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Review Article

Urban health data in India: mapping gaps and solutions

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ABSTRACT

Inadequacies of current health information systems in capturing the diverse health needs and vulnerabilities within urban populations, emphasizing the need to move beyond fragmented traditional data collection approaches. By incorporating emerging technologies and enhancing governance structures, such as strengthening coordination mechanisms and promoting transparency, urban health stakeholders can overcome data gaps and better address the evolving health landscape.

Keywords: Digital health, Health systems, Urban health, Urban health data

INTRODUCTION

India, amidst the globe's swiftly advancing economies, has embraced urbanization as a fundamental element of its developmental journey. The rapid urbanization in India presents a unique juxtaposition of opportunities and challenges.[1] Despite many cities flourishing into vibrant centres of economic activity, driving growth, fostering innovation and creating job opportunities, healthcare often struggles to keep pace. Millions are migrating from rural areas, straining urban health infrastructure. Informal settlements with poor sanitation and overcrowding become breeding grounds for disease and leading to disparities and unequal access to health services, lacking basic amenities and facing worse environmental and unhygienic conditions.[2]

For decades, health policies primarily targeted rural areas due to their prevalence of health disparities and limited access to healthcare services. Many government health policies and programs have focused primarily on rural areas due to the prevalence of poverty, agricultural livelihoods and limited access to healthcare facilities in these regions. This emphasis on rural health often led to relatively less attention to urban health concerns. However, as urban populations continue to grow rapidly worldwide, cities have emerged as epicenters of complex health challenges such as infectious diseases, non-communicable diseases, environmental health risks and socioeconomic disparities. Urban health data can uncover disparities in health outcomes across different demographic groups, geographic areas and socioeconomic strata within cities. This information is instrumental in advocating for equity-focused policies and interventions that address underlying social determinants of health. Urban health covers a wide range of issues, spanning from infectious diseases to mental health and is influenced by various factors like infrastructure, environment, and social determinants.[3]

In unveiling and measuring the gravity of urban health issues, the accuracy, completeness and accessibility of health and disease-specific data play a transformative role. They not only aid in understanding disease patterns, health disparities and resource allocations but also empower health departments and urban local bodies to design effective interventions, create equitable policies and ultimately build healthier cities for everyone.[4]

In review article, we conducted an extensive review of numerous articles and books focused on urban health data collection to identify the core challenges faced in this domain. Many scholars and authors highlighted several significant obstacles, including the high rates of rapid in-and-out migration, low enrollment in government health schemes, and the presence of unrecognized and informal settlements. These factors, among others, contribute to the systemic exclusion of vulnerable urban populations from formal health frameworks.

Through an in-depth analysis of health data sourced from multiple health portals like HMIS, RCH and NCD portals, it became evident that a significant proportion of the urban poor, particularly those living in informal settlements and slums, remain unregistered in health systems. This lack of registration hinders their ability to access government healthcare benefits, forcing them to rely heavily on out-of-pocket expenditures to address their health needs. This exclusion not only amplifies their health vulnerabilities but also perpetuates the cycle of poverty and ill-health among these marginalized communities.

The failure to adequately account for these populations in health data and policy discussions underlines the urgent need for more inclusive health strategies, ensuring that no segment of the urban poor is overlooked in efforts to improve public health outcomes.

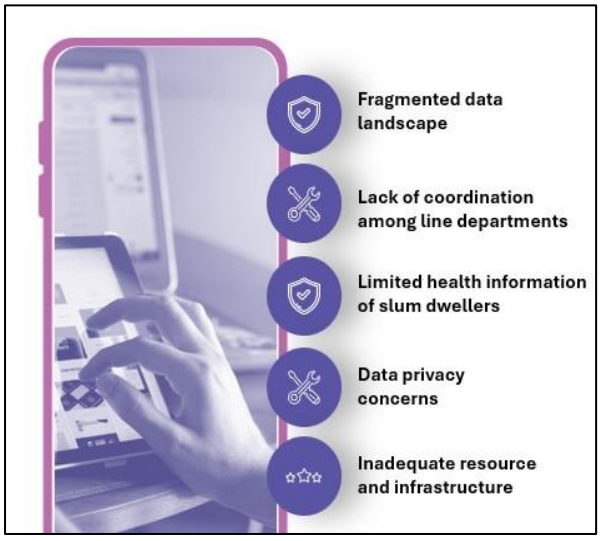

Figure 1: Common challenges in urban health data.

