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Non-communicable diseases challenges and opportunities in Iran: a qualitative study

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Policymakers should focus on reducing risk factors and ensuring equitable access to preventive and therapeutic care for NCDs. This study aimed to identify health promotion challenges and opportunities for NCDs in Iran. This qualitative study involved semistructured interviews with 14 participants, including policymakers and experts in obesity, diabetes, hypertension, and cardiovascular disease management in Iran. Interviews were conducted via Skype, recorded, and transcribed. A deductive approach was applied to extract codes using MAXQDA 10 through open coding. Qualitative analysis identified five main categories and 14 subcategories of challenges and opportunities for addressing NCDs in Iran, aligned with the Ottawa Charter for Health Promotion; policy levers for NCD prevention, including legislation and economic growth creating health-promoting environments, focusing on strengthening physical and social infrastructure community and Individual empowerment for health, focusing on social capital development, public participation, improving the quality of education, and promoting health literacy and transforming Healthcare for better health, organizing health systems and eliminating conflicting interests. The critical important of policies, environmental determinants, community involvement, and healthcare frameworks was highlighted. A holistic approach is essential for the effective prevention and management of NCDs.

Keywords Qualitative studies, NCDs, Policy, Health promotion strategies

Abbreviations

- NCDs Noncommunicable diseases
- CVD Cardiovascular disease
- LMICs Low- and middle-income countries
- WHO World Health Organization
- UHC Universal health coverage
- PHC Primary healthcare
- COIs Conflicts of interest

The worldwide challenge posed by NCDs is an escalating public health issue that demands urgent focus and response from the global community¹. NCDs lead to approximately 35 million fatalities annually, representing 60% of all deaths, with 80% occurring in low- and middle-income countries (LMICs)². The World Health Organization (WHO) reports that NCDs are responsible for approximately 71% of all deaths worldwide, which equals approximately 41 million deaths yearly³. In Iran, NCDs account for approximately 86% of all deaths, and their prevalence is increasing due to an aging population, air pollution, urbanization, chemical exposure, and unhealthy lifestyle behaviors such as poor diet, inactivity, tobacco and alcohol use⁴.

The primary causes of NCDs can be categorized into different groups, such as self-care, hereditary traits, surroundings, existing medical conditions, and social and demographic factors⁵. Clear evidence indicates that the burden of behavioral risk factors is influenced by socioeconomic status in LMICs. Low socioeconomic groups exhibited a significantly higher prevalence of tobacco and alcohol use compared to high socioeconomic groups. They also consumed fewer fruits, vegetables, fish, and fiber. Conversely, high socioeconomic groups were less physically active and had higher intakes of fats, salt, and processed foods⁶.

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The average total costs per year to a patient/household in LMICs of cardiovascular diseases (CVD) and diabetes were \$6055.99, and \$1017.05, respectively⁷. It is anticipated that the economic burden of NCDs will significantly rise in the future. While mortality rates may decrease, the number of years lived with a chronic illness is expected to increase⁸.

Despite efforts made by the Iranian government to tackle the burden of NCDs, challenges persist due to limited resources and infrastructure, insufficient healthcare workforce, and low public awareness regarding NCDs and their risk factors⁹. Significant reductions in NCD morbidity and mortality can be achieved through policies that significantly decrease risk factors, control hypertension, and provide fair access to effective and high-quality preventive and therapeutic care for acute and chronic NCDs¹⁰. While, Iran has created a national action plan aligned with the WHO's guidelines, leading to the formation of the National Committee for Prevention and Control of NCDs (INCDC) to reduce NCD-related mortality by 30% by 2030¹¹, Also, previous research has focused on challenges in organizing NCD services within the health system¹²⁻¹⁴, , there remains a critical gap in understanding the specific challenges and opportunities for NCDs prevention and control in the Iranian context. This study aims to address this gap and identify challenges and opportunities in health promotion for NCDs in Iran.

Methods

Design

This qualitative study adhered to all relevant guidelines in its methods. The data collected reflected the individual perspectives of the participants on challenges and opportunities in health promotion for NCDs in Iran. We ensured that all participants provided informed consent after being informed about the study's objectives and procedures. Participants' confidentiality was maintained, and they were allowed to withdraw from the study at any point. The codes and categories were developed through an iterative process, allowing themes to emerge from the data itself^{15,16}.

