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Prevention and control of noncommunicable diseases through evidence-based public health: Implementing the NCD 2020 Action Plan

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Abstract

The control of noncommunicable diseases (NCDs) was addressed by the declaration of the 66th UN General Assembly followed by the World Health Organisation's NCD 2020 Action Plan. There is a clear need to better apply evidence in public health settings to tackle both behaviour-related factors and the underlying social and economic conditions. This article describes concepts of evidence based public health and outlines a set of actions that are essential for a successful global NCD prevention. The authors describe the importance of knowledge translation with the goal of increasing the effectiveness of public health services, replying on both quantitative and qualitative evidence. In particular, the role of capacity building is highlighted because it is fundamental to progress in controlling NCDs. Important challenges for capacity building include the need to bridge diverse disciplines, build the evidence base across countries, and the lack of formal training in public health sciences. As brief case examples, several successful capacity building efforts are highlighted to address challenges and further evidence-based decision making. The need for a more comprehensive public health approach, addressing social, environmental and

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cultural conditions, has led to a whole-of government and whole-of society strategies that are now on the agenda due to efforts such as the WHO's NCD 2020 Action Plan and the Health 2020 European Policy Framework. These efforts need research to generate evidence in new areas (e.g., equity, sustainability), training to build public health capacity, and a continuous process of improvement and knowledge generation and translation.

Keywords

capacity building; evidence-based public health; knowledge translation; NCD 2020 Action Plan; NCD prevention; training

Introduction

The epidemiologic evidence accumulated over past few decades shows that noncommunicable diseases (NCDs) are the leading causes of morbidity and mortality globally.[1] These NCDs (e.g., heart disease, cancer, stroke, diabetes), no longer diseases of affluence, affect all countries across all income groups with almost 80% of NCDs occurring in low-and middle-income countries.[2] Globally, the leading risk factors for NCD are high blood pressure (12.8% of all deaths globally), tobacco use (8.7%), high blood glucose (5.8%), physical inactivity (5.5%), obesity (4.8%), high cholesterol (4.5%), and alcohol use (3.8%).[1] Underlying these behaviour-related factors are the social and economic environments (poverty, social displacement, inequality).[3, 4] The global burden of NCDs constitutes a major public health challenge that may undermine social and economic development in any country.

The prominence of NCD control is illustrated by the declaration of the high-level meeting of the 66th UN General Assembly calling upon the international community and each Member State to intensify their efforts in the prevention and control of NCDs.[5] As a follow-up and to operationalize this document, the World Health Assembly 66 in May 2013 approved global actions - including a comprehensive global monitoring - framework (the WHO global action plan for the prevention and control of NCDs 2013–2020).[6] Within this framework, the recommended NCD interventions and use of 25 indicators at the country level requires considerable efforts in strengthening public health capacities at national and international levels. Evidence, in the form of quantitative and qualitative data, forms the basis by which public health officials will accomplish the NCD goals laid out in these international plans.

In a study of 27 organisations from 16 European countries, the majority of respondents (52%) reported that evidence-based methods are currently poorly integrated into public health.[7] Putting this evidence to use in public health settings requires sufficient capacity (capacity is the availability of resources, structures and adequately trained workforce to deliver the “preventive dose“ of an NCD intervention and is comprised of resources (manpower, funds and other), skills, and structures.[8, 9]) building.[10]

There are several important challenges in workforce capacity building. First, the call for new approaches in public health such as “health in all policies”[11] highlights the need for diverse disciplines to accomplish global public health objectives.[12, 13] Some of the most important

innovations are likely to occur outside of the health sector (e.g., urban planning, economics, agriculture, communication). Second, the evidence base for public health varies considerably across countries,[7, 14] which hampers efforts in regions where the evidence for effective interventions is sparse. And third, it is likely that fewer than half of the individuals in the public health workforce have had any formal training in a public health discipline such as epidemiology or health education.[15] An even smaller percentage of these professionals have formal graduate training from a school of public health or other public health programme. For example, it is noted that 15 years following the break-up of the Soviet Union, there is still very limited capacity to implement effective health programmes and policies in the eastern European region.[16] A solution to this problem is wider dissemination of effective training programmes to increase knowledge and skills of public health practitioners

In this article, we describe the concepts of evidence-based public health (EBPH), the importance of capacity building, approaches for capacity building, and future direction to affect global efforts to control NCDs.

