

# The impact of public health interventions in a developing nation: an overview

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## ABSTRACT

**Introduction:** Around 80% of factors that determine population health sit outside the control of health services. It is essential we influence these factors in addition to those within the remit of health services in order to improve and protect the health of population in a developing country. Public health functions encompass working across the domains that constitute population health systems with various partners. The objective of this article is to give an overview of public health interventions that can improve the health of the population of a developing nation.

**Method:** A descriptive study, based on a review of the literature of key public health frameworks and interventions that are likely to have significant impacts on population health. Some selected public health interventions and case studies are highlighted to illustrate the importance of priority areas in developing countries.

**Results:** Various public health frameworks recognise the importance of wider determinants of health (socio-economic factors), effective healthcare, healthy behaviours, working with communities as critical to securing population health. Another framework adopts a life-course model of intervention starting from public health interventions during preconception period and childhood, adolescence, working life and older age. For many developing countries, the author identified some examples of priority areas for interventions such as stopping and preventing wars; improving child health, including free school meals; achieving universal healthcare through integrated primary health care; addressing commercial determinants of health; embracing new technologies; and measuring and monitoring population health.

**Conclusion:** In order to improve the health of a population in a developing country, attention needs to go beyond health services to influence the wider determinants of health, health behaviours and adopting the World Health Organisation's roadmap on essential public health functions.

**Keywords:** Public health interventions, socio-economic factors, effective healthcare, healthy behaviours, essential public health functions

## INTRODUCTION

In the August 2022 issue of South Sudan Medical Journal, Dr David Bassiouni highlighted the need for public health articles to address the major health problems facing the population.<sup>[1]</sup> The call for articles in this area is highly welcomed.

Public health is defined as “the science and art of promoting and protecting health and wellbeing, preventing ill-health and prolonging life through the organised efforts of society.”<sup>[2]</sup> Context matters, as we consider addressing public health interventions in specific countries. Although public health challenges vary between countries, there are many common public health challenges. Within each country, particular attention is needed to address unacceptable and unfair variations in health outcomes, referred to as health inequalities. Health

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inequalities stem from societal inequalities (unfairness), often rooted in political policies of a government and how they are implemented. Hence, the solutions to tackling both societal and health inequalities have major bearing on the political will of the government to address the root causes of the problems. There are historical and current lessons that can be drawn from some developed and developing countries on how public health interventions have improved the health of the population.

The objective of this article is to give an overview of public health interventions that can improve the health of the population of a developing nation and South Sudan in particular. This article will give an overview of the relevant public health frameworks to guide an approach to public health interventions. It will then outline some selected public health interventions, considered to be priorities.

### METHOD

Using a descriptive study approach, the author reviewed the literature on key public health frameworks and public health interventions likely to have major impacts on population health, while drawing upon his own public health experience. Some selected public health interventions and case studies were highlighted to illustrate the importance of priority areas in developing countries.

### RESULTS

#### An overview: Frameworks

There is increasing realisation that despite the best efforts of delivering accessible and quality healthcare, such efforts remain limited, and contribute to only about 20% of the

health of a population, while 80% of the health of the population is determined by (1) socioeconomic factors (40%); (2) health behaviours (30%) and (3) physical environment (10%).<sup>[3]</sup> Examples of socioeconomic factors include education, employment, income, family and social support and community safety. Health behaviours include tobacco use, diet, exercise, alcohol and drug use and sexual activities.<sup>[3]</sup> Factors such as those related to air quality, transport, water quality, and housing are examples of determinants of physical environment.<sup>[3]</sup>

The King's Fund (UK) on the other hand, described a population health system consisting of four key domains: (1) the wider determinants of health e.g. education, housing, transport and leisure; (2) health behaviours e.g. smoking, alcohol consumption, diet and exercise; (3) integrated health and social care system; and (4) the places and communities we live in and with.<sup>[4]</sup> Other public health experts favour a life course model to improving population health by addressing public health challenges at all stages of life: preconception, infancy and early years; childhood and adolescence; working age and adults; and older people.<sup>[5]</sup>

In 2022, the World Health Organisation (WHO) and partner organisations published a roadmap document, which outlined the national workforce capacity to implement essential public health functions, which are outlined in Box 1.<sup>[6]</sup> These were developed by stakeholders from both developing and developed nations and are therefore deemed relevant to stakeholders in developing countries. The list of 12 essential public health functions provides a framework for the types of public health functions that are needed in each country. The WHO expects each country to endorse the roadmap and to bench

#### Box 1. A consolidated list of essential public health functions (EPHFs) developed by World Health Organisation (WHO), 2022.

