend of the implementation of such approaches rather than means and targets. It further emphasizes on the recent recognition that health should be the concern not only of the sector, but of all sectors and in all urban policies, before presenting a number of themes which, conjointly, can form a framework for reinforcing the health lens in resilience building of urban settings.

Introduction

Cities, where complex challenges driven by rapid urbanization converge with exacerbated threats due to climate change and others, are emerging as the area where the main challenges for sustainable development are and will be tackled (UN-Habitat 2017). This perhaps explains the growing importance, by both academia and international development, according to sustainable development on local and urban level, and to issues such as risk reduction and disaster prevention – an interest that has been broadly accompanied by a growing global interest in cities, especially from a resilience perspective (UN-Habitat 2017). With the increasing focus on human-centred approaches of international organisations such as UN-Habitat, this interest in cities and their resilience should highlight the cities' inhabitants and provide them safe and healthy environments to live in.

However, while awareness of these issues is rising, 'urban planning in many parts of the world, but particularly in developing regions, has become increasingly disconnected from contemporary urban challenges' (Pelling 2018, p. 1), and as a consequence, remain inadequately aware of their implications for public health. This entails greater roles and engagement by local governments and stakeholders in setting better-informed inclusive decisions and urban planning policies and strategies that are conducive to decreasing the health implications of the aforementioned challenges.

This paper attempts, through a literature review, to expose the gaps in how health in general is being considered in urban strategies and policies, specifically those derived from resilience frameworks and tools. It provides an overview, specifically on disaster risk reduction and systems-approach, which attempt to address the variety of hazards that cities face. In the second section, the review shifts towards literature on health in urban policies, leading to the increasing need to consider health beyond its silo, before finally proceeding to highlight themes of convergences towards understanding how to foster healthier and more resilient cities.

Urban resilience and health

'The health of a population is a critical dimension of the resilience of a society. Population health is both a consequence and a cause of social changes, an important component of social systems that shapes their capacity to adversity and to maintain their essential structure and function under the pressure of hostile events and circumstances' (Eckersley 2010, p. 115). Impacts of hazards, either natural or man-made, constitute a greater risk to communities that lack adequate access to health care due to their limited resources (Runkle 2010). While such events have the potential to directly affect population health (causing death or injuries), their impacts can disrupt service provision

(water, electricity, transportation and waste collection), food supply and health-care services, hence inducing new threats such as water-borne and vector-borne disease outbreaks in the aftermath of floods.

The plurality and multifaceted nature of risk in urban areas has led to an evident rising interest in building the resilience of urban areas. Such unprecedented momentum is driven by a perspective shift towards an inter-sectoral and more holistic understanding of urban environments, an approach that is strongly reflected in the Post-2015 Development Framework including the Sustainable Development Goals, the Sendai framework for Disaster Risk Reduction and the New Urban Agenda following the third United Nations Conference on Housing and Sustainable Development (UN-Habitat City Resilience Profiling Programme 2017).

Health in disaster risk reduction (DRR)

Traditionally, the role of health sector in processes of disaster risk reduction and management has been limited to response and post-event recovery (WHO 2013). This role is now sought to expand in the wake of Sendai Framework for Disaster Risk Reduction 2015–2030, in which improving health is not only viewed as a goal but also as a means to decrease losses (Ting Lo *et al.* 2017). In fact, four out of the seven global targets set in Sendai are directly linked with health. This notable attention implies greater involvement and integration of health systems in national and local strategies for reducing and managing the risk of disasters. According to the World Health Organization (WHO 2017), the challenges lie in shifting the focus of health sector from merely responding to emergencies, to a broader one that considers proactive approaches centered around risk prevention and mitigation measures towards greater resilience.

On the other hand, disaster risk reduction implementation approaches, in general, are criticized for not being adequately attentive to the multiple dimensions of risks (Morcelle and O'Connor 2018), particularly in urban settings where certain political, social and economic realities not only pose threats to population health but also have the potential to increase certain social groups vulnerabilities, as well as decrease the capacity of existing health services in the face of adversities.

