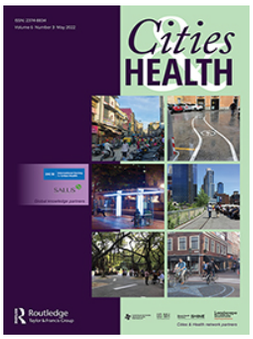

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COMMENTARY AND DEBATE

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Multisectoral approaches to addressing global urban maternal and perinatal health inequities

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ABSTRACT

Emerging trends show declines in maternal and perinatal mortality and morbidity in urban populations might be slower than in rural areas in a variety of contexts. This is happening at a critical juncture in time when urban populations are rapidly increasing and might be partly driven by specifics of vulnerability of the urban poor in Low-income countries and High-income countries alike. Poor maternal and perinatal health outcomes are largely preventable but focusing solely on healthcare interventions misses critical opportunities to reduce ill-health. Social and environmental determinants such as poverty and the impact of climate change must be integrated into policy decisions, especially to benefit poor urban dwellers. Integrating data on the social determinants of health into policy decisions can help multisectoral stakeholders embrace a more Health-in-all-policy approach creating opportunities for better outcomes for these urban poor women and their offspring. We provide examples of two cities – Rotterdam and Kampala – to show that successful multi-sectoral approaches that can address urban maternal and perinatal inequalities should focus on interventions in which healthcare and non-healthcare determinants are integrated.

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Urban maternal and perinatal health; social determinant; multisectoral approaches

Introduction

Globally, maternal deaths have dropped substantially over the past three decades, from 500,000 in 1990 to about 295,000 in 2017. However, the current global maternal mortality ratio of 211 deaths per 100,000 live births is nearly triple the level envisioned by the Sustainable Development Goals (SDG) target of 70 by 2030 (World Health Organization 2019). In addition, the burden of perinatal mortality (stillbirths and newborn deaths) contributes 4.5 million deaths annually (Hug *et al.* 2019, 2021). The majority of the reasons why women and babies die and the high burden of mortality on the most vulnerable within societies can be addressed by integrating evidence-based interventions in addition to strong health systems (Graham *et al.* 2016).

The main determinants of maternal and perinatal survival – living conditions and access to good quality care – are closely linked to place of residence. One of the sentinel determinants of conditions of living space is urbanicity. Urban population grows by an estimated 60 million every year (World Health Organization 2010); in 1990, 4 in 10 people lived in an urban area compared to more than half in 2010 and a projected 7 out of 10 people in 2050 (United Nations 2019). Therefore, the majority of the world's women, and their children, will be living in cities in coming decades. This strongly suggests that potential for improving maternal and perinatal survival and wellbeing is intricately connected to the characteristics of urban life. Any approach aiming to reduce maternal and perinatal mortality must consider the features of the urban environment which can contribute to these causes of death.

Furthermore, there are several features of urban living that can contribute to inequities in maternal and perinatal morbidity and mortality. While urban areas are characterized by positive health on many dimensions, a substantial proportion of urban residents are exposed to unsafe working conditions, social exclusion, poverty, lack of access to clean water, poor housing, air pollution, poor sanitation, and vulnerability to extreme climate-related events, all of which are associated with maternal and perinatal health outcomes (Africa Progess Panel 2010). Compounding

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the contribution of these factors are under-resourced health systems. For example, women who live in slums or poor parts of cities and experience an obstetric emergency might choose to bypass the nearest public hospital due to uncertainties about quality of care, but experience catastrophic delays en route another health facility due to traffic and insecurity on the roads (Banke-Thomas *et al.* 2019, Babajide *et al.* 2021). This can be seen as was addressed in the case of Kampala (Box 1.)

