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Community Mobilization and Participation in the Prevention of NCDs

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ABSTRACT

Background *Non- Communicable Diseases (NCDs) are a major cause of deaths throughout the world. Eighty percent of these death occur in developing nations. Four major modifiable behaviors- addiction, inadequate physical activity, and unhealthy diet are major contributors to NCDs.*

Objective *This study aims to access the effect of community mobilization in alleviating these modifiable behaviors, and thus NCDs.*

Methodology *We made use of PubMed and google scholar to look up related keywords such as: Community mobilization; non-Communicable diseases; Prevention; Public Health, etc. We reviewed multiple qualitative research papers from the2010 to 2023 that were relevant to this topic. This covered majorly low-income countries with high incidence of NCDs*

Result *The literature review found that NCDs have several major risks factors (such as physical activity, diet, substance abuse) that can be reduced in any population by effective community mobilization. Several studies showed an association between proper execution of community mobilization and lower incidence of NCDs. Thus, community mobilization has a major role in the prevention of NCDs.*

Conclusion *Community mobilization is necessary in populations with high incidence of NCDs. The researchers recommend government policy and citizen effort can be used to effectively mobilize the community, as this would lower the percentage of the population affected by NCDs.*

INTRODUCTION

Non-communicable diseases (NCDs), usually referred to as chronic illnesses, are characterized by a protracted course and are brought on by a confluence of genetic, physiological, environmental, and behavioral variables. Diabetes, cancer, cardiovascular disease (such as heart attack and stroke), and chronic respiratory illnesses (such as asthma and chronic obstructive pulmonary disease) are the four main types of NCDs. Tobacco use, physical inactivity, the harmful use of alcohol, and unhealthy diets all increase the risk of dying from NCDs.

The aging population, unhealthy lifestyles, and rising unplanned urbanization are the main causes of these illnesses. Obesity, high blood pressure, increased blood glucose, and elevated blood lipids are all symptoms of unhealthy diets and insufficient exercise in humans. These are known as metabolic risk factors, and they can result in cardiovascular disease, the major NCD in terms of preventable fatalities. All of these conditions cause premature morbidity, dysfunction, and reduced quality of life; they usually develop and progress over long periods; often initially insidious, and once manifested there is usually a protracted period of impaired health.[1]

A community-based approach to addressing NCDs has been acknowledged and recognized as one of the most cost-effective solutions. Community-based strategies include financial and health administrative support; social mobilization; community health education and promotion; and the use of community health centers in NCD prevention, detection, diagnosis, treatment, and patient management.[2]

Community mobilization uses participatory approaches to raise public awareness of the risk of NCDs and promote behaviors, actions, and practices that are collectively beneficial in preventing NCDs.[3]

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PHC system was made at the 1978 Alma Ata conference [7]. The concept was designed to address the health challenges experienced by developing countries that gained independence in the second half of the 20th century [8]. PHC is the first of the three levels of health service contact and is designed to be community-oriented, accessible, and affordable. It should as such offer promotional, preventive, curative, and rehabilitative health services.

The 1978 Alma Ata Primary Health Care (PHC) Declaration launched a phenomenal concept that has been integrated into the health systems of many countries, with the ultimate purpose of achieving 'health for all'. The original year marked as the goal for this was 2000 [7]. Originally, the concept was designed to address the health challenges experienced by developing countries that gained independence in the second half of the 20th century [8,9]. After the 1978 declaration, developing countries began to integrate the PHC strategy into their health systems.

About two decades after the Alma Ata conference, the World Health Organisation (WHO) called for a global report on PHC policy implementation and advancements made in each region to tackle contemporary and future challenges although NCDs were not a global threat at the time. The WHO African Region (AFRO) reported that members of the state displayed an explicit commitment to the PHC strategy as evidenced by various programmes and policies. For instance, the national health development plans of Burkina Faso (1986–90 and 1991–95), Kenya (1989–93), Malawi (1986–95), Congo (1982–86), and Tanzania (1980–2000) were all PHC-based. At the same time, Congo (1985), Namibia (1992), Mali (1987), and Nigeria (1988) all made strategic PHC moves in the indicated years [10,11].