Moreover, as the world is becoming predominantly urban, it is estimated that approximately 90% of future urban population growth will take place in cities of low and middle-income countries (UN-Habitat & WHO 2016), where a plurality of social, economic and political elements, coupled with the impacts of climate change, result in issues relating to housing, energy production, food or water security, economic uncertainty, social conflict among others (UN-Habitat City Resilience Profiling Programme 2017). Such

challenges contribute to the appearance of large areas of urban informality. For health, in particular, this signifies that certain groups of population are less advantaged than others (UN-Habitat & WHO 2016), not only in terms of living in healthy environments but also in having adequate access to resources and basic health services. Poor urban households, especially those dwelling in informal settlements, are often invisible in population surveys or official statistics and unrecognized by researchers, analysts, city planners and others (UN-Habitat & WHO 2016).

If these 'invisibilities', and the root causes of inequality and marginalisation are not addressed properly in DRR programmes, the latter can unintentionally result in strategies and projects in which the same conditions are reproduced (Peters and Peter 2018, Ensor *et al.* 2018). This has recently led to calls for a human rights-based approach in setting DRR strategies (Peters and Peter 2018, Ensor *et al.* 2018). Peters and Peter (2018) argue that DRR strategies can allow for transformation rather than replicating or exacerbating existing inequalities, if a human rights lens is brought into such strategies. Moreover, for DRR strategies to account for such multifaceted realities, Pelling (2018) points to the need for establishing stronger linkages between DRR and urban development, by combining environmental health and access to basic services efforts to prepare for, and respond to, extreme events, for example.

Health in urban systems approach of resilience

Consistent with this context, and in response to a growing need to bridge this gap between, on one hand, areas of risk reduction and humanitarian actions, and on the other hand, sustainable development, 'urban resilience building' has gained greater currency over the last few decades (UN-Habitat City Resilience Profiling Programme 2017). UN-Habitat defines urban resilience as the ability of any urban system, with its inhabitants, in a changing environment, to anticipate, prepare, respond to and absorb shocks, positively adapt and transform in the face of stresses and challenges, while facilitating inclusive and sustainable development.

Concurrent with this prominence, over the past several years, a trend has emerged in the field of international development towards quantifying and operationalizing Urban Resilience (Tierney 2015, Cohen *et al.* 2016, Cutter 2016, Sharifi 2016). The outcomes of this trend are becoming evident through the emergence of a number of tools and indexes aimed at assessing cities' resilience to various types of shocks and stresses, ranging from natural, environmental, socio-economic, to political. Whether developed by various actors including international development organizations such as UNISDR's

Scorecard, World Bank's City-Strength and UN-Habitat's City Resilience Profiling Tool (CRPT), or private international actors such as Rockefeller Foundation's City Resilience Index, these initiatives appear to converge upon the approach of translating assessments' outcomes into strategies and plans to be put into actions by cities' governments. Moreover, the theoretical frameworks that most of these initiatives advocate for mirror the resilience concept's evolution from the 1980s onwards, viewing cities as social-ecological systems whose resilience is realized through the ability to withstand disturbances or shocks, their capacity to self-organize, learn and adapt to changes posed by both shocks and chronic stresses (Folke 2006).

This notion of socio-ecological systems seems to also dominate the international development discourse on resilience (UN-Habitat City Resilience Profiling Programme 2017). The concept views cities as complex systems, comprised of distinct networks and elements such as urban infrastructure, built environment, communication flows, and social, cultural, political and economic structures. An urban system refers to the process of connectivity, interaction, operation and organisation of these components within an urban area. Nonetheless, operationalizing this holistic theory underlying systems-approach in building urban resilience can be challenging (Tanner et al. 2017).

