

Original Article

Role Of Cities in NCD Prevention and Management: A Qualitative Research Study among Doctors

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Conflict of Interest: None.

Mahmood H., et al. (2024). 4(2): DOI: <https://doi.org/10.61919/jhrr.v4i2.425>

ABSTRACT

Background: Noncommunicable diseases (NCDs) such as diabetes, hypertension, and cardiovascular diseases are major global health concerns, surpassing the mortality rates of communicable diseases. These conditions pose significant challenges to global development, particularly in low- and middle-income countries where two-thirds of NCD-related deaths occur. In Pakistan, NCDs account for nearly 25% of all fatalities. The prevention of NCDs requires continuous lifestyle modifications, and evidence suggests that the physical environment and urban design play crucial roles in influencing health behaviors and outcomes.

Objective: This study aimed to assess doctors' perspectives on the role of cities in the prevention and management of NCDs in Pakistan, and to identify barriers and enablers to the development of healthy city policies.

Methods: This descriptive exploratory study employed a qualitative approach, conducted at various private hospitals in the Twin Cities. A purposive sample of approximately 20 doctors from medical units and outpatient departments participated in focus group discussions (FGDs). Data were collected using a semi-structured interview guide, and the FGDs were audio-recorded with participants' consent. Thematic analysis was performed to identify major themes and subthemes related to the role of urban environments in NCD prevention and management.

Results: Participants recognized the importance of physical activity, healthy environments, and lifestyle modifications in preventing NCDs. Key barriers to physical activity included socio-cultural norms, environmental limitations, and political/legislative challenges. Facilitators included individual willpower, health-seeking behavior, supportive policies, and perceived benefits. Poor air quality and the lack of green spaces were significant contributors to the increased prevalence of NCDs. Participants emphasized the need for government intervention to improve urban infrastructure, promote physical activity, and enhance public health initiatives.

Conclusion: Well-planned cities can significantly reduce the burden of NCDs by addressing modifiable risk factors. Governments must prioritize the development of infrastructure that promotes physical activity, improves air quality, and increases access to green spaces. Comprehensive multisectoral strategies are essential to combat the rising threat of NCDs, particularly in rapidly urbanizing areas.

Keywords: Noncommunicable diseases, urban planning, physical activity, air quality, green spaces, healthy cities, Pakistan, qualitative study, focus group discussions, public health policy.

INTRODUCTION

Noncommunicable diseases (NCDs) such as diabetes, hypertension, and cardiovascular diseases are a global health concern, with NCD-related mortality currently surpassing that of communicable diseases (1-3). This steady rise in noncommunicable illnesses is a significant hindrance to global development, particularly in achieving the Millennium Development Goals in low- and middle-income countries (4). Notably, two-thirds of NCD-related deaths occur in low-income developing nations, where health education and resources are often lacking (5). In Pakistan, nearly 25% of all fatalities are attributed to noncommunicable diseases (6). The prevention of NCDs necessitates ongoing lifestyle modifications, as substantial evidence indicates that an individual's perspective and physical surroundings significantly influence their approach to disease prevention and management (7-9).

Cities play a crucial role in achieving global health goals by increasing health and well-being and ultimately reducing the burden of noncommunicable diseases in communities. NCDs, responsible for millions of deaths annually, are a pivotal factor in achieving these

health objectives. Numerous risk factors for NCDs are influenced primarily by the urban environment; however, cities have the potential to mitigate their impact on the health and well-being of residents (10). Given the myriad challenges faced in the 21st century, it is imperative that urban design contributes to both communicable and noncommunicable disease prevention (11, 12). Cities can transform the policy environment by enacting new legislation, such as smoke-free public areas, car-free zones, and urban forest planting, and then engage with local communities to ensure compliance. Moreover, they can alter the physical environment by redesigning metropolitan areas and roadways to safeguard road users, promote physical activity, and enhance the availability of green spaces or sustainable transport alternatives.

