

Non-communicable diseases in Ethiopia: policy and strategy gaps in the reduction of behavioral risk factors

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Abstract

Introduction: Non-communicable diseases (NCDs) are the leading cause of death worldwide. Over 80% of NCD deaths occur in developing countries. Four modifiable behaviors, namely tobacco use, consumption of unhealthy diet, physical inactivity, and the harmful use of alcohol, contribute to 80% of the NCD burden. Studies show that the vast majority of NCDs can be prevented through behavioral risk-reduction interventions. Properly executed, the interventions could lead to a decrease in the burden of NCDs, ranging from a 30% drop in the prevalence of cancer to a 75% reduction in cardiovascular diseases. This study examined the policy and strategy gaps in the reduction of the modifiable NCD behavioral risk factors in Ethiopia to inform and guide policy-makers and other stakeholders.

Methodology: This study used a data triangulation methodology with a sequential, explanatory, mixed-method design conducted in two stages. The authors carried out quantitative analysis on the prevalence and distribution of behavioral risk factors from the Ethiopia NCD STEPwise approach to surveillance (STEPS) survey. Qualitative data on national policies and strategies complemented the analysis of the progress made so far and the existing gaps.

Results and Discussion: Ethiopia has made substantial progress in responding to the NCD epidemic by developing a health sector NCD strategic action plan, generating evidence, and setting time-bound national targets on NCD behavioral risk factors. Activities mainly aimed at reducing tobacco use, such as implementation of the ratified WHO Framework Convention on Tobacco Control (FCTC), using evidence of the Global Adult Tobacco Survey (GATS), and the articulation of legislative measures are ongoing. On this paper our analysis reveals policy and strategy gaps, status in law enforcement, social mobilization, and awareness creation to reduce the major behavioral risk factors.

Conclusions: NCDs share common risk factors and risk reduction strategies creates an opportunity for an effective response. However, the national response still needs more effort to have a sufficient impact on the prevention of NCDs in Ethiopia. Thus, there is an urgent need for the country to develop and implement targeted strategies for each behavioral risk factor and design functional, multisectoral coordination. There is also a need for establishing sustainable financial mechanisms, such as increasing program budgets and levying 'sin taxes,' to support the NCD prevention and control program. *Ethiop. J. Health Dev.* 2019; 33(4):259-268]

Key words: NCDs, behavioral risk factors, policy, strategy, multisectoral coordination, Ethiopia

Introduction

NCDs are the leading cause of death worldwide, accounting for 71% of all deaths (41 million of the 58 million deaths that occur each year) (1,2). Among the NCDs, cardiovascular diseases, cancers, diabetes, and chronic lung diseases account for 80% of the global disease burden (1,2). Eighty per cent of NCD deaths occur in developing countries, and nearly 30% happen before 60 years of age (1). Without a proper response, the NCD burden in developing countries is likely to rise in the coming years. The World Health Organization (WHO) predicts NCDs will affect sub-Saharan Africa and other developing countries disproportionately. According to the WHO's projection for 2030, the disability-adjusted life years (DALYs) and deaths attributed to NCDs will be three and five times greater than those of communicable diseases and maternal, perinatal and nutritional conditions combined, respectively(3).

The prevention and control of NCDs involves implementing a range of interventions at multiple levels. One of the effective strategies is the reduction of NCD behavioral risk factors. Four behaviors, namely tobacco use, consumption of unhealthy diet, physical inactivity and a harmful use of alcohol, are identified as major shared risk factors for NCDs. More recently, a fifth behavioral factor, air pollution, is considered as an important NCD risk factor (4,5). Studies have shown the existence of opportunities to prevent NCDs by implementing strategies to reduce these behavioral risk factors. The evidence suggests that, if properly executed, the interventions could lead to reductions in NCDs, ranging from a 30% drop in the prevalence of cancer (3) to a 75% reduction in cardiovascular diseases (4).

This paper focuses on an analysis of Ethiopia's

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response to NCDs, mainly in light of the WHO ‘best buys’ and the WHO progress monitoring indicators (6,7). Its main objective is to examine the policy and strategy gaps pertaining to the reduction of NCD behavioral risk factors in the country to inform and guide policy-makers and other stakeholders in developing the much-needed policy frameworks and strategic direction for interventions that will help reduce the risk factors.

Methodology

Study design: This cross-sectional study used a data triangulation methodology with a sequential, explanatory, mixed method design conducted in two stages. Quantitative analysis of the prevalence and distribution of NCD behavioral risk factors was complemented by qualitative data on national policies

and strategies, building a coherent argument on the progress made so far, and identifying the current gaps.