Years later, specific efforts to revitalise PHC and introduce the management of NCDs into the programme have been executed. For instance, in 2008, the Ouagadougou Declaration made at the first International Conference on PHC and Health Systems in Africa, Burkina Faso called on African leaders to develop strategies to achieve the Millennium Development Goals associated with communicable and non-communicable diseases [12]. There was also wide adoption of the PHC strategy among African countries. For instance, the national health development plans of Burkina Faso (1986–90 and 1991–95), Kenya (1989-93), Malawi (1986–95), Congo (1982–86), and Tanzania (1980–2000) were all PHC-based [10].

In Nigeria, although PHC was proven to be effective in the control of NCDs and efforts towards the establishment of PHC in the country are evident, proper integration of NCDs management into PHC was not done until the launch of the third National Health Policy [13]. The first National Health Policy was launched in 1988, a year after the adoption of the Bamako Initiative, and it was revised to yield the second and third National Health Policies in 2004 and 2016, respectively. The 2016 policy emphasised PHC as the bedrock of the national health system and its third "policy objective" emphatically addressed the prevention and control of NCDs.

In 2010, the WHO also developed the Package of Essential Non-communicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings. This showed that PHC was a major strategy in combating non-communicable diseases (NCD)[14]. The 2018 Astana Declaration further pledged the commitment of the PHC system to address the growing burden of NCDs.[15]

EPIDEMIOLOGY

NCDs reportedly account for 74% of all global mortality. Of the 17 million premature deaths caused annually, 86% are contributed by low and middle-income countries [16]. In Africa, NCDs accounted for 37% of deaths in 2019, and in some seven African countries, between 100,000 and 450,000 lives are lost annually [17]. In Nigeria, the WHO 2018 report revealed that NCDs are responsible for no less than 29% of all deaths, with premature mortality at 22%. Cardiovascular diseases (CVDs) contribute the most (11%), followed by cancer (4%), chronic respiratory diseases (2%), and diabetes (1%) [18,19]. The Global Cancer Observatory (GLOBOCAN) 2020 reported 78,899 and 520,158 cancer deaths in Nigeria and sub-Saharan Africa, respectively [20].

Hypertensive heart disease is the most common CVD in Nigeria, accounting for 27.6% of cases, followed by cardiomyopathies (11.5%) and stroke (6.7%) [19]. In 2019, some 19 million diabetes cases were reported in Africa, and this is projected to reach 47 million by 2045 [18]. In Nigeria, the prevalence of diabetes is 4.1% [19]. In 2020, Globocan reported 233,911 prevalent cancer cases in Nigeria, with 124,815 newly discovered cases. In sub-Saharan Africa, the estimated number was about 1.5 million prevalent cases and 801,392 new cases [20]. Chronic obstructive pulmonary disease (COPD) and sickle cell disease were found to have prevalence rates of 6.9% and 1.5%, respectively [19].

Hypertension, the leading risk factor for CVDs, is most prevalent in Africa, with a rate of 27% [21]. In Nigeria, about 76.2 million people live with hypertension [22]. Impaired glucose tolerance (10.0%), impaired fasting glucose (5.8%), overweight (25%), and hypercholesterolemia (40%) are also identified as important conditions [19]. Behavioural risk factors such as tobacco use among Nigerians above 15 years old and harmful use of alcohol are prevalent at 5.6% and 34.3%, respectively. Physical inactivity and unhealthy diet are estimated to have 52% and 74.8% prevalence, respectively [19].

GLOBAL PUBLIC HEALTH POLICY

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In line with Sustainable Development Goal 3.4 [23], the consensus as regards prevention and control of NCDs is to target the common risk factors (tobacco use, harmful alcohol intake, physical inactivity, and unhealthy diets). These behavioural risk factors, if well dealt with, will indirectly reduce the major metabolic risk factors (high blood pressure, overweight, and abnormal blood cholesterol) [24–26]. This was the third of the six objectives of the WHO Global Action Plan for the Prevention and Control of NCDs 2013–2020. Other objectives include raising the priority accorded to the prevention and control of NCDs at all levels, strengthening national capacity to accelerate country response, and strengthening the health systems through PHC and universal health coverage. The Global Action Plan also highlighted nine voluntary global targets, which provide quantitative measures of progress.