The study aimed to assess doctors' perspectives regarding the role of cities in noncommunicable disease prevention and identify barriers and enablers to developing healthy city policies in Pakistan. The findings of this research can provide a foundation for formulating a research agenda for the treatment and prevention of noncommunicable diseases in Pakistan. Health literacy and empowerment can be significantly advanced through the collaborative efforts of healthcare providers, patients, and communities. This study underscores the importance of integrating urban planning and public health strategies to create environments conducive to healthy lifestyles, ultimately contributing to the reduction of NCDs and the enhancement of public health outcomes.

MATERIAL AND METHODS

This descriptive exploratory study employed a qualitative approach to explore doctors' perspectives regarding the role of cities in the prevention and management of noncommunicable diseases (NCDs). The study was conducted at various private hospitals in the Twin Cities, offering services in metabolic disorders, medicine, diabetes, cardiac care, and specialized stroke services. This diverse range of services facilitated the recruitment and identification of study participants. The study population comprised doctors from the medical unit and outpatient departments (OPDs) of these private hospitals. Doctors from the medical department were selected and invited to participate in focus group discussions (FGDs). A sample of approximately 20 doctors was determined to be sufficient to explore their perspectives in two FGDs.

Data were collected using a semi-structured interview guide designed to conduct the FGDs. The guide included seven open-ended questions aimed at eliciting participants' perceptions of NCDs, the roles of cities in NCD prevention and management, and practices related to NCD management. The interview guide covered topics such as dietary habits, physical activities, the role of public spaces in promoting a healthy lifestyle, and the concept of healthy cities (Table 1).

Ethical approval for the study was obtained from the Ethical Review Board of the Armed Forces Postgraduate Medical Institute, Rawalpindi, ensuring compliance with the Declaration of Helsinki. Participants were selected using purposive sampling, and FGDs were conducted in the OPDs of private hospitals. Each FGD lasted an average of forty minutes, ranging from 30 to 40 minutes. The sessions were audio-recorded with the verbal consent of the participants, and field notes were taken during and immediately after each session. The FGDs consisted of open-ended questions following the guide, with additional indirect probes such as humming and paraphrasing to encourage detailed responses.

The audio recordings were transcribed, and the transcriptions were read multiple times for familiarization. Significant quotations representing facilitators and impediments to physical activity were identified, and the data were coded to identify major themes. Thematic analysis was employed to analyze the qualitative data obtained from the FGDs. Both manifest content (what the text says) and latent content (the perceived meaning of the text) were analyzed following the qualitative research procedures outlined by Morse and Niehaus (103). The transcriptions were read repeatedly to ensure a thorough understanding of the material.

To ensure data reliability, the researcher transcribed the interviews and validated them against the audio recordings. Content analysis was used to interpret the findings, with significant words and phrases extracted from the material and broken down into understandable units. These units were consolidated and labeled with relevant codes pertaining to the role of cities in the prevention and management of NCDs. Two researchers independently completed the coding before reaching a consensus on the final codes through discussion. The codes were then subdivided into subcategories and organized into broader categories. In the final phase, the primary themes were determined through group discussion, and a final version of the analysis was prepared and accepted (Figure 2). This rigorous process ensured a comprehensive understanding of doctors' perspectives on the role of urban environments in preventing and managing NCDs.

RESULTS

Table 1: Participants' Demographic and Clinical Characteristics

Variables	Categories	N (%)
Age Groups (years)	25-35	4 (20%)

Variables	Categories	N (%)
	36-45	8 (40%)
	46-55	7 (35%)
	56-65	1 (5%)
Gender	Male	13 (65%)
	Female	7 (35%)
Designation	Residents	14 (70%)
	Consultants	6 (30%)
NCDs in Doctors	Diabetes Mellitus (DM)	9 (45%)
	Hypertension (HTN)	7 (35%)
	Chronic Obstructive Pulmonary Disease (COPD)	0 (0%)
	Cardiovascular Disease (CVD)	2 (10%)
	Others	3 (15%)

The focus group discussions revealed that most participants believed regular physical activity plays a critical role in preventing noncommunicable diseases (NCDs) such as heart disease, stroke, diabetes, and various cancers. They also noted that physical activity helps prevent hypertension, maintain a healthy body weight, and improve mental health and overall quality of life. Popular forms of physical activity mentioned included walking, cycling, active recreation, and play, which can be performed at any level.

