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NARRATIVE REVIEW ON THE ROLE OF PREVENTIVE HEALTH POLICIES IN REDUCING BURDEN OF NON-COMMUNICABLE DISEASES IN DEVELOPING COUNTRIES

Narrative Review

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ABSTRACT

Background: The rising global burden of non-communicable diseases (NCDs) disproportionately affects low- and middle-income countries (LMICs), necessitating a critical shift from curative to preventive models of care. Understanding the contribution of preventive public health strategies in these resource-constrained settings is therefore a pressing priority.

Objective: This narrative review aims to explore and synthesize existing literature on how preventive health policies contribute to reducing the prevalence and burden of NCDs in developing countries.

Main Discussion Points: The review synthesizes evidence around several key themes. It examines the foundational role of fiscal and legislative policies, such as tobacco and sugar-sweetened beverage taxes, as cost-effective, population-wide interventions. It further discusses the critical need to create enabling food environments through salt reduction strategies and food labelling. The integration of NCD prevention into primary health care and community platforms is highlighted as a vital strategy for individual-level risk reduction. The analysis also addresses the significant challenge posed by commercial determinants of health and the political economy of policy adoption, while consistently emphasizing the imperative of designing equitable interventions that do not widen health disparities.

Conclusion: Preventive health policies represent a powerful, evidence-informed approach to curbing the NCD epidemic in LMICs. While the existing literature supports the implementation of known "best-buy" interventions, successful reduction of the NCD burden requires a multi-sectoral approach that combines these population-level policies with strengthened health systems and a steadfast commitment to health equity. Future efforts must focus on context-specific implementation and addressing persistent research gaps.

Keywords: Non-communicable diseases, Preventive health policies, Developing countries, Health equity, Fiscal policies, Primary health care integration.

INTRODUCTION

Non-communicable diseases (NCDs), principally cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes, represent a paramount and escalating public health challenge in the 21st century. While once considered ailments of affluence, their burden has shifted dramatically towards low- and middle-income countries (LMICs), where nearly three-quarters of all NCD deaths occur (1). This epidemiological transition, superimposed on the persistent burden of communicable diseases, malnutrition, and maternal and child health issues, has created a complex double burden of disease that strains already fragile health systems. The World Health Organization (WHO) estimates that NCDs are responsible for 41 million deaths annually, equivalent to 74% of all deaths globally, with LMICs bearing the brunt of this mortality and morbidity (2). This surge is driven by a confluence of demographic, economic, and social factors, including ageing populations, rapid and unplanned urbanization, and the globalization of unhealthy lifestyles marked by tobacco use, harmful use of alcohol, physical inactivity, and diets high in processed foods, salt, sugars, and unhealthy fats (3). The economic and social ramifications of the NCD epidemic in developing countries are profound and threaten to undermine developmental gains. NCDs are not merely a health issue but a significant development challenge, as they disproportionately affect individuals during their most productive years, leading to catastrophic health expenditures, reduced household income, and deepened poverty (4). The long-term and often costly nature of NCD management places an immense financial strain on both families and national economies. For instance, projections suggest that cumulative economic losses due to NCDs in LMICs could exceed US$ 7 trillion between 2011 and 2025, a figure that underscores the urgent need for decisive policy action (5). The current approach in many LMICs, however, remains heavily skewed towards curative services, which are often inaccessible to the poorest populations and are financially unsustainable in the long run.

This reactive model fails to address the root causes of the NCD epidemic and is ill-suited to stem the rising tide of these conditions. In response to this growing crisis, there has been a significant global push to prioritize prevention. The WHO's Global Action Plan for the Prevention and Control of NCDs 2013-2030 and the inclusion of NCDs in the United Nations Sustainable Development Goals (Target 3.4) have galvanized political attention (6). These frameworks advocate for a whole-of-government and whole-of-society approach, emphasizing the implementation of cost-effective, population-wide preventive interventions. These so-called "best-buy" policies include measures such as tobacco and alcohol control through taxation and regulation, salt reduction strategies, and public awareness campaigns to promote physical activity and healthy diets (7). The evidence base for the efficacy of these interventions, largely derived from high-income countries, is robust. However, the translation of this evidence into effective and equitable policy action within the complex and resource-constrained contexts of developing nations remains a significant challenge and a critical area of inquiry. Current knowledge confirms that preventive policies can be effective, yet a substantial gap exists between knowing what works and implementing it successfully at scale in LMICs. Research has extensively documented the successes and challenges of specific policies, such as the implementation of graphic health warnings on tobacco products in countries like India or sugar-sweetened beverage taxes in Mexico and South Africa (8,9). However, the existing literature is often fragmented, focusing on single diseases or isolated interventions. There is a comparative lack of synthesized evidence that holistically examines the synergistic effects of a comprehensive suite of preventive policies and the overarching health system and governance structures required to support them in low-resource settings.