Appendix 3 of the WHO Global Action Plan provides cost-effective policy options that have been repeatedly updated to yield the current "WHO Best Buys and other recommended interventions [23,24]." The "WHO Best Buys" are a compendium of 88 evidence-based, effective interventions for the prevention and control of major NCDs, which are graded into three categories based on their cost-effectiveness [27,28]. There are 16 "best buys,' which are considered to be the most cost-effective and feasible for implementation. They have a cost-effectiveness ratio of ≤ I$ 100 per disability-adjusted life year (DALY) averted in low and middle-income countries (LMICs) [27,28]. Other interventions in the second category have a cost effectiveness of >I$ 100 per DALY averted in LMICs. The last category of interventions is also proven to be cost-effective but has no available cost-effective analysis [27,28].

One such key intervention is the reduction of tobacco use. This was first endorsed in the WHO Framework Convention on Tobacco Control (WHO FCTC), the first international treaty negotiated under the auspices of WHO. Since its adoption at the World Health Assembly in 2003 and entry into force in 2005, about 180 countries have joined [29,30]. Nigeria became a party on January 18, 2006 [31]. The WHO FCTC provides measures to reduce the devastating health challenges caused by tobacco. More importantly, it gives protection from second-hand smoke. In addition, WHO introduced MPOWER, a set of six measures that complement the implementation of the WHO FCTC [30,32].

The integration of NCDs management into primary health care was also essential, and many countries have taken this turn. PHC provides patient-centred and community-based services for people with NCDs [33–35]. In response, the WHO package of essential noncommunicable (PEN) disease interventions for primary health care was first developed in 2010 and offers a set of cost-effective, sustainable, and practicable forms of care in low-resource settings. It integrates the management of the major NCDs, except cancer, into primary health care [14].

CHALLENGES

An examination of the situation in low- and middle-income countries reveals multi-level challenges to primary health care delivery. In recent times, the marked shift from communicable diseases to non-communicable diseases in developed nations has been attributed to advances in infection control and management. Developing nations, on the other hand, are unfortunately affected by the double burden of both communicable diseases and NCDs as a result of poorly planned health systems and the impact of urbanized lifestyles. To support this, a study in Kenya showed that analysis of historical trends in diet and physical activity revealed a rise in the incidence of NCDs that corresponded to the introduction of energy-dense foods and loss of agricultural jobs that demanded more physical activity [36]. Unfortunately, cultural beliefs extolling corpulence as a sign of prosperity further propagate unhealthy dietary and physical habits [37]. Thus, increased consumption of refined foods and sedentary lifestyle create a high risk for development of cardiovascular disease, diabetes mellitus and cancers. In addition, attempts to implement policies that restrict marketing and advertisement of unhealthy foods, alcohol and tobacco are stalled by poor funding and lack of capacity [38].

Lack of access to healthcare facilities has also been identified as a significant obstacle in combatting NCDs [39]. A study carried out in Ethiopia found that despite existing primary healthcare policy, enrolment in community healthcare programs and enforcement remained low, with about 33.8% of healthcare expenditure made out-of-pocket [40]. To further complicate this, high cost of healthcare relative to the earning power in poor countries affects health-seeking and ability to adhere to prescribed medication. Data collected in Kenya also reported that in spite of subsidization of costs for screening and treatment of NCDs in public facilities, majority of the population still found it difficult to access healthcare [41]. Similar findings were also made in Nigeria where high costs of treatment for NCDs were compounded with late presentations, leading to poor outcomes and high mortality [42].

Limited funding to provide and maintain health care facilities and services also represent a significant challenge in the management of NCDs. Generally, resource-poor settings show a lack of preparedness to handle the increasing burden of NCDs due to a low number of healthcare facilities in comparison to large urban populations [43]. Limited supply of medications as well as necessary equipment required to screen for NCDs was found to be a common problem in health facilities in Bangladesh [44]. Similar problems were identified in

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Zimbabwe, with healthcare facilities lacking such simple items as glucometer strips and blood pressure machines [45].