Various data systems related to urban health in India are readily available, including the Indian Census data, which offers demographic and socio-economic information at different geographical levels, encompassing urban areas. This data proves invaluable in comprehending population distribution and identifying potential health risks associated with factors such as overcrowding. The Civil Registration System (CRS) focuses on recording vital events like mortality rates and disease patterns specifically in urban areas. Similarly, the sample registration system (SRS) provides dependable annual estimates of birth rate, death rate, infant mortality rate, and other fertility and mortality indicators at both national and sub-national levels. The National Family Health Survey (NFHS) is a large-scale survey that offers comprehensive insights into population, health, and nutrition trends across India. Additionally, the health management information system (HMIS) gathers data from public health facilities, including those in urban areas, offering valuable insights into healthcare service utilization, immunization coverage, and disease prevalence.

The Reproductive and Child Health (RCH) Portal tracks and evaluates the delivery of RCH services to eligible couples, pregnant women, and children, while the Ayushman Bharat portal serves as a unified health interface, facilitating seamless exchange of health information among patients, healthcare providers, and insurers. Lastly, the Integrated Health Information Platform (IHIP) focuses on disease surveillance, particularly early detection and outbreak response to infectious diseases, further enhancing public health preparedness in urban areas.

Each of these data systems has its own set of limitations and constraints. For instance, the NFHS is a large-scale survey that gathers data on family planning, maternal and child health, nutrition and other factors. While it offers valuable insights into population dynamics and health indicators at the national, state and district levels, it may not capture the specific nuances of health challenges faced by urban populations. Similarly, the RCH portal focuses solely on reproductive, maternal and child health data, omitting information on mental health, chronic diseases and communicable diseases. Each system functions autonomously, gathering data in isolation without integration with other systems. The lack of integration in health data systems impedes the seamless exchange of health information crucial for urban health. This impediment can undermine efforts to monitor public health, deliver efficient healthcare services, and formulate evidence-based policies.

CHALLENGES WITH URBAN HEALTH DATA

Urban health data is crucial for understanding the health needs of vulnerable populations and developing interventions to enhance the health of urban poor. However, collecting accurate and reliable data in urban areas presents numerous challenges. A significant obstacle stems from the swift expansion of informal and frequently unregistered slum settlements. These settlements often emerge spontaneously without formal recognition or infrastructure, making them difficult to capture using traditional data collection methods. Consequently, obtaining comprehensive and reliable data becomes challenging, as these settlements may not be adequately accounted for in official records. Moreover,

the constant migration of these communities complicates data collection efforts, as residents frequently relocate or may be hesitant to engage with authorities. Additionally, certain urban poor groups, such as sex workers, homeless individuals and sanitation workers, are often stigmatized and excluded, exacerbating discrepancies in health data.

Lacking comprehensive data on health indicators, disease prevalence and socio-economic factors makes it challenging to allocate resources effectively and implement targeted health initiatives in urban slum areas. Therefore, addressing the health issues faced by these marginalized populations requires innovative approaches to data collection that can adapt to the dynamic and complex urban landscape. Furthermore, despite the existence of various health data and information systems, the lack of interoperability and data fragmentation pose significant challenges in maintaining consistency and completeness across datasets. This impedes a comprehensive understanding of the factors influencing urban health and limits the effectiveness of public health interventions. For instance, while one system may focus on infectious diseases, another may concentrate on chronic conditions like diabetes or hypertension, resulting in gaps in understanding the overall health profile of urban populations.