Several barriers to physical activity were identified, including cultural, environmental, and political/legislative obstacles. Cultural barriers were particularly significant for females, as societal norms often limit their participation in physical activities. Environmental barriers included limited access to general and sports facilities, poor urban design, lack of social security, inadequate walkways, insufficient public transportation, and the effects of urbanization and a mechanized lifestyle. One participant emphasized, "If you want to enjoy good health, physical activity reduces the risk of developing many illnesses and reduces stress." Political and legislative barriers were also highlighted, with participants noting a lack of coordination and cooperation among authorities, absence of proper platforms for policy development, and insufficient government prioritization and funding for physical activity and NCD prevention. Facilitators promoting physical activity included individual willpower, health-seeking behavior, policies, knowledge, and perceived benefits. Participants identified ministries and institutes, such as the sports and youth ministry, education ministry, and health ministry, as potential leaders in promoting physical activity. Other institutions like mass media, universities, cultural institutions, national youth organizations, sports federations, and welfare organizations also play an indirect role in promoting physical activity. As one doctor noted, "As countries develop economically, levels of inactivity increase and can be as high as 70% due to changes in transport patterns, increased use of technology for work and recreation, cultural values, and an increase in sedentary behaviors. Increased levels of physical inactivity negatively impact health systems, the environment, economic development, community well-being, and quality of life."

Regarding the effects of smoke and air quality, most doctors considered smoking and poor air quality significant contributors to the development and progression of NCDs. Cigarette smoke was identified as a major cause of various cancers, including lung, pancreatic, laryngeal, and oral cancers. Participants discussed how smoking and other factors affecting air quality generate pollution, increasing the prevalence of NCDs, skin illnesses, blood disorders, liver diseases, and renal diseases. One doctor remarked, "In my opinion, smoke and bad air quality are major responsible factors for the raised prevalence of NCDs. In fact, these factors have a direct influence on the increased prevalence of NCDs. The most obvious is air pollution, second only to tobacco intake." They further explained that pollutants such as nitrogen oxide, CO, black carbon, SO₂, O₃, and others from vehicle emissions and combustion fuels significantly impact human health and physical activity, hindering NCD prevention. These modifiable risk factors can be addressed through appropriate laws and precautions.

Participants unanimously agreed on the importance of public spaces in preventing NCDs, particularly for the elderly and individuals with special needs. They highlighted the benefits of well-designed public spaces, including parks, high streets, markets, and community centers, which provide environments that reduce stress, foster community engagement, and promote mental health. One participant described, "Public space is actually a space to which people normally have unrestricted access and right of way. Good high streets, markets, parks, and community centers have many benefits, like parks that provide an atmosphere where people come and reduce their stress, helping build a sense of community, civic identity, and culture."

The discussions also revealed strong support for the concept of healthy cities in NCD prevention. Participants believed that well-planned cities could significantly reduce the burden of modifiable risk factors for NCDs, especially in developing countries like

Pakistan, where many people cannot afford luxurious health activities like gyms, swimming, and yoga. One participant emphasized, "I think a healthy city is the need of the hour. All the world is moving towards disease prevention, and we are still fighting the disease. We can only decrease the burden by having healthy cities with walking tracks, traffic-free zones, cycling tracks irrespective of gender, safety laws, traffic lights, promotion of healthy diets, and regulation against unhealthy food like junk and fast food."

Overall, the findings highlight the crucial role of urban environments in promoting physical activity, reducing pollution, and creating supportive public spaces, which collectively contribute to the prevention and management of NCDs.