Sampling and recruitment

Participants were selected using purposeful sampling to ensure maximum variation based on inclusion criteria, experience, expertise, and willingness to participate (Table 1). The criteria for inclusion were carefully crafted to bring together a wide range of perspectives. We aimed to include experts in managing NCDs, policymakers focused on health promotion, healthcare providers who work directly with NCD patients, and researchers specializing in public health and chronic disease prevention. Participants were chosen from a variety of sectors—such as government, academia, and NGOs—ensuring a diverse mix of insights and experiences. Data collection continued until data saturation was achieved¹⁶.

Data collection

We initially secured informed consent by explaining the study's purpose to the participants. Subsequently, we gathered data by conducting semi-structured, in-depth interviews with the participants. These interviews, carried out via Skype, lasted 60 min, and were recorded and transcribed word for word¹⁶.

The interview guide explored key themes aligned with the Ottawa Charter's health promotion strategies. These themes included: (1) Policy Levers for NCD Prevention: Exploring participants' perspectives on the role of legal frameworks, economic policies, and health system strengthening in addressing NCDs; (2) Creating Health-Promoting Environments: Investigating participants' views on the importance of the built environment, air quality, media, and social infrastructure in promoting healthy lifestyles; (3) Community Empowerment for Health: Examining the role of social capital, community engagement, and capacity building in empowering communities to address NCDs; (4) Empowering Individuals for Health: Gaining insights into participants'

Ν	Gender	Educational level	Job position
P ₁	Male	Ph.D	Academic faculty in university
P_2	Female	Ph.D, E-learning Fellowship	Academic faculty in university
P ₃	Male	MD, Ph.D	Academic faculty in university
P_4	Female	Ph.D	Academic faculty in university
P_5	Male	Ph.D	Academic faculty in university
P ₆	Male	MD, Ph.D, MPH	Academic faculty in university, Founding members of the National and International NCDs Committee
P ₇	Female	MD, Ph.D, MPH	Academic faculty in university
P ₈	Male	Postdoctoral HSE	Academic faculty in university
P ₉	Female	Ph.D	Academic faculty in university
P ₁₀	Female	Ph.D	Professor, Academic faculty in university
P ₁₁	Female	Pediatrician	Professor, Academic faculty in university, Head of the NCD Primary Prevention Research Institute and Children's Development Research Center.
P_{12}	Male	Ph.D	Academic faculty in university
P ₁₃	Male	MD, Ph.D, MPH	Academic faculty in university, Head of Osteoporosis Research Department at NCD research center, Director-General of the NCD office at the Ministry of Health
P ₁₄	Male	MD, Ph.D	Academic faculty in university, Chief of the NCD Center, Tehran University of Medical Sciences

 Table 1. Characteristics of the National experts.

perspectives on health literacy, self-management skills, and targeted interventions for different age groups; and (5) Transforming Healthcare for Better Health: Exploring participants' views on the need for a reoriented healthcare system focused on prevention, early detection, and chronic disease management.

Interview protocol

The semi-structured interview guide was crafted with open-ended questions to prompt participants to share their thoughts in depth. Some examples of the questions included: "Could you describe any policy initiatives that you believe have effectively helped prevent NCDs in Iran?", "What environmental factors do you think play the biggest role in the rising rates of NCDs?", "How do you view the role of community engagement in tackling the challenges of NCDs?", "What strategies do you believe are most effective in promoting self-care and health literacy?", and "From your perspective, how can the healthcare system better support NCD prevention and management?"

To encourage rich and detailed responses, probing techniques were employed, including follow-up questions like "Can you elaborate on that?", "Can you provide a specific example?", and "How does this compare to other experiences you've had?". If any answers were unclear, clarification probes such as "Could you explain what you mean by that?" were used. Reflective summaries were also incorporated to ensure understanding and prompt further elaboration. This approach helped to fully explore and capture the participants' perspectives in detail.