Data collection methods and data sources: Quantitative data on behavioral risk factors were obtained from the Ethiopian NCD STEPS survey published in 2015. Data on existing national policies and strategies for the control of the risk factors were obtained qualitatively through an extensive review of relevant documents. The qualitative document review was guided by the WHO NCD response progress monitoring indicator checklist (7). The researchers used a document review matrix, which is based on the ten NCD progress monitoring indicators, to organize data obtained from the STEPS survey and the policy and strategic documents reviewed (Table 1).

Table 1: Summary of themes and data sources

Theme	Data source
Evidence on NCD risk factors in Ethiopia	
Magnitude of NCD behavioral risk factors	• Ethiopia NCD STEPS survey, 2015
National NCD strategy and target setting	
Strategy	• National Strategic Action Plan for Prevention and Control of NCDs in Ethiopia (2014-2016)
Target setting	• Health Sector Transformation Plan 2015/16-2019/20 (HSTP)
National NCD response progress	
Progress made by the country on NCD response against a global set of indicators	• NCD progress monitor, 2017

Data analysis and interpretation: The strategy employed to interpret the results was a convergent approach whereby quantitative STEPS survey data and qualitative findings were analyzed separately and the findings brought together (8). The quantitative data were disaggregated by region to highlight the geographic variations and guide contextual priority setting. Quantitative findings are primarily presented as graphs. Qualitative data were interpreted using thematic analysis whereby codes were applied to textual data. Coding was both inductive and deductive, with pre-defined codes generated based on the WHO NCD progress indicator checklist (deductive), and new codes applied as the text was read (inductive). The codes were then refined, and final sets of codes

generated. The resulting codes were grouped into categories that formed the major themes used in the presentation and discussion of the results. The study findings were triangulated by source.

Results – Evidence on the NCDs’ behavioral risk factors

Tobacco smoking: The 2015 NCD STEPS survey found 4.2% of Ethiopians are smokers with significant regional variation in smoking prevalence (Figure 1). More men (7.1%) smoke compared to women (0.4%), and the rates are higher in rural (4.1%) compared to urban settings (3.9%). The rate of smoking among the young (15-29 years of age), accounting for 30% of the total population, is 3.1% (9).

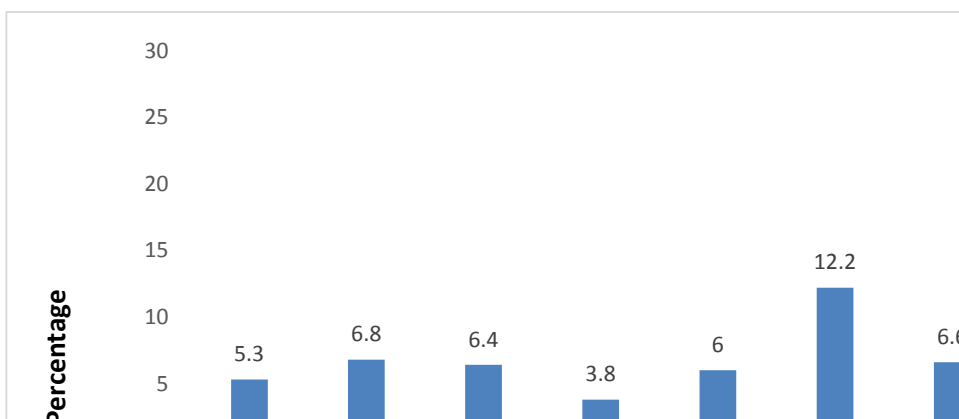


Figure 1: Distribution of tobacco smokers in Ethiopia

Table 2 summarizes the progress Ethiopia made in terms of tobacco control in accordance with some of the key components of the WHO FCTC, the progress monitor and accompanying guidelines.

Table 2: Ethiopia's progress on tobacco control

	Progress Area	Current Status
1.	WHO Framework Convention on Tobacco Control (FCTC)	Ethiopia ratified the convention in 2014, ten years after it signed the treaty.
2.	Monitoring tobacco use through Global Adult Tobacco Survey (GATS)	Ethiopia conducted GATS in 2016
3.	Increase tobacco taxation	Ethiopia has placed a 20% excise tax on tobacco leaf while there is a 75% taxation on Cigarettes, cigar, cigarillos, pipe tobacco, snuff and other tobacco products based on ad-valorem taxation. Besides, policy dialogue and advocacy are underway for further increase in taxation.
4.	Develop legislations and enforcement mechanisms to create complete smoke-free environments in all indoor workplaces, public places and public transport	The law is in place, but enforcement is very weak in all regions of Ethiopia except in Tigray region
5.	Warn people of the dangers of tobacco and tobacco smoke through effective health warnings and mass media campaigns	-Health warning messages limited to only 30% of tobacco packages in Ethiopia -Social mobilization and awareness creation efforts are patchy at best
6.	Ban all forms of tobacco advertising, promotion and sponsorship	All forms of tobacco advertising are banned by law, but there are some sponsorship activities by tobacco companies & importers
7.	Support tobacco cessation	-There are only three substance abuse treatment centres for a 100 million population of Ethiopia, and none of them is fully functional - No tobacco quit hotline for service linkage - No access to Nicotine replacement therapy -Two rounds of training conducted on tobacco cessation for health professionals. However, none of the facilities from which the staff were trained established formal cessation services

Harmful use of alcohol: The harmful use of alcohol is a major risk factor for NCDs, and is becoming a public health concern with wide-ranging consequences for health as well as for the socio-economic status of communities (10). The effects of alcohol use are mostly the result of alcohol's harm on the body, drink driving, anti-social behaviour and domestic violence (11). To address harmful use of alcohol, the World Health Assembly outlined policy options and interventions in 2010 (12).