Workers in urban settings encounter a multitude of hazards, including exposure to pollutants, physical risks in construction and manufacturing sectors, ergonomic challenges in office environments and psychosocial stressors across industries. Despite the prevalence of these hazards, there are notable gaps in occupational health data in urban areas. Traditional data collection methods often fail to capture the full extent of occupational health risks, particularly among informal and migrant workers who may not be adequately represented in official records. Moreover, fragmented data collection systems and inconsistent reporting practices contribute to incomplete and unreliable occupational health data.

Navigating the intricacies of urban health requires a nuanced understanding of numerous other obscured data blind spots vis-e-vis.

High patient volume and overworked staff in urban healthcare facilities can lead to rushed data entry, increasing the risk of errors and omissions. Inadequate funding and infrastructure limit the resource and their capacity for data collection, storage, and analysis, hindering data quality. Stringent data privacy regulations might create hurdles and limit data collection and sharing, impacting data comprehensiveness.

Additionally, a limited understanding of urban health risks weakens cities' ability to withstand emerging threats, leaving them susceptible to outbreaks, environmental disasters and other crises. Without timely interventions supported by comprehensive data, cities face challenges in recovering from adversity due to a lack of convergence among departments, concerns regarding data security and insufficient integration capabilities.

BRIDGING THE GAPS: PATHWAYS TO PROGRESS

Inaccurate data poses a significant risk in shaping effective health policies and allocating resources appropriately, particularly in urban areas. Flawed data can result in misguided priorities and overlooked health concerns, ultimately jeopardizing the well-being of urban populations. Addressing data-related knowledge gaps in urban health requires a concerted effort from stakeholders across sectors, including policymakers, researchers, healthcare professionals and communities. To enhance the quality and comprehensiveness of health data, a multifaceted strategy is required, comprising.

Fostering collaboration between diverse fields, including public health, urban planning, environmental science, and social sciences, to understand the complex dynamics of urban health and designing holistic solutions. Investing in digital innovations such as geographic information systems (GIS), remote sensing and mobile health surveillance systems and data collection platforms to provide insights into urban health trends, enabling evidence-based decision-making and targeted interventions.[5] Training healthcare workers on the importance of data quality and providing them with sufficient time for data entry can improve accuracy. Implementing standardized data formats across different healthcare information systems would enable seamless data exchange and eliminate the need for manual entry. Bridging the knowledge gaps between research and practice through effective knowledge translation strategies to translate scientific findings into actionable policies and programs that improve urban health outcomes. Adopting a broadly defined systems approach, integrating social science perspectives, adopting transdisciplinary and participatory approaches, establishing long-term monitoring and data bases, and promoting innovative practices and cross city learning. Engaging communities in the data collection process empowers them to identify their health priorities, voice their concerns, and contribute to decision-making processes. Community-based participatory research approaches ensure that interventions are contextually relevant, culturally sensitive and responsive to local needs.[6]

CONCLUSION

India is stepping into a new era of global health due to rapid urbanization, which presents challenges in collecting and managing health data, resulting in gaps in understanding urban health trends and effectively addressing emerging health issues. Addressing urban health data gaps is essential for informed decision-making and effective policy formulation in urban health

governance. These gaps, stemming from various governance challenges and the evolving urban health landscape, have significant implications for public health interventions and healthcare delivery. By recognizing the complex interplay of demographic, epidemiological, nutritional and socio-cultural factors, policymakers can develop targeted strategies to improve urban health outcomes.

Moreover, enhancing transparency, accountability and collaboration among stakeholders is crucial for overcoming governance obstacles and ensuring the availability of accurate and timely health data. Ultimately, bridging urban health data gaps can lead to more equitable and responsive healthcare systems, promoting the well-being of urban populations and fostering sustainable urban development. To overcome these challenges, we must not only improve the sources and types of health information available but also harness new technologies to develop a cohesive health information system capable of producing real-time data for informed decision-making and better healthcare delivery.

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