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Measurement of and training for NCD guideline implementation in LMICs: a scoping review protocol

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ABSTRACT

Introduction Globally, non-communicable diseases (NCDs) are the leading causes of morbidity and mortality with an estimated 41 million deaths (74% of all global deaths) annually. Despite the WHO's Global Action Plan for the Prevention and Control of NCDs since 2013, progress on implementation of the guidelines has been slow. Although research has shown success of some NCD prevention and treatment interventions, there is a dearth of research on NCD care delivery approaches, cost-effectiveness and larger implementation research, especially in low/middle-income countries (LMICs). The objective of this scoping review is to identify the existing variation in how, why and by whom implementation of NCD guidelines is measured as part of implementation research or non-research programme improvement.

Methods and analysis Using the methods established by Arksey and O'Malley, the search strategy was developed in consultation with a research librarian together with stakeholder feedback from content experts. We will apply the search to multiple electronic databases and grey literature sources. Two reviewers will independently screen title and abstract for inclusion followed by a full-text screening and all included records will be abstracted using a standardised tool that will be piloted with a sample of articles before application to all records. We will conduct a narrative synthesis of abstracted data and simple quantitative descriptive statistics.

Dissemination The results will enable stakeholders in LMICs to leverage existing tools and resources for implementation and ongoing evaluation of NCD guidelines, to improve education and capacity building, and ultimately NCD care across the lifespan.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The results of this review will identify tools and processes used to evaluate and inform implementation of non-communicable diseases (NCD) policies and guidelines across low/middle-income countries (LMICs) in sub-Saharan Africa—an important baseline for understanding countries' progress to Sustainable Development Goal 3.4.
⇒ The review will be conducted by a multi-disciplinary, multinational team that will collaborate for a comprehensive approach.
⇒ The quality of the evidence will not be evaluated.
⇒ This review will not determine the availability of NCD guidelines in LMICs and the findings are limited to published research and reports.

INTRODUCTION

Globally, non-communicable diseases (NCD) are the leading cause of morbidity and mortality with an estimated 41 million deaths (74% of all global deaths) annually.[1] Yearly, 17 million people die from NCD before the age of 70 years and low/middle-income countries (LMICs) account for 86% of these premature deaths.[1] Also, LMICs accounted for 77% of all global NCD deaths in 2022.[1] Cardiovascular diseases, cancers, chronic respiratory diseases and diabetes are the leading causes of NCD mortality.[1 2] Major risk factors for NCD include unhealthy diets, physical inactivity, tobacco and alcohol use.[1 2] In 2015, 193 countries pledged to reduce premature NCD-related mortality and risk factors by 2030 in efforts to meet the Sustainable Development Goal (SDG) 3.4 targets.[3] SDG 3.4 encourages countries to reduce one-third of premature NCD-related deaths by 2030 through prevention and treatment.[2] Despite the high burden of NCD-related morbidity and mortality in LMICs, recent evidence (including systematic reviews) reveals that no country in this geopolitical zone has made significant progress towards meeting SDG 3.4 target by 2030.[4–6] The COVID-19 pandemic has also complicated efforts to reduce NCD-related mortality since people living with NCD are more likely to die of COVID-19.[7 8] Furthermore, global COVID-19 responses highlighted the social and economic inequities in NCD morbidity in both high-income countries and LMICs.[2] Due to weak health systems, poverty and low human resources, LMICs are more susceptible to NCD, and they are less likely to adapt.[2 3 9] In addition, LMICs are four times

less likely to have NCD covered by medical insurance than high-income countries.[5] Therefore, the development of health policies and health systems strengthening are vital in NCD prevention and control, as well as to improve the health outcomes of people with NCD.

Achieving the SDG 3.4 in LMICs requires robust health systems that prioritise NCD management as well as their risk factors.[10] The 2019 WHO NCD Country Capacity survey showed that only 50% of the 160 countries sampled had national guidelines for NCD; half required technologies for timely detection, diagnosis and monitoring of NCD available in public health facilities, and only 20% of the countries had up to 6 of the 11 vital medications available.[10] Previously, in May 2013, the WHO Assembly sanctioned the Global Action Plan for the Prevention and Control of NCDs (NCD-GAP 2013–2020) to assist some countries in developing actionable NCD guidelines and strategies.[11] Furthermore, WHO compiled a list of health interventions to assist countries with implementation strategies to achieve the nine global targets for NCD as well as SDG 3.4 targets.[12] However, a recent evaluation of the WHO extended NCD-GAP 2013–2030 showed that the implementation of NCD-GAP research objectives had been very slow.[13 14] In their synthesis of WHO NCD-GAP 2013–2020, Nyaaba and colleagues found that countries across Africa were not on track in achieving the NCD indicators.[5] They suggested increased efforts and commitments from all stakeholders to implement WHO recommended NCD policies.