In addition, the ongoing brain drain of healthcare workers from Sub-Saharan Africa with an estimated health worker-to-patient ratio of 1:5000 worsens the outlook for NCD prevention [46]. Estimates show that the highest number of immigrant doctors in the developed nations are from low- and middle-income countries [47]. In addition, the introduction of merit-based immigration policies designed to attract such workers further threatens the pool of healthcare workers in developing systems.

Poor knowledge in the general population on the established risk factors and nature of most NCDs is also a hurdle in developing countries. Low literacy rates and poor education result in widespread misinformation and hamper health-seeking behaviour as well as treatment compliance. A study in Sierra Leone found that many respondents were unfamiliar with common NCDs or did not understand the underlying pathology of most conditions [48]. Lack of adherence to prescribed medication has also been identified as a barrier to the implementation of prevention and treatment programs for NCDs. A study in Ghana found that a lack of knowledge regarding the side-effects of medications resulted in non-compliance to anti-hypertensive medications among patients [49]. In addition, the chronic nature of most NCDs is frustrating for many patients and several may turn to traditional or spiritual healers with the belief of achieving a permanent cure.

Generally, the challenges of combatting NCDs in developing healthcare systems are reflective of the multiple obstacles present at various levels. In low- and middle-income countries, administrative roadblocks and inadequate complicate the implementation of favourable policies with the potential to improve the capacity of healthcare facilities. In addition, the globally worsening economic climate is ever more prevalent in less developed countries, creating an impoverished citizenry where most members are unable to afford screening and medication for NCDs. Other issues such as rapid urbanisation increasing the risk factors and burden of NCDs and decreasing the number of healthcare workers reduce opportunities for care and also collude to make the battle against NCDs even harder to win. Stakeholders must therefore consider the various problems while proposing solutions that are cost-efficient, practical, and sustainable to ensure success in advancing global health.

SOLUTIONS

The multi-faceted nature of the challenges of combatting NCDs in developing health systems is a wake-up call to the necessity of an equally aggressive and comprehensive action plan to solve existing problems and to prevent further deterioration of the system. Effective solutions must take into account the different problems and stakeholders must apply synergistic efforts to provide lasting remedies.

To address unhealthy lifestyle practices, policy recommendations include ensuring that accurate information is presented on food labels and that marketing of processed foods is tightly regulated [50]. Institution of such regulations have been shown to have positive impact on the health of the population by reducing the risk factors for development of NCDs. Numerical analysis has shown that increasing the cost of processed foods relative to healthier foods via tariffs and taxes can help to reduce the prevalence of obesity [51]. Such tactics applied in developed nations such as the United Kingdom on the advertising and sale of red meat have been shown to reduce the burden of NCDs on health infrastructure and reduce health costs overall [52]. A similar policy in France that increased tobacco costs and banned sale to younger age groups also significantly reduced cancer deaths in the region [53]. Policies aimed at reducing salt and trans-fat consumption in Finland also contributed to reducing cardiovascular diseases and NCD mortality in the region. Introduction of similar practices in developing health systems therefore carry the potential to effect similar changes and address the increasing burden of NCDs.

Improved access to primary healthcare facilities has also been shown to reduce hospital admissions for NCDs. A study in Brazil showed that a wide range of interventions including capped fees, improved health information systems, and incentives for healthcare workers improved service delivery to patients [54]. A case has also been made for the integration of NCD prevention and management efforts into existing frameworks for the prevention and management of communicable diseases such as HIV/AIDS. This carries the advantage of saving cost and speeding up NCD control [55].

Funding has been identified as a significant roadblock in the battle against NCDs, especially considering the unfavourable economic situation in developing countries. To combat this, international agencies and non-governmental organisations have collaborated to provide funding for health promotion vaccination and screening programs [56]. The private sector can also help to mobilise funds towards NCD interventions. Most importantly, private sector collaboration can be applied in providing equipment, laboratory resources and medications in resource-poor settings.

In addition, the importance of research in combatting NCDs cannot be over-emphasized. Unfortunately, inadequate funding, lack of equipment and poor personnel training affect various aspects of NCD research in developing countries, including data collection and analysis. To combat this, international agencies and organizations have committed to

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providing grants to institutions in developing countries with promising results [57]. Furthermore, studies in genetics as an important factor in the pathology of most NCDs should be encouraged and supported in low- and middle-income countries [58].