Defining Evidence-Based Public Health

EBPH involves several key concepts:[17]

- Making decisions based on the best available scientific and/or rigorous programme evaluation evidence;
- Applying programme planning and quality improvement frameworks;
- Engaging the community and stakeholders in assessment and decision making;
- Adapting and implementing evidence-based interventions for specific populations or settings; and
- Conducting sound evaluation.

By using an evidence-based approach, activities in public health practice are explicitly linked with the underlying scientific evidence that demonstrates the causes of NCDs, epidemiologic patterns in NCDs and NCD risk factors, intervention effectiveness, and external validity.

When applying the principles of EBPH in a global context for NCD prevention and control, it is important to first understand the context for intervention and then to identify key processes in the translation of EBPH from one population or geographic setting to another. Context refers to the often-difficult-to-measure characteristics of the agency, community, sociocultural, and political/economic surroundings in which an NCD intervention is to be implemented or evaluated.[17, 18] These contextual variables may be important moderators of an intervention effect, yet too often they are ignored or not reported.[19] Contextual factors may have an effect on external validity (i.e., the degree to which findings from a study or set of studies can be generalizable to and relevant for populations, settings, time periods other than those in which the original studies were conducted).[20]

Knowledge Translation and Capacity Building to Address NCDs

To address a number of the issues in EBPH, the concept of knowledge translation is central. Knowledge translation is the term to denote "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge."[21] Its purpose is improving population health, providing more effective health services and products, and strengthening the health care system. Knowledge translation for NCD control occurs within a complex social system of interactions between researchers and knowledge users.

When furthering knowledge translation for NCD prevention and control, seven important questions come to mind:

1. What is the size of the public health problem?
2. What is causing the public health problem?
3. Are there effective interventions for addressing the problem?
4. How do we best evaluate ongoing NCD interventions?
5. What information about the country-specific context of a particular intervention is helpful in deciding its potential use?
6. What data are needed to decide if the intervention could be translated to a different setting or population?
7. Is there political will to implement an effective intervention?

Questions 1–4 tend to be addressed via scientific studies and quantitative data. The latter questions (nos. 5–7) tend to rely more on the art of public health, qualitative data, and professional judgment. A large-scale strategic plan, such as the NCD 2013–2020 Plan can serve as a catalyst for addressing many of these questions. There are important considerations, both at the macro- and micro-levels.

At the macro-level, NCD control requires a multi-sector, comprehensive approach—in particular stronger leadership is needed from policy makers, public health professionals, and advocates.[22] Policy measures are sometimes (falsely) portrayed as a choice between responsibility of individuals versus restriction of freedom.[23] There is a need for strong leadership and new policies, practices, and participation beyond the confines of traditional public health agencies and services.[23] Often this macro view is grounded in the societal view of the role of government and the shared governance arrangement between citizens and policy bodies. For example, the social insurance systems of Germany and Austria have been evolving constantly since the 1880s when the Bismarck model of Social Health Insurance was established.[24] These are systems based on solidarity and population-wide coverage of health care and a remarkable pluralism of actors and organisational structures. There is ongoing discussion regarding how shared governance could generate a "global response" to chronic disease and what the part of established national governance structures can be.[25]

At a more micro-level, better information is needed on how an effective NCD intervention can be transferred from one population or setting to another. Several authors have described

the factors influencing intervention translation.[14, 26–28] Based on a review of 43 articles examining intervention translation, Cambon and colleagues identified five domains (Table 1).[26] These domains mainly relate to the external validity of an NCD intervention,[29] which too often is missing from the literature and must be developed from reading the gray literature or interviewing intervention developers.

The role of capacity building

An adequate national capacity is needed to develop national policy frameworks, with the goal of implementing and evaluating community-based initiatives and programmes for the prevention of NCD through approaches that are based on best available evidence. The important role of capacity building (e.g., move training toward prevention, increase the skills of professionals) has been noted as a "grand challenge" for NCD control.[30]

One of the priority goals of capacity development is to ensure that sufficient education is provided to public health professionals to enable them to implement evidence-based strategies for NCD prevention. This can be achieved by: 1) supporting undergraduate programmes and courses in public health that are based on the integrated approach; and 2) supporting continuing education and postgraduate education in public health that are based on the integrated approach.