Evidence from the 2015 national NCD STEPS survey shows that the prevalence of the harmful use of alcohol in Ethiopia is 12.4%, and that there is substantial regional variation (Figure 2). The prevalence is much higher in men (20.5%) compared to women (2.7%). As depicted in Table 3, although huge challenges remain, Ethiopia has shown some progress in implementing the WHO strategies for control of harmful use of alcohol (13,14).

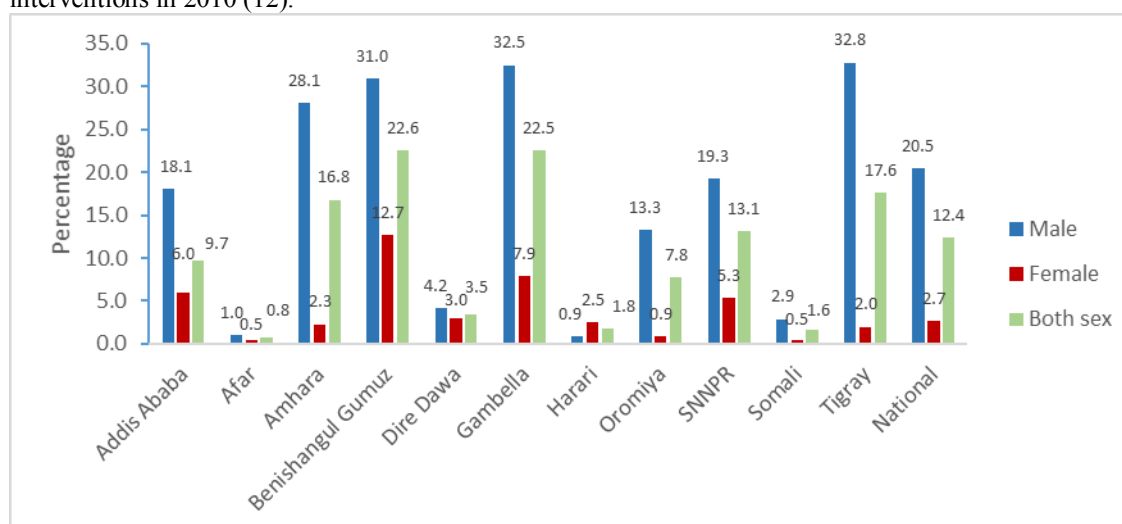


Figure 2: Proportions of adults who drink six or more alcoholic drinks at least once a month

Table 3: Ethiopia's progress on reducing the harmful use of alcohol

	Progress area	Current status
1	National alcohol control policy and strategy	Not available.
2	Regulations on commercial and public availability of alcohol	National legal minimum age of 18 years for off-premise sales of alcoholic beverages (beer/wine/spirits) has been set. However, no enforcement mechanisms exist.
3	Comprehensive restrictions or bans on alcohol advertising and promotion	Advertising alcohol drinks through sponsorships, boards and in places of public gathering and sporting is banned (Proclamation No. 1112/2019).
4	Pricing policies, such as excise tax increases on alcoholic beverages	There is a 50% excise tax on beer and stout, wine, and whisky, and a 100% tax on other alcohols (Proclamation No. 307/2002). However, most of the beer and wine consumed in Ethiopia is locally manufactured, and there is no additional tax on local products which are more affordable for the general public.

Physical inactivity: The Ethiopian NCD STEPS survey showed that 5.8% of the population were physically inactive. The rates vary significantly between regions, with Addis Ababa (28.8%), Harari (26.6%), Dire-Dawa (19.7%), Benishangul-Gumuz (13.6%) and Somali (13.6%) regions having alarmingly high rates. In all regions, men are more active than women (Figure 3). Currently, Ethiopia lacks comprehensive policies,

strategies, action plans and guidelines for promoting physical activity. Besides, there is little collaboration between relevant sectors, such as health, education, urban planning and transportation, in creating conducive environments and encouraging physical activity among the different segments of the community.