To achieve success in reducing the burden of NCDs in developing countries, a wide range of solutions across various systems must be considered and implemented widely. The importance of achieving these with reduced cost and maximal integration into existing systems cannot be over-emphasised as seamless transitions will increase the chances of achieving the goal of preventing and managing NCDs more effectively.

CONCLUSION

Owing to the increasing rates of morbidity and mortality, NCDs represent a global health issue and even more so in developing nations where vast populations have little to no access to healthcare facilities. Attention should be focused on the most important challenges including increased prevalence of risk factors, lack of access to healthcare and inadequate funding. Sustained commitment to the implementation of solutions as well as global support will be an important step towards reducing the prevalence of these diseases and improving the outcomes in existing cases. To achieve this, several aspects of healthcare systems in developing countries must be redefined and targeted towards improvement. Institution of departments in health ministries for the sole purpose of monitoring NCD prevention and control should be considered and universal healthcare insurance should be made readily available [59]. International organizations should be committed to regular assessment of the progress of nations in achieving NCD goals and must be ready to provide support where necessary. The success of the battle against NCDs in developing systems will depend heavily on a number of factors at various levels of the health delivery system. Dedication of the global community, national programs and institutional support will undoubtedly be the key to eliminating existing challenges and creating healthier, more stable populations in developing countries.

REFERENCES

1. Feroz A, Kadir MM, Saleem S. Health systems readiness for adopting mhealth interventions for addressing non-communicable diseases in low- and middle-income countries: a current debate. Glob Health Action. 2018 Jan 24;11(1):1496887.
2. Yadav UN, Mistry SK, Ghimire S, Schneider CH, Rawal LB, Acharya SP, et al. Recognizing the roles of primary health care in addressing non-communicable diseases in low- and middle-income countries: Lesson from COVID-19, implications for the future. J Glob Health [Internet]. 2021 [cited 2023 May 26];11:1–6. Available from: /pmc/articles/PMC8590826/
3. Haque M, Islam T, Rahman NAA, McKimm J, Abdullah A, Dhingra S. Strengthening Primary Health-Care Services to Help Prevent and Control Long-Term (Chronic) Non-Communicable Diseases in Low- and Middle-Income Countries. Risk Manag Healthc Policy [Internet]. 2020 [cited 2023 May 26];13:409. Available from: /pmc/articles/PMC7244358/
4. Mohan P, Mohan SB, Dutta M. Communicable or noncommunicable diseases? Building strong primary health care systems to address double burden of disease in India. J Family Med Prim Care [Internet]. 2019 [cited 2023 May 26];8(2):326. Available from: /pmc/articles/PMC6436242/
5. Tesema AG, Ajisegiri WS, Abimbola S, Balane C, Kengne AP, Shiferaw F, et al. How well are non-communicable disease services being integrated into primary health care in Africa: A review of progress against World Health Organization's African regional targets. PLoS One [Internet]. 2020 Oct 1 [cited 2023 May 26];15(10):e0240984. Available from: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0240984
6. Varghese C, Nongkynrih B, Onakpoya I, McCall M, Barkley S, Collins TE. Better health and wellbeing for billion more people: integrating non-communicable diseases in primary care. BMJ. 2019 Jan 28;l327.
7. PAHO/WHO | Declaration of Alma-Ata [Internet]. [cited 2023 May 14]. Available from: https://www3.paho.org/hq/index.php?option=com_content&view=article&id=13774:declaration-of-alma-ata&Itemid=0&lang=en#gsc.tab=0
8. McPake B. The story of Primary Health Care : from Alma Ata to the present day [Internet]. 2008 [cited 2023 May 14]. Available from: https://www.academia.edu/84302746/The_story_of_Primary_Health_Care_from_Alma_Ata_to_the_present_day
9. Okpokoro E. Primary Health Care: A Necessity in Developing Countries? J Public Health Afr [Internet]. 2013 Dec 12 [cited 2023 May 14];4(2):76–7. Available from: /pmc/articles/PMC5345435/
10. Report on the Review of Primary Health Care in the African Region | WHO | Regional Office for Africa [Internet]. [cited 2023 May 14]. Available from: https://www.afro.who.int/publications/report-review-primary-health-care-african-region
11. Aregbeshola BS, Khan SM. Primary Health Care in Nigeria: 24 Years after Olikoye Ransome-Kuti's Leadership. Front Public Health [Internet]. 2017 Mar 13 [cited 2023 May

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Copyright © 2023 Obafemi Awolowo University Medical Students' Association. All rights reserved.