Although research has shown the success of some NCD prevention and treatment interventions, there is dearth of research on the NCD care delivery approaches, cost-effectiveness and larger implementation research, especially in LMICs.[15–17] Implementation research on NCD programmes in different regions and settings could promote cost-effective and most efficient ways to scale-up life-saving health system strategies to reduce NCD-related morbidity and mortality.[18] Although several countries have endorsed the WHO NCD policies, there is a lack of comprehensive knowledge about their implementation or the geopolitical factors affecting it.[3] Much of the current knowledge about NCD policy implementation was based on anecdotal evidence; including workforce shortage and inadequate financial capacity halting NCD policies implementation in sub-Saharan Africa (SSA), and the stalling of fiscal measures in the 2018 political declaration on NCD in the USA.[3 19 20] Common fundamental factors affecting effective implementation of NCD policies were geopolitical zone, human and low financial resources, and NCD burden.[21 22] Despite the growth in implementation research on NCD in LMICs, a recent systematic review found major gaps in the science of implementation of NCD interventions, including few studies with implementation science frameworks, little specification around implementation strategies and predominate use of quantitative methods (86%) exclusively.[2] Outside of a few quality improvement initiatives, there is also a dearth of formal research on implementation and training plans and measurement strategies designed or used to inform NCD guideline implementation globally.[23] In this scoping review, we seek to identify measurement of and training for NCD guideline implementation in LMICs.

The goal of this study is to identify the existing variation in who, how, why, and by whom implementation of NCD guidelines are measured, evaluated and incorporated into training as part of implementation research or non-research programme improvement.[15] We will aim to characterise differences in NCD management including: at which point(s) in the care continuum (eg, prevention, screening, diagnosis, management), and at which life stage(s) (eg, early childhood, middle childhood, adolescence, young adulthood, etc), in which health contexts (eg, primary, community, inpatient, etc) guidelines are being implemented and implementation is being measured and evaluated.

METHODS AND ANALYSIS

The study will be conducted in the form of a scoping review using the framework outlined by Arksey and O'Malley in 2005 and expanded by Peters *et al* in 2015.[24 25] To ensure best practice for transparency in reporting our scoping review methodology, we will use the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews checklist, as outlined by Tricco *et al*.[26] For the purposes of this review, we use the WHO definition of NCD as health conditions falling into one of four major categories: (1) cardiovascular diseases (eg, heart attacks, stroke, hypertension); (2) chronic respiratory diseases (eg, chronic obstructive pulmonary disease, asthma); (3) diabetes and (4) cancers, as well as others (eg, mental health, substance use disorders, hypercholesterolaemia, neurological disorders).[1]

The objective of this review is to characterise how health and healthcare systems are measuring the frontline implementation of national NCD guidelines in LMICs across SSA.[27] To fully capture the measurement and evaluation of guidelines, we will characterise the level of specificity in essential components, countries, healthcare system structures, stakeholders and geographical settings. More granular questions that will be encapsulated within our overarching approach include: (1) what types of measures have been applied to assess the implementation of NCD guidelines?; (2) which interventions within the guidelines are being assessed?; (3) how do measurement and evaluation strategies vary by which stakeholders are collecting data?; (4) do systems have formal guideline implementation strategy for frontline providers and implementers?

Is it essential to capture guideline implementation at the frontline level, so we will also investigate if and how stakeholders are trained, and at what level(s) for implementation of NCD guidelines. We will also attempt to characterise the resources that support the training

of stakeholders in NCD guideline implementation. To answer these questions, records with stakeholders including policymakers, trained and informal healthcare providers, clients or patients, and researchers will be included. We will assess the stage of management (eg, prevention, screening, diagnosis, management, etc).

Eligibility criteria

We will include articles published in any language and grey literature (eg, national reports from major agencies including WHO, CDC, UNICEF) dating back to the last 20 years—from 1 January 2003 to present. This synthesis is limited to guidelines that are any informational product that contains recommendations for clinical practice or public health policy deployed in all health and healthcare systems that have the goal of supporting the health of individuals within populations.[28] Measurement includes qualitative and quantitative assessments, tools, and instruments of quality of care, clinical outcomes, patient experience, and population health. Studies reporting on guidelines not related to NCD implementation will be excluded.