In fact, operationalizing this approach has focused on issues of quantitative modelling, while the interaction between individual components and dynamics within the system are given less importance (Turner 2014). The ramification of this, according to several geographers and social scientists, is that issues of power and equity may receive less attention (Meerow and Newell 2016). Power, however, renders certain social groups within the city more vulnerable to disaster risks than others (2003, cited in Griffin 2017, p. 7). Such groups, including poor, marginalized and socio-economically disadvantaged communities lack the options of risk mitigation and adaptation as well as capacity and freedom to exercise their rights of participation in decision-making concerning their environments (Davoudi et al. 2012, Caniglia et al. 2017, Griffin 2017).

As for health, Morcelle and O'Connor (2018), using cases from cities in 100 Resilient Cities network for building urban resilience, argue that in practice, 'health promotion is often cited as an incidental dividend or ignored altogether'. Furthermore, they claim that although health is often stated as an essential dimension of the overall capacity of cities' resilience, their resilience do not address, adequately, how urban and spatial planning action 'such as city-wide greening, urban water management, and chronic homelessness' (p. 3) can improve and promote population health. In other words, these strategies in general

lack a clear vision regarding the role which urban health systems can play, in a transversal cross-sectoral manner, in strengthening the overall resilience of the urban system

'Urban processes – physical, social, and economic – are causally interlinked, with interactions and feedbacks that result in both intended and unintended consequences' (Bai et al. 2016, p. 72), especially when exposed to the abrupt and sudden events brought about by contemporary challenges facing urban areas. The effective application of systems-approach for building urban resilience allows empowering disadvantaged groups, by focusing on the root causes of inequalities and disparities (Bai et al. 2016), including those related to population health. In order to do that, understanding that health systems are part of the wider urban system comprised of complex internal–external interactions, and therefore expanding the traditional health silo to include a more holistic approach is highly needed.

Health and urban policies

The major asset of a society is its people and the quality of the human capital it is able to build (Blair 2011). The caliber of the human capital can explain nations economic development, accumulation of skills and knowledge, regional differences, among many other factors (Gennaioli et al. 2012; World Bank 2017, Bleakley 2010, Graff Zivin and Neidell 2013). One of the most important strands for promoting human capital is the health conditions of the population and, in many cases, the quality and effectiveness of policy interventions are measured by the effects of public interventions on people's health (Barton and Grant 2013, Corburn 2017).

At face value, it may seem that a sustainable living environment is based on good housing, connected infrastructure, access to transportation, etc. But in essence, the promotion of human health is the initial condition for planning human settlements. This approach challenges the idea that health is only the concern of the health system and policies that support it. The promotion of a healthy environment is now a concern that has important implications for many areas in urban planning and policy-making (Barton and Grant 2013).

This perspective takes into account how urbanization, urban planning and city configurations affect people's health. Moreover, the burgeoning body of literature that links environments and health has proven a very strong link between people's health and the urban space (Srinivasan et al. 2003, Schüle and Bolte 2015, Hunter et al. 2015). The bulk of the literature on health outcomes related to urban contexts refers to how public health is affected by the availability and provision of public services and the environment in

which people live (Jackson 2003, Srinivasan *et al.* 2003, Hunter *et al.* 2015, Witten 2016). Nowadays much of the narrative of city planning, the provision of public goods and policy decisions are based on the purpose of integrating health in urban agenda because urban policy decisions have the potential to contribute to public health concerns such as obesity, lack of physical activity, depression, respiratory diseases and readiness to react to disasters that have large implications on people's health (WHO 2016), in the light of recent trends in global urban population growth and climate change projections.

While the notable growth of urban population tends to prolong supply networks of basic services such as water, electricity and food provision, it increases reliance on waste collection services and wastewater systems, resulting in serious consequences for population health when such urban 'lifelines' are disrupted by hazards like storms, floods or drought (McBean and Henstra 2003, Barata *et al.* 2011). Moreover, around 50% of urban dwellers in low and middle-income countries live in settlements of poor and precarious living conditions (Huq *et al.* 2007, Barata *et al.* 2011), mostly located in risk prone areas, including areas with high levels of air pollution and environmental contamination due to heavy traffic movement or industrial activities, amongst other. The unabated pace of climate change, while increasing the intensity and frequency of natural hazards, is projected to exacerbate the current issues facing urban areas rather than generating new ones (Costello *et al.* 2009, Barata *et al.* 2011).