Key unresolved questions persist regarding the optimal strategies for adapting global recommendations to local socio-cultural and economic realities, the political economy of policy adoption facing opposition from powerful commercial interests, and the mechanisms for financing and sustaining these policies in competitive funding environments (10). Furthermore, a critical research gap pertains to the equitable impact of these policies. There is a pressing need to understand how preventive strategies can be designed and implemented in a way that does not inadvertently widen health inequalities. For example, while tobacco taxes are highly effective, their regressive nature requires complementary measures to ensure they do not disproportionately burden the poor (11). Similarly, health promotion messages may fail to reach the most marginalized communities due to literacy or access barriers. The role of primary healthcare (PHC) systems as a platform for integrating NCD prevention with existing services for maternal and child health and infectious diseases is another area requiring further exploration, as a strong PHC system is essential for risk factor screening, patient education, and follow-up (12). Much of the existing narrative revolves around national-level policies, with less attention paid to sub-national implementation, community engagement, and the empowerment of local stakeholders. The objective of this narrative review is, therefore, to explore and synthesize the existing body of literature on how preventive public health strategies and policies contribute to reducing the prevalence and burden of NCDs in the specific context of low-resource settings in developing countries. It aims to move beyond a siloed examination of individual interventions to provide a more integrated perspective on the policy landscape. The scope of this review encompasses a critical analysis of key population-based preventive policies, including fiscal measures, regulatory and legislative actions, and public awareness campaigns, as they are applied to the primary NCD risk factors.

It will also consider the critical cross-cutting themes of health system integration, governance, financing, and equity, which are fundamental to successful implementation in LMICs. The review will draw upon a range of evidence, including peer-reviewed studies, systematic reviews, and reports from major international organizations like the WHO and the World Bank, published predominantly within the last decade to ensure contemporary relevance. The significance of this review lies in its potential to inform and guide policymakers, public health practitioners, and researchers in LMICs. By consolidating and critically appraising the current evidence on what works, what does not, and under what conditions, this review aims to provide a coherent and practical resource. It seeks to highlight successful implementation models, identify common barriers and facilitators, and underscore the importance of a multi-sectoral approach. Ultimately, by elucidating the pathways through which preventive health policies can mitigate the NCD burden, this review contributes to the global effort to build more resilient and sustainable health systems that are capable of not only treating illness but, more importantly, of fostering health and well-being for all populations, even in the face of resource constraints.

THEMATIC DISCUSSION

Fiscal and Legislative Policies: Foundational Levers for Population-Wide Change

A cornerstone of NCD prevention in developing countries involves the strategic use of fiscal and legislative instruments to shape the market environment and discourage unhealthy consumption. Tobacco and alcohol control, primarily through taxation, stand as the most evidence-supported interventions. Systematic reviews have consistently demonstrated that increased excise taxes, which raise the retail price, are highly effective in reducing demand, particularly among youth and low-income populations who are most price-sensitive (13). For instance, the implementation of a sugar-sweetened beverage (SSB) tax in South Africa was associated with a significant reduction in purchases of taxed beverages, with a greater proportional decrease observed in lower-income households, suggesting a positive equity effect (14). Similarly, comprehensive tobacco control laws that include smoke-free public places, advertising bans, and plain packaging have shown success in countries like India and Brazil, leading to decreased smoking prevalence and reduced exposure to secondhand smoke (15). These legislative actions work not only by directly limiting use but also by denormalizing unhealthy behaviours, thereby creating a supportive environment for sustained public health gains. The evidence strongly indicates that such population-wide measures are more cost-effective than clinical interventions aimed at high-risk individuals alone, making them particularly suitable for low-resource settings where healthcare capacity is limited.