14];5(MAR):48. Available from: /pmc/articles/PMC5346888/

12. Ouagadougou Declaration on Primary Health Care and Health Systems in Africa | WHO | Regional Office for Africa [Internet]. [cited 2023 May 14]. Available from: https://www.afro.who.int/publications/ouagadougou-declaration-primary-health-care-and-health-systems-africa
13. Ajisegiri WS, Abimbola S, Tesema AG, Odusanya OO, Peiris D, Joshi R. The organisation of primary health care service delivery for non-communicable diseases in Nigeria: A case-study analysis. PLOS global public health. 2022;2(7):e0000566.
14. WHO package of essential noncommunicable (PEN) disease interventions for primary health care [Internet]. [cited 2023 May 14]. Available from: https://apps.who.int/iris/handle/10665/334186
15. WHO. Declaration on Primary Health Care Astana, 2018 [Internet]. World Health Organization. [cited 2023 May 26]. Available from: https://www.who.int/teams/primary-health-care/conference/declaration
16. Noncommunicable diseases [Internet]. [cited 2023 May 14]. Available from: https://www.who.int/health-topics/noncommunicable-diseases#tab=tab_1
17. Deaths from noncommunicable diseases on the rise in Africa | WHO | Regional Office for Africa [Internet]. [cited 2023 May 14]. Available from: https://www.afro.who.int/news/deaths-noncommunicable-diseases-rise-africa
18. Nigeria fulfils commitment, launches Plan for the Prevention and Control of Non-Communicable Diseases | WHO | Regional Office for Africa [Internet]. [cited 2023 May 14]. Available from: https://www.afro.who.int/news/nigeria-fulfils-commitment-launches-plan-prevention-and-control-non-communicable-diseases
19. National Multi-Sectoral Action Plan for the Prevention and Control of Non-Communicable Diseases (2019 – 2025) | ICCP Portal [Internet]. [cited 2023 May 14]. Available from: https://www.iccp-portal.org/national-multi-sectoral-action-plan-prevention-and-control-non-communicable-diseases-2019-%E2%80%93-2025
20. GLOBOCAN 2020: New Global Cancer Data | UICC [Internet]. [cited 2023 May 14]. Available from: https://www.uicc.org/news/globocan-2020-new-global-cancer-data
21. Hypertension [Internet]. [cited 2023 May 14]. Available from: https://www.who.int/news-room/fact-sheets/detail/hypertension
22. Concerns over rising cases of cardiovascular diseases - Nigerian Heart Foundation [Internet]. [cited 2023 May 14]. Available from: https://www.nigerianheart.org/concerns-over-rising-cases-of-cardiovascular-diseases/
23. SDG Target 3.4 | Noncommunicable diseases and mental health: By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being [Internet]. [cited 2023 May 14]. Available from: https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/sdg-target-3.4-noncommunicable-diseases-and-mental-health
24. Preventing noncommunicable diseases [Internet]. [cited 2023 May 14]. Available from: https://www.who.int/activities/preventing-noncommunicable-diseases
25. Singh K, Reddy KS, Prabhakaran D. What are the Evidence Based Public Health Interventions for Prevention and Control of NCDs in Relation to India? Indian J Community Med [Internet]. 2011 Dec 1 [cited 2023 May 14];36(Suppl1):S23. Available from: /pmc/articles/PMC3354911/
26. Noncommunicable Diseases - PAHO/WHO | Pan American Health Organization [Internet]. [cited 2023 May 14]. Available from: https://www.paho.org/en/topics/noncommunicable-diseases
27. Noncommunicable diseases [Internet]. [cited 2023 May 14]. Available from: https://www.who.int/teams/noncommunicable-diseases/updating-appendix-3-of-the-who-global-ncd-action-plan-2013-2030
28. Tackling NCDs: "best buys" and other recommended interventions for the prevention and control of noncommunicable diseases [Internet]. [cited 2023 May 14]. Available from: https://apps.who.int/iris/handle/10665/259232
29. WHO Framework Convention on Tobacco Control (WHO FCTC) [Internet]. [cited 2023 May 14]. Available from: https://www.who.int/europe/teams/tobacco/who-framework-convention-on-tobacco-control-(who-fctc)
30. WHO EMRO | Reducing tobacco use to prevent and control noncommunicable diseases in the Eastern Mediterranean Region | Publications | NCDs [Internet]. [cited 2023 May 14]. Available from: https://www.emro.who.int/noncommunicable-diseases/publications/questions-and-answers-on-reducing-tobacco-use-to-prevent-and-control-noncommunicable-diseases-in-the-region.html
31. Nigeria | Tobacco Control Laws [Internet]. [cited 2023 May 14]. Available from: https://www.tobaccocontrollaws.org/legislation/nigeria/summary
32. MPOWER [Internet]. [cited 2023 May 14]. Available from: https://www.who.int/initiatives/mpower