Themes on how to foster healthier and resilient urban environments

There are at least four themes identified by the World Health Organization (2016) and backed up by a large body of academic and policy research that frames the urban agendas to foster health and resilience in cities, namely: i) policies to reduce infectious and non-communicable diseases; ii) health indicators to proxy benefits from public interventions and decisions; iii) health impacts on urban policies to foster sustainable development; and iv) readiness for health risks and disasters. These themes present considerations on how a systems-level approach to health issues can be carried out and foster resilience in cities centered around the concept of Health in All Policies – HiAP.

Since health is a core element for people's wellbeing and an enabler condition, most of policy decisions have to take into account the health implications of those decisions, this translates into a Health in All Policies approach – HiAP – (Leppo *et al.* 2013). Rudolph *et al.* (2013) claim that HiAP responds to multiple issues that are often intricately linked, some of which are directly linked to health such as chronic

epidemics and some others are caused by growing inequalities including health inequities, in addition to climate change impacts, among others. Morcelle and O'Connor (2018) argue that a number of elements make HiAP an ideal for improving community resilience. These elements include the ability of HiAP to address health inequities by promoting structural or procedural change, to support cross-sectoral collaboration and action, engage and empower an array of stakeholders including those in vulnerable situation, civil society organizations and private sector.

Policies to reduce infectious and non-communicable diseases

Countries all over the world are experiencing an increase in infectious and non-communicable diseases. Cardiovascular and respiratory diseases, cancer, obesity and conditions that are to a large extent preventable, are growing (PAHO 2017). These conditions are chronic stresses that impose important costs for the health system, workforce productivity and diminish the quality of life of the population (Jackson 2003). Thanks to the large body of research that has studied these issues, today it is known that the environment plays a pivotal role on explaining people's health outcomes (Jackson 2003, Srinivasan *et al.* 2003, Meyer *et al.* 2014, Hunter *et al.* 2015). This wider perspective to understanding health issues highlights how urban planning and the decisions made by local governments have a significant impact on the trends observed on many non-communicable diseases that are reported worldwide, and if properly considered, increase resilience to health risks.

Urban planning matters and can affect people's choices and behaviors. Having green areas near home, cycle lines, good and connected transportation, safety, lightened street and appropriate idewalks have the power to increase physical activity, which in turn reduce obesity, depression, streets and it improves people's overall health (Lee *et al.* 2012, Ferdinand *et al.* 2012, Brown and Cummins 2013, Diez Roux and Mair 2010). Urban planning also has an important role to play in reducing inequalities in cities. Residents who live on deprived and isolated areas constantly report ill health and are more prone to mental health conditions and obesity (Wilkinson 2002, Kondo *et al.* 2009, Pickett and Wilkinson 2015). These communities are also more exposed to the spread of infectious diseases often due to the poor provision and management of urban services such as waste and storm water systems in these areas (WHO 2016).

Health indicators to proxy benefits from public interventions and decisions

To a large extent, many public interventions are measured on their effectiveness to improve people's health

such as increasing physical activity, reducing obesity and having an impact on mental health outcomes like stress and depression (Barton and Grant 2013, Corburn 2017), pointing towards the inherent integration of health and local development agendas. It is also important for the measurement of citizen's health other types of indicators that increase subjective well-being, such as social capital promotion, social cohesiveness and contact with nature that are important for many dimensions of the overall health (Wilkinson and Marmot 2003, Barry 2009).

Furthermore, to create healthier and more resilient human settlements, it is necessary to perform health impact assessments, monitor health risks and well-being, and conduct those assessments by groups populations and socioeconomic conditions using timing data synchronizing national and local policy agendas (WHO 2016). Understanding these indicators on health and well-being are essential in determining capacities and vulnerabilities of communities when faced with hazards, and should be crucial components in designing and monitoring urban policies.