Box 1. Harmonised Decision-making: Urban Health Strategy in the City of Kampala

Kampala, the capital of Uganda, has an estimated population of 1.5 million people. In addition to migration from rural areas which contributes to the growth of slums and other areas with substandard housing and infrastructure, the city swells to 4 million during daytime with the regular influx of commuters. The current methods of understanding the number and needs of pregnant women, such as household surveys or censuses, do not include this sizeable population. Therefore, the planning for and provision of health care is insufficient for the growing number of urban dwellers, daily migrants, and residents of neighboring districts who seek healthcare in the facilities in Kampala. Research conducted by Makerere University together with the Kampala City Authority (KCCA) showed that women's health-seeking is poorly understood and not actively managed. In-depth engagement with women residing in the poorest communities showed that a lack of public health facilities in these areas has resulted in a proliferation of for-profit providers, who are unregulated, expensive, and without adequate capacity to provide care during childbirth and in obstetric emergencies. Increases in the number of women seeking care during pregnancy in Kampala translate into overcrowding in the few public hospitals who do offer tertiary life-saving care such as caesarean sections and blood transfusions. The research findings are leading to re-visioning of the role of KCCA in terms of planning for provision of maternal and perinatal services to residents beyond its administrative boundaries. It views itself not just as responsible for ensuring care for the residents of the greater Kampala area, but also as a provider of care to a larger de facto catchment area for maternal and perinatal referrals from neigbouring districts. Although, this shift in framing is helping re-negotiate financial allocations from the government to ensure high-quality, affordable, and timely care for all women and their babies. Considering the challenges women and their newborns were experiencing in the cities, KCCA got re-envisioned as efforts were channeled towards multisectoral collaboration in delivering better maternal and perinatal services to its residence, and also beyond its administrative areas. USAID sponsored projects with partnership from organizations like Population Services International, targeted at improving maternal referral systems and care, maternal and child nutrition. The effort sought a multistakeholder innovative approaches to bolster maternal, newborn health outcome to ensure the gaps of health inequities is closed for poor women living in the city who might be experiencing worse health than their counterparts in the rural area. Human-centered design was used to identify and map out the various stakeholders and a multi-pronged approach was proposed to address the challenges posed by rapid urbanization in the city. Shortly after Kawempe national referral hospital attracted media attention for being congested with very poor care for newborns, MoH with KCCA and UNICEF and other stakeholders intervened. Questions on why it is congested and where do this mothers and babies come from led to mapping out other facilities to take up care for mothers and new born. Multinational telecommunication companies donated equipment including incubators This resulted in reduced congestions and improved care for mothers and their newborn. KCCA started a referral system which uses public and private sector ambulances. The telecom companies, and public and private sector hospitals also collaborated in the project to improve maternal referral and care. It tapped into the already available ambulances and encouraged parliament members to fund the purchases of ambulances in their constituencies. The Ambulance system which uses a digital app, resulted in more referrals being made and birthed the results like from zero mothers not attending ANC in October 2020 to 1242 mothers attending by August 2021.

For decades, research and policies on maternal and perinatal health have focused on disadvantages that emerge from living in rural settings and issues related to the quality of care within health facilities in rural areas (Channon *et al.* 2010). However, with rapidly evolving global urbanization, research and policies must broaden their focus to also the specificities of collecting data and informing action in urban areas. Examples from around the world show that a multisectoral policy approach which takes into account both medical and social sectors can help address some of these challenges. Such approaches were used in Rotterdam, the Netherlands (Box 2.) to address context-specific issues. Further, we suggest that without a global effort to share, learn from, and implement such multisectoral policy approaches, improvements in maternal and perinatal survival and wellbeing will not keep pace with global urbanization and SDG targets.

Achieving this will require a broader understanding of the complex interconnected determinants that affect the life and health of women in cities, and mechanisms to make sure that understanding informs decision-making. The example of Rotterdam shows that basic improvements to housing and social protection, income, and food security has the potential to transform perinatal survival among vulnerable populations, even in high-income settings with mortality rates below global average. This strategy recognized that improving health and reducing inequities starts at the beginning of life (the first 1,000 days). It also argued for availability and improved use of data on social determinants of maternal health that can contribute to a Health-in-all-