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Copyright © 2023 Obafemi Awolowo University Medical Students' Association. All rights reserved.

33. Demaio AR, Nielsen KK, Tersbøl BP, Kallestrup P, Meyrowitsch DW. Primary Health Care: a strategic framework for the prevention and control of chronic non-communicable disease. Glob Health Action [Internet]. 2014 [cited 2023 May 14];7(1). Available from: /pmc/articles/PMC4122819/
34. Varghese C, Nongkynrih B, Onakpoya I, McCall M, Barkley S, Collins TE. Better health and wellbeing for billion more people: integrating non-communicable diseases in primary care. BMJ [Internet]. 2019 Jan 28 [cited 2023 May 14];364. Available from: https://pubmed.ncbi.nlm.nih.gov/30692118/
35. WHO EMRO | Management of noncommunicable diseases in primary health care | Publications | NCDs [Internet]. [cited 2023 May 14]. Available from: https://www.emro.who.int/noncommunicable-diseases/publications/questions-and-answers-on-management-of-noncommunicable-diseases-in-primary-health-care.html
36. Onyango EM, Onyango BM. The Rise of Noncommunicable Diseases in Kenya: An Examination of the Time Trends and Contribution of the Changes in Diet and Physical Inactivity. J Epidemiol Glob Health. 2018 Dec;8(1–2):1–7.
37. Owino VO. Challenges and opportunities to tackle the rising prevalence of diet-related non-communicable diseases in Africa. Proceedings of the Nutrition Society. 2019 Nov 8;78(4):506–12.
38. Juma PA, Mohamed SF, Matanje Mwagomba BL, Ndinda C, Mapa-tassou C, Oluwasanu M, et al. Non-communicable disease prevention policy process in five African countries authors. BMC Public Health. 2018 Aug 15;18(S1):961.
39. Sharma SR, Page R, Matheson A, Lambrick D, Faulkner J, Mishra SR. Non-communicable disease prevention in Nepal: systemic challenges and future directions. Glob Health Promot. 2019 Sep 1;26(3):94–7.
40. Fassil S, Mekitew L, Awoke M. Non-communicable Diseases in Ethiopia: Disease burden, gaps in health care delivery and strategic directions. Ethiopian Journal of Health Development. 2018;32.
41. Subramanian S, Gakunga R, Kibachio J, Gathecha G, Edwards P, Ogola E, et al. Cost and affordability of non-communicable disease screening, diagnosis and treatment in Kenya: Patient payments in the private and public sectors. PLoS One. 2018 Jan 5;13(1):e0190113.
42. Olumide AO, Shmueli A, Omotade OO, Adebayo ES, Alonge TO, Ogun GO. Economic costs of terminal care for selected non-communicable diseases from a healthcare perspective: a review of mortality records from a tertiary hospital in Nigeria. BMJ Open. 2021 Apr 24;11(4):e044969.
43. Elsey H, Agyepong I, Huque R, Quayyem Z, Baral S, Ebenso B, et al. Rethinking health systems in the context of urbanisation: challenges from four rapidly urbanising low-income and middle-income countries. BMJ Glob Health. 2019 Jun;4(3):e001501.
44. Rawal LB, Kanda K, Biswas T, Tanim MdI, Poudel P, Renzaho AMN, et al. Non-communicable disease (NCD) corners in public sector health facilities in Bangladesh: a qualitative study assessing challenges and opportunities for improving NCD services at the primary healthcare level. BMJ Open. 2019 Oct 7;9(10):e029562.
45. Kamvura TT, Dambi JM, Chiriseri E, Turner J, Verhey R, Chibanda D. Barriers to the provision of non-communicable disease care in Zimbabwe: a qualitative study of primary health care nurses. BMC Nurs. 2022 Dec 18;21(1):64.