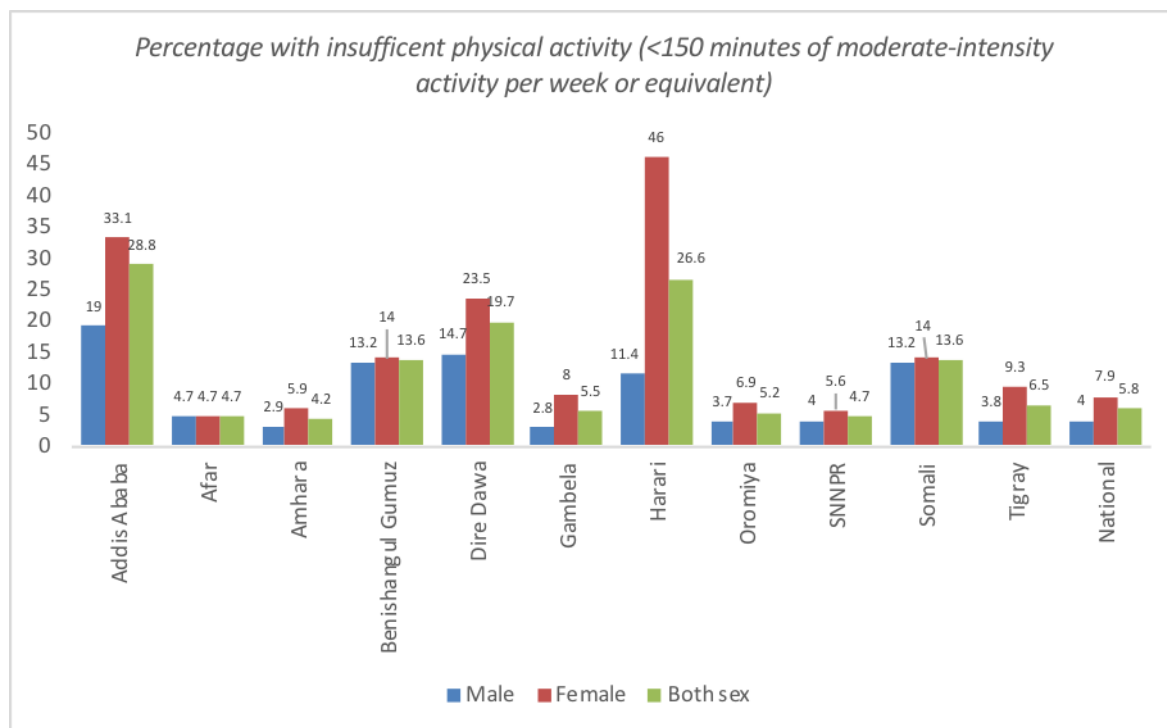


Figure 3: Proportions of adults who are insufficiently physically active

Poor dietary practices: Under-nutrition and other dietary factors contribute to 5.8% of all deaths and 2.2% of DALYs in sub-Saharan Africa. In Ethiopia, 23% of all NCD deaths are attributable to dietary factors (15). The following sections outline Ethiopia's situation concerning the major dietary practices.

A. Consumption of fruits and vegetables

The regular consumption of fruits and vegetables in adequate amounts is associated with a low risk of

NCDs (16). According to WHO, consuming 400 gm or five servings per day (excluding potatoes and other starchy tubers) of fruits and/or vegetables is a protective factor for NCDs. In Ethiopia, only 2.4% of the adult population consumes fruits and vegetables as per the WHO recommendation (Figure 4). Analysis of data from the global burden of diseases study showed that a low fruit and vegetable diet accounts for 86 deaths per 100,000 population in Ethiopia. The same study showed an increasing trend of NCD deaths as a

result of inadequate fruit and/or vegetable consumption, from 11.3% in 1990 to 11.9% in 2013 (17).