Bias mitigation strategies

To minimize potential biases during data collection and analysis, several strategies were put in place. Researcher reflexivity was maintained through the use of a reflexive journal, which allowed the research team to critically reflect on how their perspectives might influence the data. Triangulation of data sources was carried out by comparing insights from different participants and secondary sources to bolster the credibility of the findings. Peer debriefing was also employed, where the research team discussed interpretations with colleagues to challenge assumptions and ensure that a variety of perspectives were integrated into the analysis. These measures helped enhance the rigor and trustworthiness of the study.

Data analysis

In this qualitative study, data analysis followed a concurrent design, with analysis ongoing throughout data collection. First, the interviews were transcribed verbatim. Then, the transcribed text was read several times for familiarity before coding. Open coding was employed to identify preliminary codes based on the data, informed by the Ottawa Charter's health promotion strategies. Codes were subsequently grouped into categories through a process of constant comparison and theoretical sensitivity, and participant quotes were used to support and highlight these themes. Emerging themes were identified by examining the relationships between categories and searching for patterns in the data. This approach ensures that the results reflect the insights and experiences shared by the experts while maintaining the rigor of the thematic analysis. A concept map was created to visually represent the relationships between themes and subthemes, aiding in the identification of overarching patterns. Rigorous peer checking with the team ensured inter-rater reliability and enhanced the trustworthiness of the findings. MAXQDA version 10 was used for data analysis¹⁵.

Trustworthiness of the data

In this study, we applied the credibility, dependability, and transferability strategies recommended by Lincoln and Guba to ensure trustworthiness¹⁷. To establish credibility, the researcher engaged with the data for an extended period and conducted frequent interviews. Dependability was assessed through peer and member checks, considering both factors of instability and design-induced changes. The interviews, codes, and extracted categories were reviewed by the researchers (Z.T., E.Sh.) with expertise in qualitative studies¹⁷.

To ensure transferability, referring to how findings can be applied to other settings or groups, the researchers provided a clear description of the culture, participant selection, data collection, and analysis process. They collected a broad variety of comments and interpretations using sampling with maximum variation, ensuring the findings were not limited to a specific group or context, thus increasing the potential transferability of the study's findings¹⁷.

Results

We engaged with 14 participants, comprising policymakers, health planners, and specialists in obesity, diabetes, hypertension, cardiovascular diseases, and poverty in Iran. From this engagement, we identified five primary categories and 14 subcategories pertinent to the challenges and opportunities associated with health promotion for NCDs within the Iranian population (Table 2) (Fig. 1). The following results provide a detailed exploration of these themes, with direct references to Table 2 to illustrate the viewpoints of participants.

Policy levers for NCD prevention

Legislation for NCD prevention

Participants responses emphasized the importance of strengthening NCD prevention policies and regulations, "Strict health regulations are essential" (P 7,9,12). One participant remarked, "All health risk factors must be addressed, placing health at the core of parliamentary priorities" (P10). This view was supported by others who called for imposing higher taxes on harmful products, highlighting the critical role that policy levers play in tackling NCDs (P13). Participants stressed the need for legislation promoting health equity to address the disproportionate burden of NCDs on disadvantaged populations, "Social inequality can lead to stress and negative health outcomes, especially affecting women and children economically" (P1), "Both absolute and relative inequalities impact NCDs While promoting equality is essential, some disparity between the wealthy and the poor is

Categories	Sub-categories
	Legislation for NCD prevention
	Strengthening interventions for NCD risk factors
Policy layers for NCD prevention	Economic growth
Foncy levers for NCD prevention	Implementing upstream guidelines to prevent NCDs
	Revision of management standards
	Strengthening security and stability
Creating backle many sting and income	Strengthening physical infrastructure
Creating nearth-promoting environments	Strengthening social infrastructure
Community amouverment for bealth	Social capital development
Community empowerment for nearth	Strengthening public participation
Empowering individuals for health	Improving the quality of education
Empowering individuals for nearth	Promoting health literacy
Transforming healthcare for better health	Organizing Health Systems
Transforming nearthcare for Detter nearth	Eliminating conflicting interests

Table 2. Summary of viewpoints of the experts on challenges and opportunities in health promotion for NCDs in Iran; divided into 5 main categories based on the Ottawa charter of health promotion strategies and 14 sub-categories.