During last 25 years, the CINDI (Countrywide Integrated Noncommunicable Diseases Intervention) programme as a regional network for NCD prevention in the European Region of WHO played an important role in enhancing evidence-based public health training including exchange and dissemination of experience and best practice.[9, 31, 32] CINDI's regional approach has lead to a number of country-specific trainings in evidence-based public health.

A number of international capacity building activities were organized by WHO and CINDI.[33] These included the preparation and dissemination of guidelines (e.g. guidelines for GPs on prevention in primary care, the CINDI dietary guide), teaching projects (e.g. the Pharmacy-based hypertension project) summer schools and workshops (e.g. summer schools on nutrition organized in Lithuania and Poland), collaboration on capacity building among several countries (e.g. a summer school on capacity building for six CINDI programme participating countries of central and eastern Europe hosted by CINDI- Canada in Halifax), educational site visits (e.g. a training week on preventive practice in CINDI-Austria for general practitioners from CINDI-Russia) long-term bilateral collaboration (e.g. between the North Karelia team and the Russian Karelia team on establishing a community-based integrated NCD prevention programme in the Russian Federation). In addition, the CINDI network has developed two types of annual structured training courses, described below.

From 1997–2007, an annual training seminar was offered to health professionals interested in the planning, implementation and evaluation of programmes for health promotion and noncommunicable disease prevention. The CINDI Winter School "New Public Health: Theory and Practice" - was coordinated by the WHO Regional Office for Europe and hosted by the National Public Health Institute of Finland in Helsinki. International faculty members

were well recognised experts in public health. The week-long course included lectures, group discussions and individual consultations. The participants were encouraged to present their own programmes during the group discussions. It was aimed at presenting the background, principles, practical implementation, evaluation, results and experiences of the implementation of the integrated approach to NCD prevention. Pertinent theories, international frameworks, state-of-art in practice, as well as examples from a number of CINDI programmes were presented and discussed. The training course also supported the implementation of the EU TACIS projects of health promotion in Russia and the Republic of Moldova.

Since 2002, a training course entitled: “Evidence-based Public Health: A Course in Chronic Disease Prevention” – has been organised annually. This was the first European-American collaborative training effort on EBPH capacity building. It has been organised by the WHO Regional Office for Europe in collaboration with the Centers for Disease Control and Prevention and Control, the Prevention Research Center in St. Louis, CINDI-Austria, CINDI-Canada, CINDI-Finland, CINDI-Lithuania, and CINDI-Slovenia. The training seminar has been hosted by CINDI-Austria. The course is organised around a set of core domains (Figure 1) and detailed core competencies are described elsewhere.[17, 34] The course has featured a train-the-trainer approach that helps create training programmes when participants return to their home countries. Theoretical knowledge was balanced with presentations on practical aspects of the implementation of evidence-based integrated intervention at local and national levels. Evaluations of this course have shown its beneficial impact in building skills and knowledge in evidence-based decision making.[35, 36]

In addition, numerous new professional contacts among the participants have been established as a result of the EBPH course. The course gave a fresh impetus and motivation to the further development of established programmes and was a powerful marketing tool of the usefulness of the integrated approach towards NCD prevention and control. This international training had numerous follow-ups and spin-offs. These include:

- Opportunities for fellowships for the participants of the course to engage in graduate education in the United States;
- The development of national/regional training materials and courses for capacity building in evidence-based NCD prevention (e.g., in Bulgaria, Lithuania, the Russian Federation, Georgia);
- Dissemination of capacity building approaches at national and international meetings;
- National/regional workshops or other training forms (e.g. Bulgaria, the Russian Federation); and
- Stimulation of national NCD policy development (e.g., Lithuania, Bulgaria, Portugal).

Summary and Future Challenges

Noncommunicable diseases are not just one of the world's most pressing health concerns but also a significant development challenge and a human rights issue. They have been recognized as such at the highest global political levels and are already reflected in various intergovernmental processes related to the post-2015 development agenda.[37] They impede social and economic development and are driven by underlying social, economic, political, environmental and cultural factors, broadly known as "social determinants."[38] Noncommunicable diseases are an enormous and growing strain on health systems worldwide and also are the source of social and economic costs at national and household levels. Inequities are also apparent within countries, where NCD outcomes and risk factors are patterned along various socio-economic gradients or geographic areas.