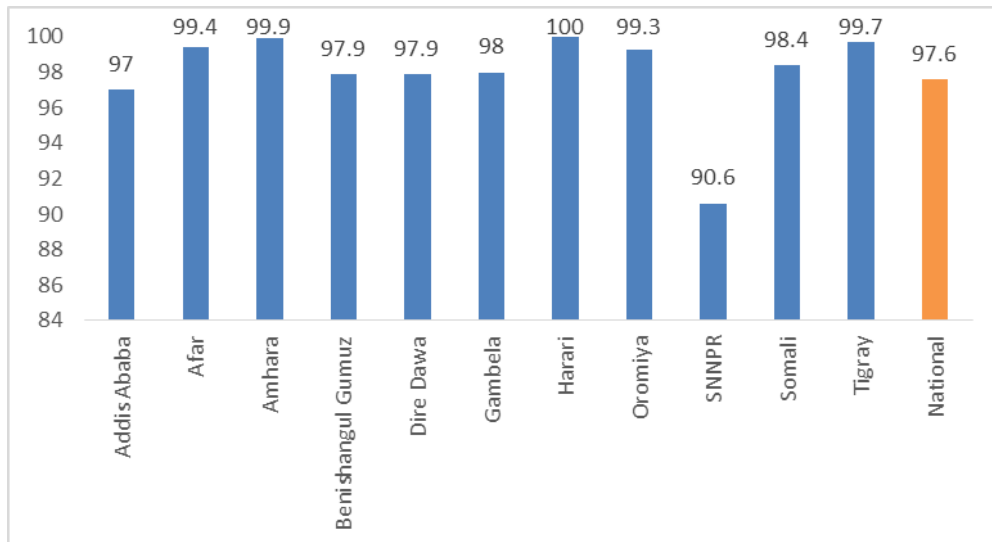


Figure 4: Proportions of people eating fewer than five servings of fruits and/or vegetables per day

Each year, Ethiopia produces an average of 2,399,566 tons of vegetables and fruits, which accounts for just 2% of the overall crop production. The land cultivated for fruit and vegetable production is only 0.11% of the total cultivated land (18). In general, rural farmers in Ethiopia prefer to produce cereals and pulses due to the perishable nature of fruits and vegetables, because of food security concerns, and a lack of storage facilities (19). As a result, the supply and consumption of fruits and vegetables is minimal in the country.

B. High salt intake

The World Health Organization recommends a maximum daily consumption of salt of 5gm/dl. According to the national STEPS survey, the average

salt consumption in Ethiopia is 8.2gm/dl/day (6.75 to 8.75gm/dl/day). The rates of salt consumption are comparable across regions except Somali, where the intake is relatively lower at 6.75gm/dl/day (Figure 5). The WHO recommends five major interventions to reduce salt intake at the population level: measuring and monitoring salt use; promoting the reformulation of foods and meals to contain less salt; adopting standards for labelling and marketing; increasing consumer awareness; and supporting settings to promote healthy eating (20). In Ethiopia, the measuring and monitoring of salt intake were initiated in 2015 through the STEPS survey. However, concrete measures are yet to be taken on the other four WHO policy and legislative recommendations.

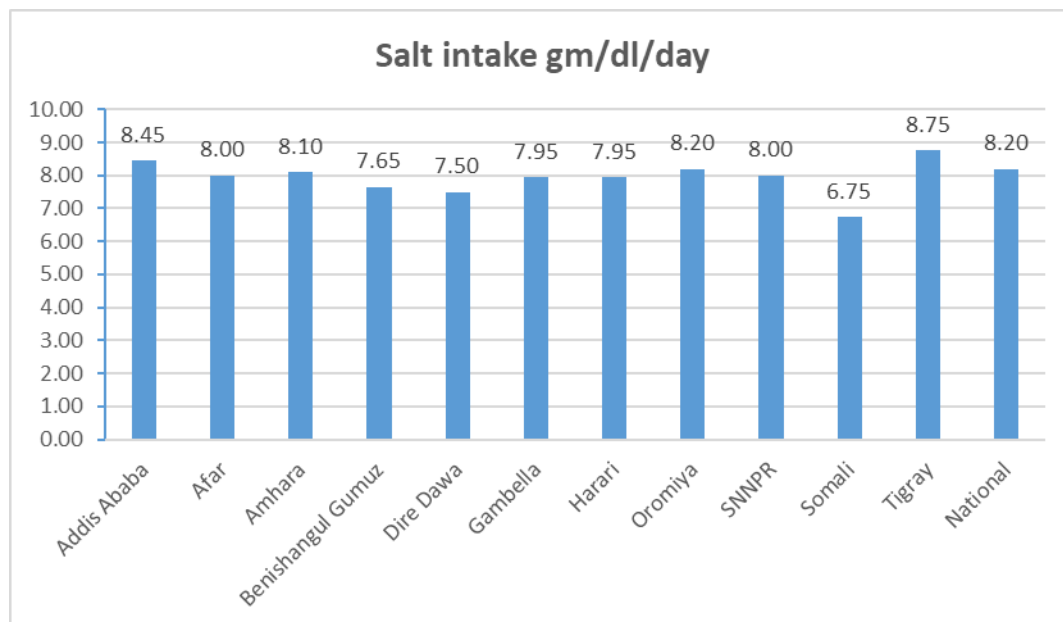


Figure 5: Salt consumption of adults in gm/dl/day, Ethiopia STEPS survey 2015

C. Consumption of unhealthy oil and fat

The consumption of unhealthy saturated and trans fats

is associated with increased rates of NCDs, especially of heart disease through the elevation of ‘bad

cholesterol'. According to the 2015 Ethiopia NCD STEPS survey, the consumption of foods with such fats is common in the country, with 65.7%, 0.1%, and 2.7% of the population consuming vegetable oil, margarine and butter from animal products, respectively. The WHO recommends the adoption of national policies that nearly eliminate industrially produced trans fatty acids and limit availability of saturated fatty acids from

the food supply. In Ethiopia, the policy interventions proposed by the WHO are yet to be developed.