Fig. 1. Summary of viewpoints of the experts on challenges and opportunities in health promotion for NCDs in Iran; divided into five main categories based on the Ottawa Charter of health promotion strategies and 14 sub-categories.

acceptable, provided that the poor have improved access to healthcare resources" (P14), as reflected in Table 2 under "Policy Levers for NCD Prevention".

Strengthening interventions for NCD risk factors

Participants emphasized the need for a comprehensive approach to address NCD risk factors. Primary and secondary prevention strategies were frequently mentioned as essential components. Interviewees highlighted the importance of expanding healthcare coverage to improve early detection and management of NCDs; "Risk factor reduction should be addressed at the top management level" (P13, 14). "Lack of healthcare coverage can result in people being unaware of their HTN and DM. The government should support service recipients to address

this issue" (*P14*). Furthermore, participants recognized the potential role of insurance companies in promoting NCD prevention, saying that: "*Insurance companies can save money in the long run by charging less for coverage to individuals who exercise regularly and maintain a healthy weight, despite receiving less money in the short term" (<i>P6*), aligning with "Strengthening interventions for NCD risk factors" in Table 2.

Economic growth

Participants identified a strong connection between economic growth and health outcomes, noting that development enhances access to essential resources like food, clean water, and better living conditions, thus preventing diseases. They stressed the necessity for targeted economic policies to reduce health disparities, particularly for vulnerable groups such as children, the elderly, and people with disabilities; "Improving the economic situation should be the main priority for governments" ($P_{10^{0,14}}$).

Implementing upstream guidelines to prevent NCDs

Participants underscored the importance of implementing evidence-based guidelines to address NCD prevention. They emphasized the role of universal health coverage (UHC) and strengthened primary healthcare (PHC) as essential components of a comprehensive approach: "*The main priority should be to expand universal health coverage (UHC) and strengthen primary healthcare (PHC) policies*". WHO has categorized and presented a set of cost-effective interventions that can be effectively implemented" ($P_{1,2}$).

Revision of management standards

Participants highlighted the need for modernization of healthcare management standards to improve service quality and address the evolving landscape of NCDs, *"Iran's healthcare system is based on individual scientific views, unlike the centralized models of Scandinavian countries"* (P11, 12). Regular updates of management protocols to ensure alignment with current best practices; Implementation of the robust electronic healthcare system to enhance data management, accessibility, and security; *"Iran's health system is insufficient, with major issues in the SIB portal"* (P14). Strengthened intersectoral collaboration involving healthcare, education, and social services; *"Organizations must recognize healthcare's importance and prioritize necessary collaboration"* (P 10,12). and comprehensive monitoring and evaluation systems to measure health program effectiveness and inform improvement. *"We need a thorough monitoring process that includes care quality"* (P 10,14). Additionally, they emphasized the need for improved collaboration between scientists and policymakers to inform effective NCD prevention and control strategies. *"Globally, it is a widespread issue that scientists have limited communication with policymakers. Advocates could lobby the government, present scientific ideas within a political context, and assist politicians in understanding the importance of taking action"* (P14).

Strengthening security and stability

Participants noted that a stable environment enhances healthcare access, which is crucial for preventing NCDs. This highlights the need to address social and political factors alongside biomedical interventions for effective NCD prevention. "There is a link between stability, security and public health, and it is necessary to have a political commitment to execute effective health programs" (P_{1a}).

Creating health-promoting environments

Strengthening physical infrastructure

Society must advocate for health-promoting activities such as running, while simultaneously ensuring the provision of safe environments to mitigate potential risks. *Municipal authorities should prioritize investments in cycling and pedestrian infrastructure, including sidewalks, to foster the development of healthy lifestyles (P2,3,7). Additionally, it is crucial to implement strategies aimed at mitigating air pollution, thereby enhancing public health outcomes (P3,10,14).* This relates to "Strengthening physical infrastructure" in Table 2, showing urban planning's key role in health promotion.

Strengthening social infrastructure

Participants underscored the vital role of media and communication in influencing health behaviors and advancing NCD prevention, emphasizing the need for evidence-based messaging and targeted strategies. They recognized the potential of digital platforms for health promotion, while also acknowledging the challenges of misinformation and unhealthy media representations. "Media has a significant impact on shaping the values, preferences, and knowledge of communities" (P_2). This aligns with "Strengthening social infrastructure" in Table 2, emphasizing effective communication for NCD prevention.