Box 2. Heatmaps (Vulnerability Atlas) in the Netherlands

Poverty was recognised as a key social vulnerability underlying poor maternal and perinatal health in the Netherlands. It presents an accumulation of risks for women during pre-conception and pregnancy, resulting in maternal stress which is known to be associated with adverse pregnancy outcomes. The multidimensionality of poverty and social vulnerability was addressed through targeted social care ('a taken by the hand approach') in the highly ambitious multisectoral "Mothers of Rotterdam" program (Van der Hulst *et al.* 2018). By paying attention to non-medical risks (such as poverty) by midwives and gynaecologists at the booking visit during pregnancy, these women are identified and offered this support by dedicated municipals teams. For example, long-term secure housing was provided to pregnant and postpartum women and their children. More recently, the Rotterdam research community developed the Geographical Distribution of Vulnerability in the Netherlands, which is available via an interactive website (Figure 1). This atlas shows the distribution of the degree of vulnerability among (future) parents in the Netherlands, i.e. women and men aged 18-40 years. Vulnerability is a complex, dynamic concept and results from an imbalance between risk factors and protective factors. The distribution of vulnerability is based on a statistical model using the best available - anonymized - data from Statistic Netherlands. It predicts the risk of vulnerability based on combinations of the various factors among all (potential) parents. They are converted into a vulnerability score per municipality or neigboorhood.

These interactive maps can be used to inform and advise (local) governmental bodies on targeting interventions and strategies to reduce vulnerability and improve the chances of optimal (perinatal) health of these populations with a substantial risk of being vulnerable and their offspring.