Table 4 summarizes the overall progress Ethiopia has made in addressing poor dietary practices – low fruit and/or vegetable intake, high salt intake, and the consumption of unhealthy oil and fats – against the WHO NCD progress indicators.

Table 4: Ethiopia's progress on reducing unhealthy diets

Standard progress indicators	Country status
Adoption of national policies to reduce salt/sodium consumption	No policy in place
Adoption of national policies that limit saturated fatty acids and virtually eliminate industrially produced trans fatty acids in the food supply	No policy in place
WHO set of recommendations on the marketing of foods and non-alcoholic beverages to children	No regulation on marketing junk foods and non-alcoholic beverages to children.
Legislation/regulations fully implementing the International Code of Marketing of Breast-milk Substitutes	The Food, Medicine and Healthcare Administration and Control Authority (FMHACA) is mandated by Proclamation No. 661/2009 to regulate food safety and quality in the country. The authority issued a directive in 2013 to control the promotion of infant follow-up formula and complementary foods, and ensure the safety, quality, nutritional value and promotion of the products.
Implementation of at least one recent national public awareness program on diet and/or physical activity	On World Diabetes Day in 2016, a mass walk, that the media covered, was carried out to raise awareness on unhealthy diets and the need for physical activity.

Household air pollution: Indoor air pollution, commonly caused by biomass fuels, is an important risk factor for NCDs. Ethiopia is among the 20 most affected countries across the globe, with 4.9% of the total burden of disease attributed to indoor air pollution (21). In Ethiopia, a majority of the population live in rural areas, and 95% of the energy is from biomass sources that cause indoor air pollution that causes an estimated 56,700 deaths and 1,790,800 DALYs per year (22). The WHO proposed three interventions to address indoor air pollution: modifying the source (use of alternative clean fuels and improved stoves); improving the environment (minimizing exposure among adults and children); and behaviour change at the individual level (keeping children away from smoky environments). Data on the country's progress in implementing the interventions is patchy, and WHO lacks any specific indicator to track household air pollution among its member states in its 201 NCD progress monitor.

Discussion

The NCD response in Ethiopia is characterized by political willingness, although there is a lack of coordination and sustainable financial mechanisms for a successful response. In addition, the country needs to develop effective pro-poor health strategies to reduce out-of-pocket expenditure on NCD services and ensure universal health coverage for NCDs. One of the major approaches is the reduction of behavioral risk factors. NCD risk factors have deep-rooted socio-economic and environmental determinants that cannot be tackled by the health sector alone.

Of all the NCD behavioral risk factors, tobacco use is the most preventable. In Ethiopia, tobacco use is relatively low. However, it requires substantial policy interventions given the number of people affected, which is due to the large population size of the country. The significant regional variation in tobacco use, and the increasing trend of tobacco use, especially among the young are other reasons for putting emphasis on tobacco use. Although Ethiopia is taking important steps towards responding to the tobacco use epidemic by measuring the burden, passing legislation on packaging, labeling and advertising of tobacco, and creating smoke-free environments, the implementation of the WHO FCTC measures has been slow. Tobacco and tobacco product taxation remain low, and no significant measures have been taken to enforce the smoke-free environment law and restrict sponsorship activities. Tobacco cessation facilities for treating and supporting tobacco users are almost non-existent. As a result, Ethiopia's population remains at risk of increased tobacco use – both smoking by individuals and second-hand exposure to smoke. The earliest time period for tobacco exposure, which is associated with lifelong use, is at school. The young are prone to experimentation and peer influence, and are exposed to pressure from globalization. Thus, without proper health promotion interventions in place, schools may become the target for the tobacco industry, potentially resulting in an increased burden of tobacco use in the country, as seen in other African countries such as Cameroon (23).

Besides the health risks, tobacco use is a socio-

economic and environmental issue which is included in the SDGs (target 3a) with emphasis on strengthening the WHO FCTC. Implementing the four elements of the WHO FCTC, namely taxation, smoke-free environment, warning the public about tobacco dangers, and banning tobacco advertisement(24), is estimated to save 15 to 18 lives per 100,000 over a 10-year period, while the combined cost of interventions requires just USD\$0.10 cents per person. Furthermore, a 21.4% increase in the real price of tobacco products through higher taxation decreases tobacco consumption by 10% (25). Beyond taxation, the full implementation of the other articles of the WHO FCTC framework is important, as it plays a significant role in reducing tobacco use. Thus, there is a need to draw lessons from local and international programs on implementation of the articles. For instance, Ethiopia can and should build on the best practice in advancing the smoke-free cities initiative that the Tigray region of the country demonstrated (26).