Community empowerment for health

Social capital development

Participants acknowledged the importance of social capital for health and well-being, noting that strong social networks offer belonging, support, lower stress, better mental health, and improved access to resources. They suggested that those with solid social ties are less prone to NCDs like diabetes or heart disease, highlighting the potential for public health initiatives to foster social capital. *"Social relationships greatly impact our behavior and well-being. A Canadian psychologist's research shows that social interactions may outweigh addiction's influence—isolated mice consumed more drugs than those with connections. This highlights the importance of social ties in shaping behavior and health" (P₁). This viewpoint is captured in "Social capital development" in Table 2.*

Strengthening public participation

Participants emphasized the importance of community-based councils or coalitions in addressing NCD prevention and control. "It is crucial to strengthen NGOs and ensure they remain independent from government influence, as they often rely on governmental support" (P12, 13). They highlighted the need for a shift from a top-down to a bottom-up approach, where community members actively participate in decision-making processes. Participants also highlighted the potential of influential community members, such as athletes, religious leaders, and other respected figures, to serve as health ambassadors. "More efforts are needed to encourage citizen responsibility for health and lifestyle choices. The focus has largely been on services, not awareness of diet and exercise. Involving citizens in decision-making and engaging respected figures as health ambassadors can promote healthier behaviors" (P6). This matches the "Strengthening public participation" subcategory in Table 2.

Empowering individuals for health

Improving the quality of education

Participants emphasized education's vital role in empowering health management and preventing NCDs. They urged for improved scientific and health education for youth, focusing on risk factors and social skills. Concerns were voiced about the current education system, highlighting the need for standardized curricula and lifelong learning skills. *"To bring significant changes to the healthcare system, it is imperative to reform the education system first. It is important to improve scientific and academic education" (P1).* This emphasizes the need for better health education for youth to prevent NCDs, as noted in the "Improving education quality" subcategory in Table 2.

Promoting health literacy

Participants stressed the importance of health literacy for informed health choices. They underscored the necessity for clear, accessible information for diverse groups and urged practical guidance that offers alternatives to expensive gym memberships. Ensuring equitable access to health resources was also highlighted. One participant pointed out, *"That simply telling people to avoid unhealthy snacks without providing healthy alternatives is ineffective. She highlighted promoting activities such as walking as exercise rather than expensive sports classes"* (P_{11}). This highlights the need for clear guidance, as seen in the "Promoting health literacy" subcategory in Table 2, focusing on accessible health information.

Transforming healthcare for better health

Organizing health systems

Participants highlighted the need for an organized healthcare system to prevent NCDs, advocating for universal access to preventive care and environments that promote healthy lifestyles. They underscored the crucial role of government leadership in developing and executing a comprehensive healthcare framework, as reflected in "Organizing Health Systems" in Table 2.

Eliminating conflicting interests

Participants emphasized that conflicts of interest hinder NCD prevention. They called for improved transparency, accountability, and independent oversight in healthcare, along with clear conflict-of-interest policies and adequate funding for independent research to prioritize public health in decisions. Participants stated, "Conflicts of interest and the governance of clinical groups within the healthcare system prevent them from making decisions regarding NCDs" (P_1). Decision-makers in the healthcare system often resist transparency, which can undermine accountability and allow those in power to act unchecked, potentially causing significant harm to the health system (P14). This corresponds to the "Eliminating conflicting interests" subcategory in Table 2, calling for clearer governance structures in healthcare.