Search strategy and information sources

The key search concepts will include: NCD, guidelines, implementation, measurement, LMICs and SSA; each concept will be represented in the strategy by subject headings and keyword synonyms. These search terms will be further refined and adapted for each of the identified databases. The following databases will be searched: Ovid MEDLINE, Embase (Embase.com/Elsevier), CINAHL (EBSCO) and Scopus. Searches will also be run in grey literature (reports, clinical trial registries, etc). No language limits will be applied to obtain the necessary documents. Database results will be exported to EndNote, duplicates will be removed using a multi-step process and results will be transferred from EndNote to Rayyan for screening. References of included studies will be hand searched for the identification of other possibly relevant studies for inclusion.

Study selection

The process of selecting original research articles will be implemented over two stages. The first stage will consist of three reviewers applying the inclusion and exclusion criteria to titles and abstracts. All reviewers will read a sub-set of titles and abstracts to classify the studies as 'included', 'excluded' or 'uncertain' to refine the screening criteria. The process of conducting a scoping review is often iterative, requiring a reflexive approach to each stage as the researchers become increasingly familiar with the literature, and so potentially useful search terms may be discovered and incorporated in a later stage into the search strategy and search terms originally included may be removed from the final search criteria.[29] In the second stage of the selection process, studies classified as 'included' or 'uncertain' will have their full text reviewed by two independent reviewers. Should differences arise in this stage, the reviewers will consult the third reviewer to reach consensus. When consensus is not reached, those articles will be included in the review. Rayyan (https://www.rayyan.ai/) online screening software will be used. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart will be included to report the process of winnowing the search results to the final set of included studies.

Data extraction process

The charting or mapping process of this scoping review aims to generate a descriptive summary of the results that address the research questions. We will develop a draft data extraction form to aid in the collection and sorting of key pieces of information from the selected articles. Each included article will have the data extracted by two independent reviewers, who will reconcile any discrepancies in the data.

Data to be extracted from selected studies will include standard information (such as title, author, year of publication, country of origin, study design), and results or findings relevant to the review (stage of NCD management, type of instrument used, country, year, characteristics of measurement, etc) and implementation level (eg, policy level, screening/treatment guideline, individual interventions, etc). Additional information may also emerge during the data collection, and the data extraction form will also allow reviewers to record emergent information that will be discussed and refined during research team meetings. This may be further refined at the review stage and the extraction form may be updated accordingly. Change(s) in scoping protocol methodology will be acknowledged and defined in manuscript.

The goal of our research is to characterise materials currently available regarding measurement for NCD guideline implementation in both the peer-reviewed and grey literature; therefore, we will not assess the quality of the included records. As the purpose of a scoping review is to present an overview of all the information collected, the results from existing studies will be summarised and presented in a narrative account that will accompany the tabulated results and describe the linkages between the findings and the review objective and questions. This summary will be analysed using thematic content analysis. Two presentation strategies will be employed: (1) the basic descriptive statistics of the number, type and geographic distribution of the studies included in the review and (2) a narrative description of the results, discussing them regarding the extant literature. No additional data are available. There is no need for ethical approvals as this is a scoping review.

DISSEMINATION

Our review seeks to (1) describe the approaches employed in the assessment of NCD guideline implementation in the last 20 years since the WHO

NCD-GAP 2013–2020 and (2) document the extent and types of tools used for assessment of NCD guidelines implementation. The results will enable stakeholders in LMICs to leverage existing tools and resources for implementation and ongoing evaluation of NCD guidelines to improve capacity building and ultimately NCD care across the lifespan.

Patient and public involvement

No patients were involved in the development of this protocol, but we will work to disseminate the results as broadly as possible, including to relevant public and community groups.

Strengths and limitations of this study

The results of this review will identify tools and processes used to evaluate and to inform implementation of NCD policies and guidelines across LMICs—an important baseline for understanding countries' progress to SDG 3.4. The review will be conducted by a multi-disciplinary, multinational team that will collaborate for a comprehensive approach. However, given the goal of our study to characterise existing materials, the quality of the evidence will not be evaluated. Additionally, the inclusion of grey literature may increase the risk of bias.

Results will be shared directly with target stakeholder groups to inform capacity building work at institutions in LMICs in SSA. Additional knowledge translation will be conducted through the publication of a manuscript in a peer-reviewed journal and presentations in meetings, seminars and at conferences.