The harmful use of alcohol is increasing in Ethiopia. However, there is poor progress in tackling the problem through regulations on availability and putting meaningful taxation and pricing measures to limit alcohol use. Harmful alcohol use is not only a risk factor for NCDs, but also has a causal association with infectious diseases (10). The behavior also has a negative socio-economic impact as a result of harm to others from drink driving, anti-social behavior and domestic violence (11). The harmful use of alcohol is becoming a public health policy concern globally as a result of which it received attention from the World Health Assembly in 2010 (12). According to a 2014 WHO report, harmful use of alcohol is progressively increasing in Africa with the total per capita alcohol consumption of the equivalent of six liters of pure alcohol per year in 2010. Although the same report indicated a lower rate of consumption in Ethiopia at 4.1 liters, (27) however there is evidence of increasing trend in alcohol production and consumption in the country(28). Thus, addressing the harmful use of alcohol in Ethiopia requires an organized policy response and programs to develop and enforce legislation in key areas, namely raising awareness of the harm associated with the use of alcohol; regulating and restricting alcohol availability and marketing, especially to young people; enforcing drink-driving laws; and reducing demand through taxation, particularly of the locally produced alcohol. It is also important for the health sector to expand interventions for the treatment and support of alcohol abuse problems and alcohol use disorders.

Although the national prevalence of physical inactivity is low, there are substantial regional variations, with the likes of Harari having very high rates, which requires an appropriate response. Besides, physical inactivity is likely to worsen in the country given the current increasing trend in urbanization and a lack of proper planning, such as the situation in Addis Ababa, where most residential areas lack open playing fields. According to an estimate by the WHO, 3.2 million deaths across the globe are attributed to physical inactivity each year. Various studies also linked

physical inactivity to an increase in the burden of major NCDs, such as coronary artery disease, diabetes and cancer(29). A study from Ethiopia also reported a reduction in the prevalence of metabolic risk factors of NCDs with physical activity (21). The reasons for physical inactivity in Ethiopia can be attributed to two major factors: the lack of conducive environments for physical activity, such as due to increased construction and a lack of designated areas for sports at the community level; and sedentary behavior because of increases in non-labor intensive work. The current initiative taken by the prime minister office about car-free days is a breakthrough on reducing physical inactivity. There are also efforts on construction and improving of walking sidewalks. Further, the country needs to address physical inactivity through multisector interventions. It is important to continue revisit the urban planning processes and ensure cities have sufficient and suitable environments for walking, cycling and other forms of physical activity for all age groups. Major residential areas, such as condominiums, need sports playgrounds for residents. In addition, workplace physical fitness initiatives should be promoted, and efforts should be made to increase awareness among the public about the risks associated with physical inactivity. The mass media, school health and physical education clubs, churches and mosques, and other community structures, can be leveraged to this end.

The dietary habits of Ethiopians are poor, with a low intake of fruits and vegetables, a high intake of salt, and an increasing trend in the consumption of unhealthy oil and fat. Under-nutrition, and other dietary factors, contributed to 5.8% of all deaths and 2.2% of DALYs in sub-Saharan Africa; the contribution to NCD deaths is much higher in Ethiopia at 23% (15). The global burden of diseases study showed that a low fruit and vegetable diet accounts for 86 deaths per 100,000 population in Ethiopia, and the trend is likely to increase (17). In general, regular consumption of adequate amounts of fruit and vegetables is associated with a low risk of NCDs (16). Each year, 1.7 million deaths occur globally due to diets that are deficient in fruits and vegetables (30). WHO recommends a daily consumption of 400gm or five servings of fruits and/or vegetables (excluding potatoes and other starchy tubers) for protection against NCDs. In Ethiopia, only 2.4% of the adult population consumes fruit or vegetables as per the WHO recommendation.

The low consumption of fruits and vegetables in Ethiopia is unlikely to improve without appropriate policy measures that enhance their production and consumption. For instance, Ethiopia produces an average of 2,399,566 tons of vegetables and fruit each year, accounting for just 2% of the total crop production, including exports. The land cultivated for fruit and vegetables is only 0.11% of the total cultivated land in the country (18). As a result, a huge gap exists between production and need. Among the reasons for the low production of fruit and vegetables in the country are the concern associated with the perishable nature of fruit and vegetables, food security concerns, and a lack of storage facilities, making rural

farmers prefer cereals and pulses (19). A lack of awareness, economic reasons, and a lack of nutrition programs, except for those targeting young children and mothers, are also among the reasons for the low consumption of fruit and vegetables (31). Thus, it is of paramount importance to formulate policies to improve the availability and accessibility of fruit and vegetables, such as promotion of home, community and school gardening, as well as urban agriculture initiatives (32). Studies have shown that reductions in the price of fruit and vegetables through subsidies or tax exemptions improve availability and encourage those in the low socio-economic group to eat more, making such measures worthwhile considerations. (33). Improving the agricultural and food systems for storage and the transportation of fruits and vegetables are also vital. Furthermore, behavioral interventions to increase fruit and vegetable consumption especially during childhood have an important role, which foretells the behavioral impact during adulthood (34).