Discussion

This study elucidates the challenges and opportunities associated with NCD health promotion in Iran, offering valuable insights into the nation's socio-political and healthcare contexts. The diverse perspectives of policymakers, planners, and experts underscore the multiplicity of stakeholder needs, thus facilitating more effective public health policymaking. Policymakers underscore the importance of long-term sustainability, planners address daily operational challenges and implementation concerns, while experts concentrate on issues related to evidence-based data. Five pivotal areas have been identified: *"Policy Levers for NCD Prevention, Creating Health-Promoting Environments, Community Empowerment for Health, Empowering Individuals for Health, and Transforming Healthcare for Improved Health Outcomes."*

The findings of this study align with those of similar qualitative studies conducted in LMICs, where common policy challenges, health promotion strategies, and community engagement efforts are frequently observed. Like studies conducted in India and South Africa, this research highlights the pivotal role of legal frameworks and economic policies in mitigating NCD risks¹⁸. In contrast, countries like Brazil have experienced greater success in translating legal frameworks into action, driven by strong political will and collaborative efforts across various sectors¹⁸. This contrast underscores the importance of context-specific factors—such as political stability, governance, and intersectoral coordination—in determining the success of NCD prevention strategies.

When comparing the approach to community engagement, studies in other LMICs emphasize the significance of local networks and grassroots mobilization in addressing NCDs¹⁹. This finding resonates with our study, where the involvement of local community networks was identified as a key strategy for NCD management. However, in Iran, the implementation of community-led health initiatives faces challenges, primarily due to the lack of formalized platforms and resources to support such programs. Countries like Thailand have made considerable progress in fostering community health interventions, providing more structured support and better integration of these initiatives into the formal healthcare system²⁰. This contrast highlights the need for building stronger

infrastructure and resources for community health programs in Iran, ensuring they are systematically integrated into broader health promotion strategies.

This study makes several novel contributions, particularly in terms of empowerment strategies and policy levers that are uniquely applicable to Iran and countries with similar socio-economic contexts. One such contribution is the emphasis on empowerment through tailored interventions that consider local customs, socio-economic barriers, and gender roles in health interventions. While broader, one-size-fits-all strategies are often employed in global health initiatives^{21,22}, this study underscores the importance of context-specific approaches that can more effectively address the unique health challenges in Iran²³. By incorporating local cultural and socio-economic factors, these targeted strategies have the potential to drive more meaningful and sustainable changes in health outcomes.

Furthermore, the study introduces a more nuanced perspective on economic levers, specifically proposing the combination of fiscal policies such as subsidies for healthy foods and taxes on unhealthy foods. While such measures are gaining attention globally²⁴ the study's focus on Iran's unique economic and cultural context— where subsidizing healthy foods for vulnerable populations may be more effective—offers a model that could be adapted for other countries facing similar socio-economic barriers. This approach recognizes the potential for targeted economic interventions to shift consumption patterns and improve public health, especially in contexts where affordability and access to nutritious food are key challenges for underserved populations.

The study also sheds light on the role of health literacy and community empowerment in managing NCDs. In many LMICs, health literacy remains a fundamental challenge in achieving better health outcomes, and this study emphasizes the need for initiatives targeting health literacy at the grassroots level^{25,26}. Specifically, efforts to integrate health literacy into community-based programs, coupled with local engagement, can help individuals make informed health choices, thereby reducing NCD risks This approach not only empowers individuals to take control of their health but also fosters a culture of preventative care within communities. By combining education with active community involvement, the study advocates for a sustainable model that can have long-term positive effects on health outcomes, particularly in resource-limited settings where access to formal healthcare may be constrained.

The findings of this study have broader implications for global health, particularly for countries facing similar economic, healthcare, and political constraints. The challenges of policy implementation and healthcare delivery in settings with limited infrastructure and socio-political barriers are not unique to Iran. Many LMICs share these struggles, and the findings from this study can inform global efforts to address NCDs by highlighting the need for comprehensive policy frameworks that incorporate legal, fiscal, and social interventions. By emphasizing the importance of tailored, context-specific strategies, this study suggests that successful NCD prevention and management require addressing local socio-cultural factors, ensuring effective community engagement, and fostering multisectoral collaborations²⁷. These insights can serve as a valuable guide for policymakers and health professionals seeking to develop more inclusive, equitable, and sustainable health promotion strategies in resource-constrained settings worldwide.

The findings suggest that policy experimentation, such as adjusting subsidies and taxes or investing in health literacy, should be an integral part of tackling NCDs in settings with significant socio-economic disparities. By incorporating a range of targeted interventions, such as fiscal policies tailored to local needs and health literacy programs aimed at marginalized communities, governments can better address the underlying social determinants of health and create environments conducive to healthier behaviors²⁸. The study underscores the importance of continuously adapting and refining policies to meet the dynamic challenges of NCD prevention in complex socio-political landscapes.