Creating Enabling Food Environments and Promoting Dietary Shifts

Beyond sugar, the reformulation of processed foods to reduce salt, trans-fats, and saturated fats represents a critical front in the battle against cardiovascular diseases. Mandatory policies, such as South Africa's legislation setting mandatory limits for salt in a range of staple foods, have demonstrated the feasibility of this approach in an LMIC context, with modelling studies predicting substantial reductions in hypertension and stroke mortality over time (16). However, the promotion of healthy diets faces formidable challenges from the rapid penetration of global and local food corporations marketing ultra-processed foods. The relatively low cost, high palatability, and extensive marketing of these products create an "obesogenic" environment that undermines public health efforts (10). This is compounded by the fact that in many urbanizing LMICs, traditional food systems are being displaced, and access to fresh fruits and vegetables can be limited and costly. Therefore, preventive policies must be two-pronged: firstly, to disincentivize the consumption of unhealthy commodities through fiscal and regulatory measures, and secondly, to actively promote and subsidize healthy alternatives. School-based nutrition programs, subsidies for fruits and vegetables, and clear, mandatory front-of-pack nutrition labelling (e.g., warning labels as adopted in Chile) are emerging as promising strategies to empower consumer choice and reshape food demand from a young age (17).

Integrating NCD Prevention into Primary Health Care and Community Platforms

While population-level policies are crucial, the primary health care (PHC) system serves as a vital platform for individual-level risk reduction and early detection, particularly for reaching vulnerable and rural populations. The integration of NCD prevention and screening into existing PHC services for maternal and child health, HIV/AIDS, and tuberculosis presents a pragmatic strategy to leverage established patient touchpoints and infrastructure (18). For example, bundling blood pressure measurements into routine antenatal care or HIV clinic visits can efficiently identify individuals with hypertension at an early stage. Community health workers (CHWs), a backbone of many LMIC health systems, can be trained to deliver brief interventions on tobacco cessation, conduct opportunistic glucose

testing, and provide counselling on healthy lifestyles (19). A study in Kenya showed that a CHW-led intervention for hypertension management was feasible and led to improved blood pressure control among participants (20). However, the scaling of such integrated models faces significant hurdles, including chronic underfunding of PHC, workforce shortages, high patient loads, and fragmented supply chains for essential NCD medicines and technologies. Successful integration therefore requires not only training but also systemic investments to strengthen the entire PHC ecosystem, ensuring that it is equipped to manage the continuum of care from prevention to palliation.

Addressing Commercial Determinants and Navigating Political Economy

A critical, and often under-addressed, theme in the discourse on NCD prevention is the role of commercial determinants of health. The industries that produce and market tobacco, alcohol, and ultra-processed foods are major economic actors whose interests frequently conflict with public health goals. In many LMICs, these industries employ tactics such as lobbying against regulation, funding research to create doubt about the harms of their products, and promoting corporate social responsibility initiatives to foster political goodwill and position themselves as part of the solution (21). The political economy of policy adoption is therefore complex, as governments may fear job losses, reduced tax revenue from other streams, or legal challenges from powerful corporations. This creates a significant implementation gap, where evidence-based policies are known but remain unimplemented due to a lack of political will. Navigating this landscape requires strong governance, transparency in policy-making, and the strategic mobilization of civil society to counter industry influence and create a demand for health-promoting policies from the ground up.

The Imperative of Equity and a Life-Course Perspective

Finally, the effectiveness of preventive policies cannot be fully assessed without a deliberate focus on health equity. Many NCD risk factors and outcomes are socially patterned, with the poorest populations often facing the greatest exposure to unhealthy environments and having the least access to preventive services and treatment. There is a risk that some population-level interventions, while effective on average, could widen health disparities if not carefully designed. For instance, while tobacco taxes are effective, their regressive nature necessitates that a portion of the revenue generated be reinvested into cessation services and other health programs that benefit low-income communities (11). Similarly, health promotion messages that rely on mass media may fail to reach populations with low literacy or limited media access, underscoring the need for tailored, community-based communication strategies. Adopting a life-course perspective is equally vital; interventions that target children and adolescents, such as school-based physical activity programs and restrictions on junk food marketing to children, can establish healthy behaviours early and yield substantial long-term dividends for a nation's health and economic productivity (22).