Health impacts on urban policies to foster sustainable development

The policy-making process at national and local levels needs to take into account the considerable body of research that international bodies and academia have produced to inform responsible decision-making. There is an important body of research that can inform sustainable and adaptable practices on housing, transport and mobility, green space availability, land use, waste management, energy systems, among other important areas (Un-Habitat 2013, WHO 2014, 2015, 2016, PHAO 2017).

It is also important to support measures that promote better health outcomes whilst striving towards an improved and sustainable environment such as energy conservation, sustainable urban design, water conservation, pollution reduction, and sustainable transportation and mobility policies (WHO 2016). Those policies also need to be inclusive of all citizens regardless their socioeconomic conditions and with particular emphasis on marginalized settlements or those who live outside the urban grid that deserve a particular set of policies to foster health equity (Leppo et al. 2013). Through this, the targets of sustainable development can be achieved while enhancing resilience capacities of vulnerable communities.

Readiness for health risks and disasters

Generally speaking, there are two factors that are creating a major probability to experience disasters from natural hazards more often than ever: i) climate change and ii) rapid urbanization in areas of high risks. There is enough evidence that shows that with global climate change, extreme weather events are more likely to occur (Lau et al. 2010, Bergholt and Lujala 2012). Since the 1970s the proportion of people living in flood-prone areas has increased by 114% and more than half of the world's larger cities are located in areas of high earthquake risks. According to UN estimations, since 2000 over 2.7 billion people have been affected by natural hazards, with a large implication of economic and social recovery of the urban settlements affected (UN 2012).

Given the high prevalence of disasters, communities, organizations and national and local governments have to be equipped to face those possible hazards. The systemic nature of urban areas and the multiplicity of risks mean that this task goes beyond the response of health system and have to include a systems-based HiAP approach (UN 2011, Institute of Medicine 2015). Disaster risk reduction and recovery is a community endeavor and policymakers should provide integrating frameworks to foster resilience to the communities potentially affected by hazards. One of the measures that could be taken at the local and national level is to strengthen the capacity of different government entities to prepare and anticipate health shocks and stresses. It is important to foster resilience policies to clearly communicate about the implications of climate change and rapid urbanization and the adaptation aftershock events by promoting health impact assessments and human-based health systems (Meerow et al. 2016, Demiroz and Haase 2019).

These four themes highlight the interactions of health topics placed within a wider systems perspective. With the urban systems-approach to resilience advocating for increased interaction among different networks, if these themes are integrated in resilience-building frameworks and processes, they can ensure that health issues and their determinants, essential to address in urban areas, are effectively focused upon and not just treated as secondary or accidental considerations. This increased focus on health in a more systemic manner can begin directly addressing health inequities in order to reduce vulnerabilities and increase capacities of communities, which, in any case, is necessary to achieve resilience (Morcelle and O'Connor 2018).

Conclusion

By conducting this literature review, the gaps of current frameworks in resilience to address health issues are highlighted, with some frameworks criticized for not considering or focusing on health risk factors and impacts. While urban resilience embraces a transversal systems approach, it is not focused enough on ensuring equitable improvements to health risks, and so treats health impacts from subsequent strategies or policies as byproducts instead of means and targets.

Similarly, on its own, health-sector-specific policies do not adequately address the multi-dimensionality of health issues in urban areas, although new paradigms in health are increasingly considering the role of urban planning and multi-sectoral approaches in health.

Literature relating how these convergences among health, urban policies and resilience emerged and were discussed in specific themes, that may serve as future guidance on how to foster integration. These involve infusing health equity in policies by using urban planning to address infections and non-communicable diseases, recognizing the multi-dimensions of health indicators, and recognizing that health impacts of disasters require an integrating multi-sectoral approach. It also highlights how health perspective permeates not only in the health system but also how health impacts can be used as a benchmark for resilient and sustainable environments. Ensuring the integration of these themes in urban resilience frameworks would potentially be a step forward in enabling a deeper awareness and consideration of health issues while retaining a transversal approach necessary to address emerging challenges.

Disclosure statement

No potential conflict of interest was reported by the authors.

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