Additionally, the study emphasizes the importance of community-based approaches, focusing on social capital, participation, and capacity building. These strategies can empower local communities to take an active role in health promotion and NCD management, fostering a sense of ownership and collective responsibility. By leveraging existing social networks and integrating health interventions within local contexts, such approaches can bridge the gap between formal healthcare systems and the people they serve²⁹. This community-driven model not only improves health outcomes but also offers a scalable and adaptable framework for countries facing similar health challenges, demonstrating that local engagement can play a pivotal role in overcoming structural barriers to effective NCD prevention and management.

Limitations

The present study had two limitations, one relating to the interviewees and another to the timing of the research study. Some key actors were unavailable for interviews, which may potentially create gaps in critical stakeholder perspectives. Their absence may have biased the sample and limited insight diversity.

The second limitation of the study was that interviews occurred during the COVID-19 outbreak. This created challenges, as the reliance on Skype led to technological issues like poor connectivity and a lack of non-verbal cues, which may have hindered rapport between the interviewer and participants. The absence of face-to-face interaction likely affected the depth of responses and could have skewed the data. Additionally, many participants were essential workers, impacting their availability and making scheduling difficult, which sometimes resulted in shorter or less detailed responses.

Additionally, the exclusion of specific stakeholder groups, such as frontline healthcare workers, further limits the generalizability of the study's findings. Their exclusion means that important viewpoints from those directly involved in managing the pandemic may be underrepresented, potentially affecting the overall comprehensiveness of the research. Frontline workers often have valuable insights into the day-to-day challenges faced during health crises, and their inclusion could have enriched the understanding of policy effectiveness and practical implementation. Future research could benefit from including these key stakeholders to ensure a more

holistic perspective and to capture a wider range of experiences that could influence health outcomes and policy development.

Conclusion

The research study identified key challenges and opportunities for helath promotion in preventing NCDs in Iran. By examining the perspectives of policymakers, health planners, and specialists, five primary areas were identified: policy levers, health-promoting environments, community empowerment, individual empowerment, and healthcare system transformation. These findings offer valuable insights for developing effective NCD prevention and control strategies.

To address the complex nature of NCDs, a multi-faceted approach is essential. Policymakers, healthcare providers, and communities must collaborate to implement evidence-based interventions that address the underlying determinants of health. However, the study also acknowledges the challenges posed by limited infrastructure and socio-political barriers that may hinder policy implementation and healthcare delivery. These barriers are critical to understanding the full scope of the problem and the effectiveness of proposed solutions. While some findings are well-supported by data, areas such as the long-term effectiveness of specific interventions and innovative policy mechanisms require further research and policy experimentation. Testing and adapting policies within real-world settings, especially in resource-constrained environments, will be essential for assessing their sustainability and impact over time.

Economic growth and the pursuit of universal health coverage present both opportunities and limitations in achieving equitable health outcomes. While increased financial resources and expanded health services can enhance prevention and care for NCDs, disparities in access and affordability must be carefully addressed to avoid exacerbating existing health inequalities. The expansion of services, if not managed inclusively, could inadvertently widen the gap between those who can afford them and those who cannot.

Future research should explore sustainable financing models and effective policy frameworks that ensure equitable health promotion efforts across different population groups. This includes looking into targeted subsidies, tiered healthcare pricing, and other mechanisms to ensure that vulnerable populations benefit from health advancements, without being left behind by rising costs or uneven distribution of resources.

Data availability

All data generated or analysed during this study are included in this published article.

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Author contributions

ZT and ES made significant contributions throughout the entire research process. MT and NR reviewed and gave their approval to the final manuscript.

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Declarations

Competing interests

The authors declare no competing interests.

Ethical considerations

The study was approved by the Ethics Committee of Tehran University of Medical Sciences (IR.TUMS.SPH. REC.1398.129). Before participating, all individuals provided informed consent and were briefed on the study's purpose and procedures verbally and in writing. Participants' confidential information was safeguarded, and they had the option to withdraw from the study at any time.

Additional information

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