

## Noncommunicable diseases prevention in low- and middle-income countries: an overview of Health in All Policies (HiAP)

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Author:	Ebele Ndubuisi, MScPH

Corresponding Author:	Ebele Ndubuisi, MScPH Syddansk Universitet Niels Bohrs Vej 9-10 6700 Esbjerg Denmark E-mail: fzn272@alumni.ku.dk
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**Title:**

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**Abstract:**

NCD causes an estimated 35 million deaths annually and accounts for 60% of all deaths globally, of which 80% is in low-and-middle-income countries (LMIC). NCDs will account for 80% of the global burden of disease by 2020. And will be responsible for seven out of every ten deaths in LMIC, more than double the current trend today. NCD is no longer an emerging problem in developing countries, it is assuming an alarming dimension, and it's taking on the proportion of an epidemic. The known risk factors for significant NCDs are well documented. The critical risk factors are tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol. To reverse the current trend that leads to an increase in poor dietary pattern, sedentary lifestyle, tobacco use, and harmful alcohol use- will require policies that transcend the health sector and policy change in different areas such as finance, urban planning, education, agriculture, and transportation.

**Keywords:**

Low-and-middle income countries (LMIC), Noncommunicable diseases (NCD), Health in All Policies (HiAP), Sedentary Lifestyle, Risk Factors, Developing Countries, City Planning, Global Burden of Disease, Diet, Income, Tobacco Use, Transportation, Agriculture

**Introduction:**

Noncommunicable diseases (NCDs) such as cardiovascular diseases, chronic respiratory diseases, cancer, obesity, diabetes, and mental illnesses are until recently, defined as a health problem of the rich and developed countries, and associated with economic development. However, current epidemiological data shows NCDs to be on the rise in developing countries and contributes a higher number of mortalities in these countries.

NCD causes an estimated 35 million deaths annually and accounts for 60% of all deaths globally, of which 80% is in low-and-middle-income countries (LMIC) (1). NCDs will account for 80% of the global burden of disease by 2020. And will be responsible for seven out of every ten deaths in LMIC, more than double the current trend today (2). NCD is no longer an emerging problem in developing countries. It is assuming an alarming dimension, and its magnitude is in terms of an epidemic (Table 1). The effect of NCDs in LMIC exacerbated by the persisting communicable diseases (CDs) which have proven hard to eradicate, is an issue of concern.

Evidence from many population-based epidemiological studies shows that the risk factors for NCDs. Cancer, cardiovascular diseases, chronic respiratory diseases, obesity, and diabetes are closely related to lifestyle choices and are readily preventable. The principal risk factors are tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol. Nevertheless, it's simplistic to associate these diseases to individual

lifestyle choices alone. Without taking into consideration factors like globalization, industrialization, and urbanization, which has occurred rapidly over the past decades. Therefore, NCDs might be a lifestyle and environmental disease that in many cases is not directly linked to an individual's behavior but as a result of societal changes in terms of economic transition, urbanization, globalization, and other known risk factors.

These global changes have significant effects on a population's health and nutritional status, especially for low-and-middle income countries in transition. The visible improvement in the standard of living and increase in food availability and diversity in the developing countries. Also comes with its negative consequences like poor dietary habits, sedentary lifestyle, and increased use of tobacco, translating to increase in lifestyle-related chronic diseases, especially among the poor in these countries (3). Therefore, any effective prevention strategy must target these risk factors and promote opportunities for healthy lifestyle choices. Reversing the current trend that led to an increase in poor dietary pattern, sedentary lifestyle, tobacco use, and harmful alcohol use requires policies that transcend the health sector. And policy change in different areas such as finance, urban planning, education, agriculture, and transportation (4).

Apart from the known risk factors, there are major socioeconomic determinants that cause NCDs, which is beyond the scope of the health sector. Multidisciplinary and multisectoral action is required to address these determinants and the complex interaction between individuals, communities, populations, and their environment. These also require a proper understanding of the social, economic, cultural, and political determinants of health. Notably, those related to rapid globalization and trade liberalization, uncontrolled urbanization, improved communication and technology. And the aging population for appropriate initiation of policy and program interventions (5).

About 80% of morbidity and mortality from chronic disease can be prevented by tackling just three risk factors; poor diet, tobacco use, and lack of physical activity (6). The risk factors for significant NCDs are known and modifiable. Hence, a population-wide intervention tackling the risk factors is feasible and can lead to considerable reductions in NCDs burden. The increasing trend of NCDs in low-and-middle income countries, the cost of management, coupled with the difficult task of dealing with infectious diseases on an already stretched health systems, makes prevention the primary focus of all efforts to curtail and reduce the NCD scourge. Prevention at the primary health presents the best buy in dealing with NCDs in these settings. Rather than another vertical program that disintegrates the health system.