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REFERENCES

1 World Health Organization. Noncommunicable diseases. 2021. Available: https://www.who.int/en/news-room/fact-sheets/detail/noncommunicable-diseases [Accessed 07 Sep 2022].
2 Hategeka C, Adu P, Desloge A, *et al*. Implementation research on noncommunicable disease prevention and control interventions in low- and middle-income countries: a systematic review. *PLoS Med* 2022;19:e1004055.
3 Allen LN, Nicholson BD, Yeung BYT, *et al*. Implementation of non-communicable disease policies: a geopolitical analysis of 151 countries. *The Lancet Global Health* 2020;8:e50–8.
4 Lupafya PC, Mwagomba BLM, Hosig K, *et al*. Implementation of policies and strategies for control of noncommunicable diseases in Malawi: challenges and opportunities. *Health Educ Behav* 2016;43:64S–69S.
5 Nyaaba GN, Stronks K, de-Graft Aikins A, *et al*. Tracing Africa's progress towards implementing the non-communicable diseases global action plan 2013-2020: a synthesis of WHO country profile reports. *BMC Public Health* 2017;17:297.
6 Bennett JE, Kontis V, Mathers CD, *et al*. NCD countdown 2030: pathways to achieving sustainable development goal target 3.4. *The Lancet* 2020;396:918–34.
7 Chang AY, Cullen MR, Harrington RA, *et al*. The impact of novel coronavirus COVID-19 on noncommunicable disease patients and health systems: a review. *J Intern Med* 2021;289:450–62.
8 Palmer K, Monaco A, Kivipelto M, *et al*. The potential long-term impact of the COVID-19 outbreak on patients with non-communicable diseases in Europe: consequences for healthy ageing. *Aging Clin Exp Res* 2020;32:1189–94.
9 Heine M, Lategan F, Erasmus M, *et al*. Health education interventions to promote health literacy in adults with selected non-communicable diseases living in low-to-middle income countries: a systematic review and meta-analysis. *J Eval Clin Pract* 2021;27:1417–28.
10 Organization WH. Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2019 global survey. 2020.
11 Organization WH. Global action plan for the prevention and control of noncommunicable diseases 2013-2020. World Health Organization; 2013.
12 Organization WH. Updated Appendix 3 of the WHO global NCD action plan 2013-2020 Technical Annex; 2017.
13 Banatvala N, Akselrod S, Bovet P, *et al*. The WHO global action plan for the prevention and control of NCDs 2013–2030. In: *Noncommunicable Diseases*. Routledge, 2023: 234–9.
14 Marten R, Mikkelsen B, Shao R, *et al*. Committing to implementation research for health systems to manage and control non-communicable diseases. *Lancet Glob Health* 2021;9:e108–9.
15 Alonge O, Rodriguez DC, Brandes N, *et al*. How is implementation research applied to advance health in low-income and middle-income countries. *BMJ Glob Health* 2019;4:e001257.
16 Kruk ME, Gage AD, Arsenault C, *et al*. High-quality health systems in the sustainable development goals era: time for a revolution. *The Lancet Global Health* 2018;6:e1196–252.
17 Isaranuwatchai W, Teerawattananon Y, Archer RA, *et al*. Prevention of non-communicable disease: best buys, wasted buys, and contestable buys. *BMJ* 2020;368:m141.
18 Ojo T, Kabasele L, Boyd B, *et al*. The role of implementation science in advancing resource generation for health interventions in low- and middle-income countries. *Health Serv Insights* 2021;14:117863292199965.
19 Juma PA, Mohamed SF, Matanje Mwagomba BL, *et al*. Non-communicable disease prevention policy process in five African countries authors. *BMC Public Health* 2018;18:1–12.
20 Dalal S, Beunza JJ, Volmink J, *et al*. Non-communicable diseases in sub-Saharan Africa: what we know now. *Int J Epidemiol* 2011;40:885–901.

21 Sacco R, Smith S, Holmes D, *et al*. Accelerating progress on non-communicable diseases. *The Lancet* 2013;382:e4–5.
22 Hunter DJ, Reddy KS. Noncommunicable diseases. *N Engl J Med* 2013;369:1336–43.
23 Hartveit M, Hovlid E, Nordin MHA, *et al*. Measuring implementation: development of the implementation process assessment tool (IPAT). *BMC Health Serv Res* 2019;19:721.
24 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol* 2005;8:19–32.
25 Peters MDJ, Godfrey CM, Khalil H, *et al*. Guidance for conducting systematic scoping reviews. *Int J Evid Based Healthc* 2015;13:141–6.
26 Tricco AC, Lillie E, Zarin W, *et al*. PRISMA extension for scoping reviews (PRISMA-SCR): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
27 World Health Organization. WHO guidelines publications web site. 2022. Available: https://www.who.int/publications/who-guidelines [Accessed 07 Sep 2022].
28 Fischer F, Lange K, Klose K, *et al*. Barriers and strategies in guideline implementation—a scoping review. *Healthcare (Basel)* 2016;4:36.
29 Peters DH, Bhuiya A, Ghaffar A. Engaging stakeholders in implementation research: lessons from the future health systems research programme experience. *Health Res Policy Syst* 2017;15:104.