CRITICAL ANALYSIS AND LIMITATIONS

While the existing literature provides a compelling case for the implementation of preventive NCD policies in developing countries, a critical analysis reveals significant methodological limitations and knowledge gaps that must be acknowledged to accurately interpret the evidence and guide future research. A predominant weakness across many studies, particularly those evaluating real-world policy impacts, is their heavy reliance on observational and quasi-experimental designs. The nature of public health policy often precludes the use of randomized controlled trials (RCTs), the gold standard for establishing causality. Consequently, researchers frequently employ interrupted time series analyses or difference-in-differences models to assess the effect of, for example, a new sugar tax. While these methods are robust, their validity hinges on strong assumptions, such as parallel trends between intervention and control groups, which can be difficult to verify and are often violated in dynamic, real-world settings where multiple concurrent health and economic shocks may occur (23). The inability to fully randomize policy exposure means that unmeasured confounding factors can never be entirely ruled out, potentially leading to over- or under-estimation of a policy's true effect. Furthermore, the generalizability of findings is a persistent concern. Many of the most-cited success stories originate from a relatively small subset of middle-income countries—such as Mexico, Chile, South Africa, and Thailand—that possess stronger research infrastructure and more robust governmental capacity. The evidence base is markedly thinner for low-income countries, particularly fragile and conflict-affected states, where the NCD burden is growing amidst profound systemic weaknesses. Findings from urban centers in Brazil may not be readily applicable to rural communities in Malawi, given vast differences in health system architecture, governance, cultural norms, and the informal economy (24).

This creates a significant applicability gap, leaving policymakers in the most resource-constrained settings with limited context-specific evidence upon which to base their decisions. The literature often treats "LMICs" as a monolith, obscuring the vast heterogeneity in

policy implementation capacity and health system readiness that exists within this broad categorization. Another critical limitation lies in the measurement of outcomes and the duration of follow-up. Many studies focus on intermediate outcomes, such as changes in product purchases, self-reported behavioural intentions, or short-term biometric markers like blood pressure, due to the relative ease and lower cost of collecting such data. While these are valuable proxies, there is a comparative scarcity of long-term studies linking specific policies directly to hard endpoints like NCD incidence, disability-adjusted life years (DALYs), or mortality (25). The causal pathway from a tobacco tax to a reduction in lung cancer rates spans decades, a timeframe that exceeds the scope of most funded research projects. This reliance on intermediate outcomes, while necessary, introduces uncertainty about the ultimate long-term population health impact of these interventions. Moreover, the variability in how outcomes are defined and measured—for instance, what constitutes "physical activity" or a "healthy diet" across different cultural contexts—complicates cross-study comparisons and meta-analyses. The field is also susceptible to publication and funding biases. There is a well-documented tendency for journals to publish studies with positive or statistically significant findings, while evaluations that show null or negative results for a policy intervention often remain in the "grey literature" or are not submitted for publication at all (26).

This creates an inflated perception of efficacy. Simultaneously, the research agenda is often shaped by donor priorities and the availability of funding for specific diseases or interventions, potentially leaving other critical areas underexplored. For example, while policies targeting tobacco and sugar are relatively well-studied, there is less robust evaluation research on population-level interventions for reducing harmful alcohol use or promoting physical activity in LMIC contexts. This skews the body of evidence and may lead to an imbalanced policy focus. Finally, a substantial methodological gap exists in the inadequate capture of implementation science factors and equity impacts. Many studies answer the question "Does it work?" under ideal or specific conditions, but fail to adequately address "How does it work?" and "For whom does it work?" in diverse, low-resource settings. There is a lack of deep, qualitative inquiry into the political economy of policy adoption, the role of informal power structures, and the practical challenges of inter-sectoral collaboration (27). Quantitative studies often lack sufficient statistical power to conduct meaningful sub-group analyses, meaning that the differential effects of a policy on the poor, women, or ethnic minorities are frequently overlooked or reported as anecdotal observations rather than rigorous findings. Without this nuanced understanding of context, barriers, and differential impacts, the successful replication and scaling of promising preventive policies from one setting to another remains a formidable challenge.