In public health science, it well noted that health is rooted extensively in society — an idea of prominence with the WHO report on the Social Determinants of Health (SDH). A notion earlier replete in the Health for All Strategy of the WHO in 1979 that emphasized inter-sectoral action as a mechanism for achieving its primary health vision (7). The Ottawa Charter also identified critical areas for health promotion actions. That put health on the agenda of policymakers in all sectors and at all level, instructing them to recognize the health consequences of their decisions and accept their responsibility for health (8). Indicative that the health sector lacks direct influence over many determinants of health outside the health sector.

Health in All Policies (HiAP), was the central theme in the field of health during the Finish EU presidency in 2006 (9)(10). Buttressed the notion that policies in other sectors other than health have far-reaching effects on health outcomes. The idea is to strengthen policy implementation that considers health determinants controlled in other areas- finance, agriculture, education, urban planning, transportation, and trade. It looks for a win-win situation, where the health and well-being of the nation are improved and at the same time wealth creation. Through structures and actions originating solely from other sectors other than health, this

strategy has been used before in Finland. The Finns used it in decreasing the burden of cardiovascular disease in Finland and would be most relevant in tackling other NCDs that share modifiable risk factors (11). The strategy conceptualizes the role of actors, actions, and determinants that can sway policies relating to NCDs. The HiAP framework will be applied to identify needed plans for the prevention of NCDs in LMICs.

This article will aim to briefly analyze the argument for HiAP in preventing NCDs in LMIC, identify health determinants in other sectors directly linked with NCDs. It will also propose policy changes directed towards preventing and controlling the current trend of NCDs in LMIC.

## Discussions:

### The problem

Low-and-middle income countries have the highest number of deaths related to NCDs; it accounts for 80% of the 60% NCD deaths worldwide, according to data from the WHO (12). Global deaths are projected to increase by 15% between 2010 and 2020; the LMICs will have the highest increase, where the African region will see an increase of over 20% (13). Lopez et al. also showed that cardiovascular disease burden per head in LMICs increased between 1990 and 2001(14). The LMICs currently accounts for over 80% of cardiovascular and diabetes deaths, and nearly 90% of all COPD deaths worldwide. Cervical cancer is the leading cause of cancer deaths among women in Sub-Saharan Africa. More than two-thirds of the cancer deaths globally are in LMICs, where the incidence is projected to rise to 14.3 million in 2030 provided the current global cancer rate remains the same. It calls for concern that NCDs is more concentrated among the more impoverished population. Having effects on all age distributions; 48% of all NCDs deaths in the LMICs occur in persons under the age of 70, compared to 26% in high-income countries (14).

Moreover, 26% of NCDs related deaths occur in persons below the age of 60 as compared to 13% in high-income countries. One literature showed that half of the cardiovascular deaths in Sub-Saharan Africa occur among persons aged between 30-69 years (15). Globally one-quarter of all deaths attributed to NCDs occur among people aged below 60 years (13).

This phenomenon portends grave economic consequences for the LMICs in terms of productivity loss and the enormous cost of long-term treatment associated with NCDs, moreover, the potential vicious cycle of driving families and societies to poverty. The World Economic Forum's 2009 report elucidates that NCDs to a high degree presents the most threat to economic development. The NCD cost for 2010 is a staggering US\$ 30 trillion, or 48% of the global GDP (16). A clear picture of NCDs capabilities to push millions of people into poverty, most likely in the LMICs where millions are already grappling with poverty.

Globally, the direct medical cost of treatment and loss of productivity related to NCDs has reduced the quality and quantity of the labor market and human capital (17). A report on the macroeconomic impact of NCDs indicates that the cost of medical treatment for NCDs: coronary heart diseases, hypertension, diabetes, obesity, and stroke in China stands at about US\$3 billion annually. Similarly, it costs Brazil US\$ 72 billion annually for treatment and loss of productivity associated with NCDs (18). The direct cost of diabetes in terms of treatment cost is projected to reach a whopping US\$ 300 billion by 2030 in the LMICs, which will shoulder 45% of diabetes cases. This estimate is lower based on the difficulties of estimating the 2030 costs in some countries (16). Chronic obstructive pulmonary diseases (COPD), which refer to a group of

progressive lung diseases (e.g., bronchitis, emphysema, and asthma) has a direct medical cost of about US\$2.1 trillion. The price is expected to rise to US\$ 4.8 trillion in 2030. The LMICs contributes approximately half the global costs for COPD (16).