DISCUSSION

The current study explored doctors' general perceptions and understanding regarding the role of cities in the prevention and management of noncommunicable diseases (NCDs). Participants were aware of the importance of physical environments, activities, and lifestyle modifications in preventing NCDs. However, there was an apparent disconnect between their knowledge and practices, and participants expressed a lack of agency to address the current state of cities and NCD prevalence in Pakistan. The findings highlighted perceived barriers and facilitators to physical activity, suggesting that healthy environments and cities can be achieved by identifying and addressing these barriers.

Socio-cultural and environmental barriers were the main obstacles to adopting a physically active lifestyle, with self-motivation and time constraints identified as personal barriers. These findings are consistent with previous studies that identified a lack of resources and social support as significant barriers to healthy behaviors (14-17). Additionally, poor air quality in cities was seen as a major contributor to the increased frequency of NCDs. Persistent exposure to air pollution was believed to raise the likelihood of developing respiratory disorders, which significantly contribute to the burden of NCDs. Participants emphasized the need to minimize air pollution, as studies have shown that exposure to PM_{2.5} and particulate matter is linked to increased risks of lung cancer, cardiovascular disease mortality, and type 2 diabetes (18-22).

The scarcity of green spaces in urban areas was another significant factor related to the increasing incidence of NCDs, as sedentary lifestyles and the lack of green areas contribute to poor health outcomes. Participants felt that the health advantages of using green spaces were undervalued and believed it was the government's responsibility to address this issue. Research has shown that the use of green spaces is influenced by sociodemographic characteristics and an understanding of their health benefits (23-26). However, physicians did not consider their role in prescribing park use or physical activity, in contrast to healthcare practitioners globally who promote the use of green spaces through initiatives like park prescriptions (27-32).

Urban populations tend to have unhealthy lifestyles due to greater access to fast food, sugary beverages, and inadequate physical activity. High-calorie diets pose significant risks for obesity and NCDs. Participants believed that without government backing, efforts to promote smoking cessation, nutritional improvement, and physical activity would be less effective. Implementing WHO healthy cities initiatives to address air pollution, lack of green and recreational spaces, and unhealthy city infrastructure is essential yet beyond the scope of physicians' skills.

All participants agreed that the government must be responsive to NCD prevention and control, acknowledging cities' responsibility in this regard. This includes constructing infrastructure such as walking and cycling paths, green areas, and outdoor gyms to encourage healthy behaviors among urban residents. Enhancing public transportation and engaging private sector partners in multisectoral initiatives were also recommended.

There is a need for community-level preventative initiatives, including monitoring and managing air pollution, promoting physical activity, and implementing educational initiatives focused on NCD risk factors. Health education and promotion should emphasize reduced cigarette use, increased physical activity, and healthier diets. Small-scale healthy eating initiatives and physical activity programs have shown favorable outcomes (33-34). However, NCD policies in low- to lower-middle-income countries like Pakistan often do not reflect the realities of urban life and lack coherence with other policies, leading to minimal intersectoral and multisectoral collaborations.

The strengths of this study include its qualitative approach, which provided in-depth insights into doctors' perspectives, and the focus on urban environments' role in NCD prevention. However, limitations include the small sample size and potential biases in self-reported data. Future research should expand the sample size and include diverse urban settings to validate these findings.

CONCLUSION

In conclusion, well-planned cities can significantly reduce the burden of NCDs by addressing modifiable risk factors. Emphasizing physical activity, improving air quality, and creating more public spaces and green belts are crucial steps. Rapid urbanization in Asia continues to contribute to the development of NCDs, increasing vulnerability and threatening the sustainability of cities. Comprehensive multisectoral strategies focusing on key NCD risk factors in urban settings are necessary to address this rising threat.

Despite many countries enacting national plans for NCD prevention, Pakistan's implementation remains inadequate. Governments must intensify efforts to improve policy execution, including allocating financial and other resources to support healthy city projects. Incorporating NCD policies into urban planning through the design and development of parks, pedestrian and cycling tracks, and incentives for non-use of motorized vehicles is essential to combat air pollution and physical inactivity effectively.

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