46. Kassa MD, Grace JM. Noncommunicable Diseases Prevention Policies and Their Implementation in Africa: A Systematic Review. Public Health Rev. 2021;42:1604310.
47. El Saghir NS, Anderson BO, Gralow J, Lopes G, Shulman LN, Moukadem HA, et al. Impact of Merit-Based Immigration Policies on Brain Drain From Low- and Middle-Income Countries. JCO Glob Oncol. 2020 Feb;6:185–9.
48. Witter S, Zou G, Diaconu K, Senesi RGB, Idriss A, Walley J, et al. Opportunities and challenges for delivering non-communicable disease management and services in fragile and post-conflict settings: perceptions of policy-makers and health providers in Sierra Leone. Confl Health. 2020 Dec 6;14(1):3.
49. Laar AK, Adler AJ, Kotoh AM, Legido-Quigley H, Lange IL, Perel P, et al. Health system challenges to hypertension and related non-communicable diseases prevention and treatment: perspectives from Ghanaian stakeholders. BMC Health Serv Res. 2019 Dec 15;19(1):693.
50. Asiki G, Wanjohi MN, Barnes A, Bash K, Muthuri S, Amugsi D, et al. Benchmarking food environment policies for the prevention of diet-related non-communicable diseases in Kenya: National expert panel's assessment and priority recommendations. PLoS One. 2020 Aug 6;15(8):e0236699.
51. Boysen O, Boysen-Urban K, Bradford H, Balié J. Taxing highly processed foods: What could be the impacts on obesity and underweight in sub-Saharan Africa? World Dev. 2019 Jul;119:55–67.
52. Springmann M, Mason-D'Croz D, Robinson S, Wiebe K, Godfray HCJ, Rayner M, et al. Health-motivated taxes on red and processed meat: A modelling study on optimal tax levels and associated health impacts. PLoS One. 2018 Nov 6;13(11):e0204139.
53. Ndubuisi NE. Noncommunicable Diseases Prevention In Low- and Middle-Income Countries: An Overview of Health in All Policies (HiAP). Inquiry. 2021;58:46958020927885.
54. Varghese C, Nongkynrih B, Onakpoya I, McCall M, Barkley S, Collins TE. Better health and wellbeing for billion more people: integrating non-communicable diseases in primary care. BMJ. 2019 Jan 28;364:l327.

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55. Kintu A, Sando D, Okello S, Mutungi G, Guwatudde D, Menzies NA, et al. Integrating care for non-communicable diseases into routine HIV services: key considerations for policy design in sub-Saharan Africa. J Int AIDS Soc. 2020 Jun 19;23(S1).
56. Jailobaeva K, Falconer J, Loffreda G, Arakelyan S, Witter S, Ager A. An analysis of policy and funding priorities of global actors regarding noncommunicable disease in low- and middle-income countries. Global Health. 2021 Dec 29;17(1):68.
57. Malekzadeh A, Michels K, Wolfman C, Anand N, Sturke R. Strengthening research capacity in LMICs to address the global NCD burden. Glob Health Action. 2020 Dec 31;13(1):1846904.
58. Chikowore T, Kamiza AB, Oduaran OH, Machipisa T, Fatumo S. Non-communicable diseases pandemic and precision medicine: Is Africa ready? EBioMedicine. 2021 Mar;65:103260.
59. Tesema AG, Ajisegiri WS, Abimbola S, Balane C, Kengne AP, Shiferaw F, et al. How well are non-communicable disease services being integrated into primary health care in Africa: A review of progress against World Health Organization's African regional targets. PLoS One. 2020 Oct 22;15(10):e0240984.

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