The modifiable risk factors for NCDs have been identified and extensively recorded in the existing scientific literature. These risk factors, such as poor diet, physical inactivity, tobacco use, and harmful use of alcohol. Leads to metabolic/physiological changes that are associated with and causally linked to NCDs. These are the leading risk factors in order of magnitude: raised blood pressure (13%), tobacco use (9%), elevated blood glucose (6%), physical inactivity (6%), overweight and obesity (5%). And are the causes of deaths attributable to NCDs (13).

It is important to reiterate that, all these factors, to some extent, are individual lifestyle related. However, it is vital to highlight the lack of studies tailored towards understanding possible relations between personal lifestyle, environment, and policies associated with NCDs in LMICs. Notwithstanding, several determinants of health outside the domain of the health sector identified in various literature possible aggregated determinants of NCDs.

#### The idea

Several studies documented health determinants and policy outside the health sector, related to health and well-being. Identification of these determinants led to advocacy towards adopting the intersectoral approach in dealing with the health of the population. However, experts in health policy still do not readily grasp the term Health in All Policies (19). Therefore, research and development in health policies are still mainly within the health sector. HiAP aims to improve evidence-based policymaking by focusing on strategies rather than on projects or programs (20).

The health sector deals with diseases, but, most often in terms of health determinants, other sectors play pivotal roles. Ollila says that an essential key to HiAP lies in the exceptional ability to analyze all policies based on its implication for health and not confined within the health sector (21). Such analysis requires a good understanding of content, context, process, and the actors in international and national policy environment (22). It is vital for understanding the process related to policy development and as well as identifies windows of opportunity for policy change.

The initiation and implementation of actions, which are outside the domains of an actor, is particularly tricky. When a probable channel opens for discussions and integration of favorable health implications, a daunting challenge is that coalitions, organizations, and networks might change. And adopt new spheres of work in an ever-changing policy environment.

However, a win-win strategy can aim at policies that benefit all actors: as seen in areas such as education, sanitation, hygiene, and the environment (20). Such a strategy was used in France and Finland in combating the scourge of two NCDs (cancer and cardiovascular diseases) and proved much useful. It identified policies outside the health sector and addressed their adverse health consequences.

The high number of cancer mortality reported in an EU report brought about the French Cancer Plan of 2003. The plan, among other strategies in the health sector, employed the HiAP initiative by setting target outside

the health sector in the drive to reduce the number of cancer mortalities. It took on a policy that increased the price of tobacco by 45% and banned the sales of cigarettes to persons under the age of 16 years. This action reduced the number of smokers, over 1.8 million people in the first two years of implementation (23). As part of the plan, policies were made that required a health risk warning on food and drinks packaging and mandated the ban of all food and drinks vending machines in schools. The plan acknowledged the links between health and environmental factors (24). And focused chiefly on public education, which enabled collaboration between the Ministries of Health and Education, to create and implement programs that raise public awareness about risky behaviors related to cancer.

In North Karelia, Finland in 1972, the North Karelia Project was launched as a means of curtailing the high incidence of CVD in the area. The project's main aim was to change lifestyle related-risks through community-based actions involving different sectors and different policies. It targeted change in diet to lower high blood cholesterol levels by educating the populace to reduce saturated fat and salt intake. It later cumulated into a national program in 1977 which brought about policy change in other sectors; agriculture and food industry. A collaboration with Ministries of Commerce and Agriculture increased the availability and consumption of fruits and vegetable through the Berry and Vegetable Project (25). The program led to an improvement in the quality of diets in Finland. Statistics showed a reduction in the number of people that used butter on their bread from 90% of the population in 1972 to less than 5% in 2009. The butter consumption per capita reduced from about 18kg in 1965 to 3kg in 2005. Dietary changes in Finland led to a massive reduction in cholesterol level with 80% reduction in annual CVD mortality among the working-age population (11).

These examples show the HiAP strategy adopted in these countries, mostly implemented outside the health sector, with, collaborations between the health and other areas in preventing disease. The idea is to change unhealthy behaviors, and the right policy interventions in the economic, social, and environmental sector, it's inexpensive and permanent. Against focusing on the narrow realms of diseases and medical care, an essential idea in fighting the menace of NCDs in LMIC.