IMPLICATIONS AND FUTURE DIRECTIONS

This comprehensive synthesis of the literature carries significant implications for reshaping health systems and guiding future scholarly inquiry in the domain of NCD prevention within developing countries. For clinical practice, the most profound implication is the necessity for a fundamental reorientation from a purely curative model to one that seamlessly integrates prevention at every patient touchpoint. Primary healthcare providers, including physicians, nurses, and community health workers, must be empowered to function as frontline advocates and agents of preventive care. This involves routinely screening for NCD risk factors—such as blood pressure, blood glucose, and tobacco use—during consultations for any reason, a strategy known as opportunistic screening (18). Furthermore, the findings underscore the critical role of brief interventions and patient education. Clinicians should be trained to deliver concise, effective counselling on smoking cessation, alcohol reduction, and dietary modification, leveraging their unique position of trust. The evidence supporting population-level policies also implies that clinicians have a role beyond the clinic walls; as respected community figures, they can be powerful advocates for public health policies, lending their voice to support evidence-based measures like sugar taxes or clean air laws, thereby amplifying their impact on the health of the populations they serve. For policymakers and health system planners, the implications are equally compelling. The review reinforces that investing in preventive policies is not merely a health expenditure but a strategic investment with substantial economic returns. Governments and development partners should prioritize the full implementation of WHO's "best-buy" interventions, particularly fiscal and regulatory measures that offer the greatest reach and cost-effectiveness. However, the analysis cautions against a one-size-fits-all approach. Policy design must be context-specific, involving careful consideration of local dietary patterns, cultural norms, and economic structures (24). A critical implication is the need to proactively embed equity considerations into the very fabric of policy design. This includes ring-fencing a portion of tax revenues from tobacco or sugary drinks to fund health promotion programs and safety-net services for disadvantaged communities, thereby mitigating any regressive effects and ensuring that policies reduce rather than widen health disparities. Moreover, strengthening the entire health system, particularly primary care, is a non-negotiable prerequisite for sustaining NCD prevention efforts, ensuring that individuals identified with risk factors have access to subsequent diagnosis, management, and treatment.

Looking ahead, this review has identified several critical avenues for future research that must be pursued to build a more robust and applicable evidence base. A primary unanswered question revolves around the long-term sustainability and political feasibility of policies. Longitudinal studies are urgently needed to track the durability of policy impacts over decades and to understand the factors that enable policies to survive changes in government and intense industry opposition. Implementation science research should be prioritized to move beyond efficacy and answer critical questions about scale-up: What are the most effective strategies for training and sustaining a motivated community health workforce for NCD prevention? How can digital health technologies be leveraged to support task-shifting and improve patient adherence to healthy behaviours in low-literacy settings? (28). Furthermore, there is a glaring gap in research focused on the complex interplay between NCDs and other health priorities, such as the double burden of malnutrition (obesity and undernutrition) and the syndemic of HIV and NCDs, requiring integrated intervention models. To address these questions, future research must embrace methodological innovation and diversification. While quasi-experimental designs will remain essential for policy evaluation, they should be complemented with more mixed-methods approaches. Robust qualitative studies are needed to unpack the "black box" of implementation, exploring the political economy, stakeholder dynamics, and lived experiences of both providers and communities (27). Pragmatic trials and adaptive implementation designs that test interventions under real-world conditions are better suited to generating actionable evidence for policymakers than highly controlled efficacy trials. Crucially, future studies must be deliberately powered and designed to conduct equity analyses, ensuring that the distributional effects of interventions across gender, socioeconomic status, and geography are not an afterthought but a central outcome of interest. By addressing these gaps with rigorous and contextually grounded research, the global community can accelerate progress towards the goal of reducing the preventable burden of NCDs and fostering health equity for all populations, regardless of their resource setting.

CONCLUSION:

In conclusion, this narrative review affirms the potent role that preventive health policies can play in mitigating the burgeoning burden of non-communicable diseases in developing countries, with a strong evidence base supporting the efficacy of fiscal measures, regulatory actions, and the integration of prevention into primary health care. Despite the methodological limitations inherent in much of the existing literature, including a reliance on observational data and challenges in generalizability, the collective findings provide a compelling justification for governments and health systems to prioritize these population-wide and integrated approaches. The strength of the evidence is sufficient to warrant decisive action, yet it also underscores the critical need for more nuanced, implementation-focused, and equity-oriented research to optimize policy design and execution in diverse low-resource contexts. Therefore, the final recommendation is for a dual-pronged strategy: an immediate, scaled-up implementation of known cost-effective interventions, coupled with a sustained commitment to generating context-specific evidence that can address the identified gaps in sustainability, political economy, and equitable impact, ultimately forging a path toward more resilient and health-promoting societies.

AUTHOR CONTRIBUTION

Author	Contribution
Touseef Abid*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Ali Basim	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Tanzeela Iram	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Umair Latif	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Asma Waheed	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Bakhtawer Farooq	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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