Responding to NCDs is not simply a matter of changing individual behaviours in isolation; broader changes in social, economic, environmental and cultural contexts are also needed.[4] Leadership and action from the health sector is the anchor for NCD responses. Significant, actions from other sectors and stakeholders is crucial, especially to address social determinants. Multisectoral action that tackle the underlying, overlapping and interacting social determinants of NCDs as a cornerstone of NCD responses has been endorsed at the highest political levels, such as in the 2011 "UN Political Declaration on Non-communicable Diseases."[5]

WHO's "Global Action Plan for the Prevention and Control of NCDs 2013–2020"[6] and the Health 2020 European Policy framework[39] already point the way forward for whole-of-government and whole-of-society responses. In this regard, we will need to draw increasingly on other disciplines to study effective governance structures for multisectoral coordination and participation, transparency and accountability mechanisms, human-rights-based approaches to NCDs, municipal and decentralized responses, and the role of the law. Practice-based evidence or case examples of action outside the health sector could also help in developing a practical framework for multisectoral action.[40]

NCD prevention will continue to challenge the field of EBPH. Limited frameworks and limited consensus on best practices, lack of data, and lack of appropriate methods are major barriers to greater integration of evidence-based methodologies into practice. To address these barriers, it will be important to develop innovations in methods to evaluate and monitor comprehensive interventions. Examples of the types of innovations required may include identifying new measures of health and well-being, equity and sustainability; implementing new systems for more timely and consistent data measures that are easily accessible; developing analytic procedures for mixed methods research designs that enable us to understand how temporal shifts in context influence the outcomes of NCD interventions; and applying integrative theories that describe how the scale-up of interventions takes hold both vertically, through levels of the system, and horizontally across sectors.[41–44] These innovations will also need to be incorporated into knowledge generation, synthesis, and integration initiatives.[45, 46]

It has been noted that ”evidence without capacity is an empty shell” (Mohan Singh).[47] In this regard, various forms and types of workforce training should be available at local, national and international levels. Future work will require expanding and improving the access of training initiatives such as the course on evidenced-based public health as well as building research capacity to guide evidence-based action on the social determinants of NCDs. Accessibility of training and multidisciplinary workforce development to meet the needs of the practitioners may require examining virtual and digital approaches. For example, social media opens the way for broader networks which can bring together transnational communities of interest.[48] It also provides the opportunity of shortening dissemination chains by linking policy development on public health issues directly with large numbers of community based organisations, interest groups, and practitioners.

In addition to traditional approaches to capacity building through training initiatives, knowledge generation and translation activities require partnerships underpinned by effective exchanges between researchers and users to appropriately integrate the latest and most relevant research in decision-making.[49] The Evidence Informed Policy and Practice in Europe project is an example that involves more than 40 partners from across Europe and internationally in order to increase all types of evidence use across all education sectors by developing capacity among researchers, policy makers and practitioners and strengthening connections between them. There are similar examples in other regions such as the WHO initiative in knowledge translation, the Evidence Policy Network which promotes a network of partnerships at all levels among health system policy makers and other stakeholders to improve health outcomes through context specific research evidence. Such expanding networks create new opportunities for synergies and collaborative learning from existing experiences and best practices to advance the field of evidence-based public health.

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Figure 1.
Training approach for evidence-based public health

Table 1

Factors related to the translation of interventions

Domain	Examples
Underlying health problem	• Prevalence of the NCD • Prevalence of NCD risk factors • Causal link between the risk factors and the NCD
Population (target of the intervention)	• Representativeness and characteristics of the target population • Participation of the target population • Cultural factors related to lifestyles and worldviews • Cognitive factors affecting participation (age, language, literacy)
Implementation	• Resources and practices required • Adaptability to the target population and local context • Mobilization methods used in the intervention • Incentives or compensation for participation • Feasibility of the intervention • Acceptability of the intervention
Professionals	• Instructions required for intervention delivery • Training to take into account professionals' views, experiences, attitudes • Involving professionals in the development and pilot testing of the intervention • Interest and enjoyment of the professsionals
Environment	• Recognition of the unique organizational settings • Factors related to the socio-political context (health system, financing, role of government) • Factors associated with the interaction between the intervention and the environmental context

*Adapted from Cambon et al.[4, 26, 27]