For preventive action relevant to curbing selected NCDs; ischemic heart diseases, cardiovascular disease, and lung cancer, tobacco control is at the forefront. Smoking causes a large percentage of coronary heart diseases, CVD, and lung cancer. 33% of all ischemic heart disease, 35% of CVD, and 83% of lung cancer are caused by smoking among persons aged 35-65 years (26). Tobacco use is one significant health risk that demands urgent actions through Health in All Policies. Tobacco has both adverse effects for the smoker and passive smoker. One study estimated the effects of the tobacco control program in Washington, found a significant reduction in adult smoking and health condition associated with tobacco use. It counted more than \$1.5 billion in savings to the health sector in terms of medical cost and reported consistency in the 10-to-1 return in reduced health care costs related to the tobacco control program (27). Still, some economic policymakers argue that cutting tobacco production and consumption has enormous financial consequences to governments in LMIC, showing the difficulties in initiating policy change. Nevertheless, this argument is scarcely valid. Rather these countries, if they fail to act, will lose a lot in terms of direct medical cost and productivity loss in the long run. Therefore, making it "illogical and irresponsible for economic policymakers to talk about economic growth and simultaneously ignore NCDs" (16).

Studies in several countries of tobacco control policymaking have shown that the media plays a pivotal role in advocacy and support for tobacco control law reform (28)(29). Therefore, a case for greater involvement



of the news media in raising public awareness. And in policy-oriented matters bordering on tobacco control program in LMIC in any drive to prevent NCDs. WHO Framework Convention for Tobacco Control (FCTC), key objectives is to reduce demand in tobacco products through an increase in taxation, curtail smoking in public places through legislation, ban on tobacco advertising, health warning on tobacco packaging, and counter-advertising (30). These are all proven strategies for reducing smoking prevalence (31) and shows a positive effect in lowering tobacco-related health conditions, like ischemic heart disease (32), CVD, and cancer (33). The FCTC has been in force in many LMIC (34), but there are no national laws prohibiting tobacco use in public places. In countries where such rules are in existence, the challenges of implementation and enforcement arise. The current framework must be evaluated and modified to encourage collaborations and implementation of comprehensive tobacco control programs cutting across all sectors. Structures should be put in place to ensure enforcement of tobacco ban in public places and sale of tobacco products to minors.

### **Conclusion:**

Taking into cognizance the idea that policy is the result of intricate economic, social, and political synergy that does not develop in a vacuum (22). It is simplistic to suggest a broad policy needs or change, as a silver bullet for preventing NCDs in LMIC, without considering the actors and the policy environment. It is also useful to state that different actor's shape policy contained within the structure of policy context. Therefore, context-specific research on means of getting health on the agenda of other sectors to prevent NCDs is required. However, a review of literature dealing with health determinants and policies outside the health sector related to NCDs led to the identification of critical areas that are associated with NCDs. And they are advertising, transportation, urban planning, agriculture, education, food industry, tobacco, and alcohol industries.

NCD is of grave concern given the associated risk of substantial medical cost and productivity loss in the future if the LMIC fails to act. The projections show that NCDs will constitute the more significant burden of disease in the LMIC shortly and can drive families and societies to poverty in already struggling economies. From a prevention perspective, the LMIC still have the window of opportunity open to reverse the trend of NCDs and avert tremendous losses. NCDs are multi-factorial diseases that are not only dependent on individual lifestyle choice but also on the environment. Therefore, making its prevention multisectoral as the factors that cause NCDs are resident in different sectors outside of health. And can be prevented through policies that consider its devastating effect on society. HiAP offers a credible platform vital for the prevention of NCDs. Public health experts should continue to forge alliance across all sectors and engage policymakers to ensure that policies that will tackle NCDs come into effect.

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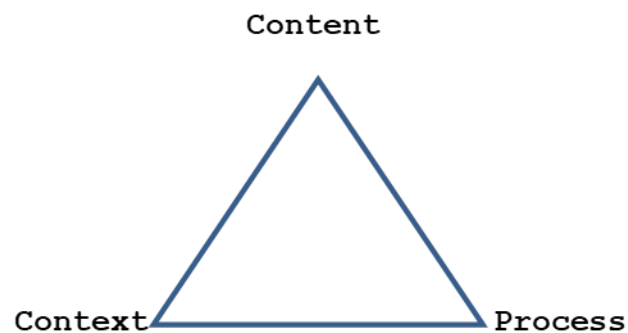
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Table 2: Projected NCDs economic burden 2011-2030 (trillions of US\$ 2010)

Country income group	Diabetes	Cardiovascular disease	Chronic respiratory diseases	Cancer	Total
High	0.98	8.5	1.6	5.4	16.4
Upper-middle	0.6	4.8	2.2	2.3	9.9
Lower-middle	0.2	2.0	0.9	0.5	3.6
Low	0.0	0.3	0.1	0.1	0.5
LMIC	0.8	7.1	3.2	2.9	14
World	1.7	15.6	4.8	8.3	30.4

Source: World Economic Forum/ Harvard School of Public Health

Figure 1: Policy triangle; model for analyzing health policy



Source: Walt and Gilson (1994)