The high salt consumption in Ethiopia is above the WHO recommendation of less than 5 gm of salt per day. High salt consumption results in raised blood pressure, which is a risk factor for developing cardiovascular disease (35). WHO recommends key interventions to reduce salt intake at the population level: surveillance on salt intake, such as through the WHO STEPS survey; promoting the reformulation of foods and meals to contain less salt; implementing standards for proper labeling and marketing of food; increasing consumer awareness; and environmental changes to increase the availability and affordability of healthy food (20). A review study in sub-Saharan Africa showed both legislative and voluntary strategies for reducing dietary sodium can be effective. According to the study, salt reduction strategies resulted in improved outcomes as measured by changes in systolic blood pressure, mean arterial blood pressure and 24-hour urinary sodium excretion (36). Overall, the population-level interventions proposed by WHO would save lives and reduce the healthcare costs of individuals and government(37,38).

Reducing the high consumption of unhealthy fat and oil in Ethiopia also requires policy interventions. In line with the current WHO REPLACE strategy, the country needs to “**R**eview dietary sources of industrially-produced trans fats and the landscape for required policy change; **P**romote the replacement of industrially-produced trans fats with healthier fats and oils; **L**egislate or enact regulatory actions to eliminate industrially-produced trans fats; **A**ssess and monitor trans fats content in the food supply and changes in trans fats consumption in the population; **C**reate awareness of the negative health impact of trans fats among policy makers, producers, suppliers, and the public; and **E**nforce compliance of policies and regulations”(39).

Household air pollution is the unforeseen NCD risk factor in Ethiopia affecting the majority of the population (21). Even though chronic respiratory diseases are considered one of the major NCDs because of their burden, household air pollution, a

major risk factor for chronic respiratory illness, has received less attention in Ethiopia. For example, the national NCD STEPS survey did not assess the level of household air pollution in the country. Globally, Ethiopia is among the top 20 countries most affected by household air pollution. Around 5% of the total burden of disease in the country is attributed to household air pollution. Deaths from household air pollution are the highest in the sub-Saharan African countries at 400 to 600 deaths per million population per year (21). In Ethiopia, the majority of the population live in rural areas and 95% of the energy used for cooking is from biomass sources, with an estimated 50,000 deaths and 5% of national burden of disease attributed to household pollution from the use of solid fuel (22). According to the 2016 Ethiopia Demographic and Health Survey, 93% of households in the country used solid fuel for cooking. Concrete policy measures on reducing household air pollution are lacking in Ethiopia. WHO proposes three areas of intervention to address indoor air pollution: improving the source of energy, such as the use of alternative clean fuels and improved stoves; modifying the environment (proper ventilation using hoods or chimneys); and making behavioral changes, such as using dried easily combustible fuel sources and keeping children away from cooking environments (40,41). As it stands, organized response to household air pollution in Ethiopia is minimal. hence needs to create a policy framework for a population-level response to household air pollution due to the magnitude of the problem and its consequences. The WHO guidelines can be used as a starting point for improving the existing interventions on clean energy and developing contextually appropriate policies and strategies to address household air pollution effectively.

Conclusions

For nations such as Ethiopia, NCDs are future threats that the health sector alone cannot handle. The four major NCDs share common risk factors, and therefore provide an opportunity for an effective response. However, given the magnitude and complexity of NCD behavioral risk factors, it is unlikely that current efforts will avert deaths and morbidity from NCDs. Addressing NCD behavioral risk factors would require an effective multisectoral and intersectoral coordination mechanism with shared responsibility on implementation of proven interventions. Formulations of targeted policies and strategies and creation of sustainable domestic financing mechanisms are critical for the country to address the challenges and meet the time-bound global NCD targets.

Limitations of the study

This study relied on the NCD STEPS survey that partly lacked useful information on specific issues such as nutritional constituents of different staple foods and magnitude of indoor air pollution. There is also a lack of detailed evidence on the national response on some of the NCD behavioral risk factors with factors like law enforcement practices, space availability for physical activity and national response on household air pollution lacking large-scale studies addressing them.

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Authors contribution

FS and ML designed the study methodology; the members of the national taskforce – TG, ThG, AD, AA, AB, KA, HT, TT, GT MG, GG, AIB, TK, DY, MuG, FC, YG, KiM, MulG and YT – commented on the study methodology; FS wrote the draft paper; ML critically reviewed the document.

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Competing interests

All authors declare they have no competing interests. The authors are solely responsible for the views expressed in this article, and they do not necessarily represent the views, decisions, or policies of their institutions.

Ethics approval

Ethical approval was received from the ethical committee of the Ethiopian Public Health Institute.

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