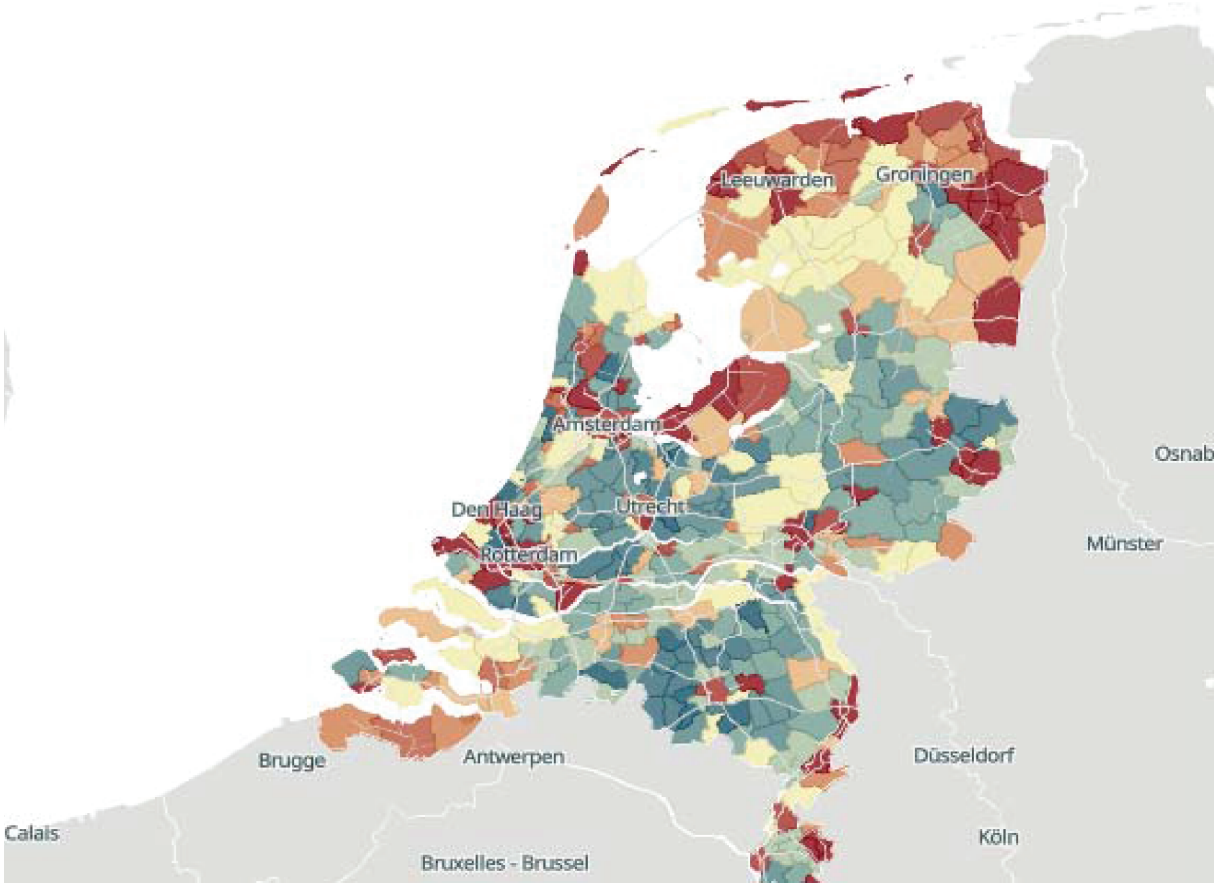

Figure Legend

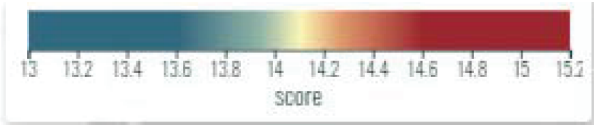

Figure 1. Sample heatmaps showing clusters of vulnerable mothers and children in the Netherlands (https://kwetsbaarheid.kansenkaart.nl/kwetsbaarheidsindex#7.2/52.241/5.285). The project is financed by the Bernard van Leer Foundation.

Policy approach in cities. This was done in the Netherlands through heat maps on perinatal mortality, prematurity, and low birth weight, This resulted in the national programs 'Healthy Pregnancy for All' and 'Solid Start' (Schreiber 2020, Waelput *et al.* 2017, 2022).

A way forward

We are beginning to see action on some of these challenges in several sectors. The World Health Organization recently launched a special initiative for Action on Social Determinants of Health for Advancing Equity which focuses on demonstrating a reduction in health inequities by improving the social circumstances that promote health and access to quality healthcare for at least 20 million disadvantaged people in at least 12 countries by 2028 (Working Group for Monitoring Action on the Social Determinants of Health 2021). Urban cities' decision-makers will benefit from data about the social determinants of urban maternal and perinatal health. Technical capacity must be nurtured to allow public health practitioners and non-healthcare stakeholders to inform policy and decision-making on urban maternal and perinatal health and the social determinants affecting it. Strong consideration should be given to providing data on the social determinants of health to decision-makers. The report of the 3-D commission provided recommendations about how this could be achieved and may offer a template for the adoption of approaches to data gathering that can inform decision-making (3-D Commission 2021, Martins *et al.* 2021).

Researchers can contribute through generating evidence that can help document the spatial magnitude of maternal and perinatal inequities in cities. Priorities include: understanding which determinants of maternal and perinatal health are most relevant, which multisectoral maternal health policies exist, and how they are formulated and implemented.

Policy making should be informed by the actions targeting maternal health and safe motherhood that have been implemented in a few cities (Africa Progess Panel 2010, Waelput *et al.* 2022). While some similar policies have met with local success in few countries (Mwoka *et al.* 2021) as policy makers took into consideration social and environmental determinants in policy decisions to improved population health and closed gaps of inequities, many questions remain. Do these policies make provision for women in underserved parts of the cities? Is there an in-depth understanding through disaggregated data of the challenges of varying social groups of women in the city? What data on social determinants inform the policy process? Exploring policy-making cycles specific to how cities are positioned for optimum maternal health and capturing the use of non-healthcare data in growing cities will advance understanding for city-level decision-makers on adaptation of data on social factors to maternal health policies.

Societal valorization of knowledge through collaboration between academics, government, and non-profit organizations is equally essential (Steegers *et al.* 2016). There is tremendous potential for research that engages multi-stakeholders across diverse sectors. New knowledge from multidisciplinary research should be used to improve the health and wellbeing of the general population with a view to addressing health inequities. Researchers can also identify policies that influence decision-makers on urban maternal and perinatal health as well as what measure of multisectoral collaboration is integrated into the process. A combination of qualitative methods, Delphi techniques and policy analysis can be used to investigate how different cities are positioned to improve the health of urban poor women of reproductive ages. This should include focusing on the effectiveness of newly designed interventions, in which medical and social care are integrated. Cross-cities and cross-national comparative case studies can be helpful to provide a clear picture of a feasible health-in-all policy in action in not different settings. Multi-city selection should consider diversity- multicultural, high, middle, and low-income settings, as well as varying socio-economic groups. Findings can inform new strategies for urban maternal and perinatal health approaches and could provide multisectoral stakeholders with a framework for action to accelerate progress in maternal and perinatal morbidity and mortality.

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All Authors have contributed significantly to this manuscript. OB and LB were responsible for the initial conceptualization of this commentary. IOA, SMA and SG provided suggestions and comments to refine the content. PW and EAPS provided expert information for Box 1 and 2, respectively. OB has led the drafting process, with input from all authors. All authors have approved the final manuscript.

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