1. Monitoring and evaluating the population's health status, health service utilization and surveillance of risk factors and threats to health.
2. Public health emergency management.
3. Assuring effective public health governance, regulation and legislation.
4. Supporting efficient and effective health systems and multisectoral planning, financing and management for population health.
5. Protecting populations against health threats, including environmental and occupational hazards, communicable disease threats, food safety, chemical and radiation hazards.
6. Promoting prevention and early detection of diseases, including non-communicable and communicable diseases.
7. Promoting health and well-being and actions to address the wider determinants of health and inequity.
8. Ensuring community engagement, participation and social mobilization for health and well-being.
9. Ensuring adequate quantity and quality of public health workforce.
10. Assuring quality of and access to health services.
11. Advancing public health research.
12. Ensuring equitable access to and rational use of essential medicines and other health technologies.

mark where it is with its public health workforce needed to implement the essential public health functions.<sup>[6]</sup>

## Selected public health interventions

### a. Interventions to stop and prevent war

War is a major public health issue and affects all stages of life. The impact is immediate and long-term, resulting in deaths, injuries, and subsequent health problems such as traumatic experiences, diseases and lack of access to essential healthcare.<sup>[7]</sup> A study by the London School of Hygiene and Tropical Medicine (2018) estimated that between December 2013 and April 2018, there were 383,000 excess deaths in South Sudan, a high proportion of these were attributable to violence (war).<sup>[8]</sup> The same report also reported violence as the major cause of excess deaths in other parts of Africa, for example, Darfur in Sudan (68-93% of deaths); Democratic Republic of Congo (605,000 deaths between 2003-2004); and Chad (91% of deaths among refugees from Central African Republic).

Therefore, it is in the best interest of public health to prevent wars or stop them where they exist by addressing societal injustices and exclusions of sections of the population that give rise to negative impacts on health outcomes and health inequalities. Wars tend to undermine all human development indices, including health outcomes.

Some of the consequences of war include traumatic brain injuries, spinal injuries, limb losses and post-traumatic stress syndrome. These call for appropriate rehabilitation interventions, provision of artificial limbs to render victims independent and self-supporting, and suitable employment.

### b. Interventions to improve child health

One of the greatest impacts follows interventions to protect and improve the health of children, giving them the best start in life.<sup>[5]</sup> Evidence suggests that investment in children has the potential to yield 10:1 benefit-cost ratio in health, social and economic areas.<sup>[5]</sup>

Among the top childhood interventions include clean water, vaccination, adequate nutrition (including free school meals), and quality housing. While vaccination falls within the remit of the health service, efforts in other areas such as the provision of clean water and adequate nutrition do not. It is the recognition of cross-governmental cooperation and partnership working that ensures the health of children is protected and improved.

Free school meals for primary school children have been implemented successfully in Botswana since 1960s, championed by its first President, Seretse Khama with the aims of (1) increasing school enrolment, attendance and retention; (2) reducing hunger and malnutrition;

and (3) boosting domestic food production.<sup>[9]</sup> Botswana's experience showed a close partnership working, initially with the UN World Food Programme at the earlier stage and gradually the free school meal initiative moved under full government responsibility. Although the Ministry of Local Government and Rural Development had the overall responsibility, it collaborated with partners within the government (e.g., Ministries of Health, Education, Finance, etc), Partnership for Child Development, New Partnership for African Development (NEPAD). In 2014, Botswana had provided one free school meal per pupil per day to 755 primary schools, covering 331,000 learners. It has a population of 2.3 million according to 2022 population census. Botswana extended the initiative of free school meals to pre-school children. It had even managed to provide two school meals per day for children in boarding schools from rural areas.<sup>[9]</sup>

### c. Integrated Primary Health Care

In a previous edition of the South Sudan Medical Journal (2019)<sup>[10]</sup>, detail was published of an integrated primary health care (iPHC) model for a developing country, consisting of five pillars: (1) public health services (2) clinical services (3) universal registration of population in the catchment areas; (4) a standard building infrastructure; and (5) training of multi-disciplinary healthcare workforce. This proposed model remains valid.

### d. Measuring and monitoring the health of the population

Improvement in population health can come about if there is a clear requirement to report on the state of health of a country, and its administrative units (e.g., states or counties). These reports should be produced annually or at regular intervals as deemed appropriate for the country, or its administrative units, which help to capture the progress or deterioration in health status, and key priorities based on health needs. In the UK, it is a legal requirement since 1847 for Directors of Public Health (formerly Medical Officer of Health) of local authorities to produce and publish an annual report of the health of the population of each local authority area.<sup>[11]</sup> The requirement to measure and report on the health of the population is consistent with the essential public health functions produced by the WHO.<sup>[6]</sup> It is important to incorporate both quantitative and qualitative health outcomes in measuring health.

In 2011, the UN General Assembly adopted a resolution, which gave importance to happiness and well-being to be measured and monitored by countries. It focused attention on how to achieve, and measure socio-economic development in each country. Since then, World Happiness Reports have been produced annually.<sup>[12]</sup> It is therefore, important to incorporate a qualitative assessment of happiness and wellbeing of the citizens in population health reports.

### e. Commercial determinants of health

It is now clear that there are threats to health posed by commercial industries whose sole purpose is to make profits. The products of commercial industries endanger health, especially in developing countries where regulatory systems are weak. These include industries linked to producing tobacco products, drinks and food products, alcohol, fake medical products among others. They have short- and long-term health implications. Governments in developing countries must pay attention to strengthening their legislative and enforcement measures (powers) and use them effectively to tackle these public health threats.<sup>[13]</sup>

### f. The use of health technologies

There is increasing use of new technologies, especially mobile telephones, in most developing countries. These advances provide opportunities for enhancing the delivery of a health service at a distance (telehealth). A previous edition of South Sudan Medical Journal contained an article by this author on the potential for telehealth.<sup>[14]</sup> There are also lessons that can be drawn from research carried out on why and how new technologies fail or succeed to embed in routine health services.<sup>[15]</sup>

## DISCUSSION

Improvement in population health is closely linked to the overall welfare of a nation; its socio-economic development, state of peace in the country, in addition to access to universal health care. In countries affected by war, it is hard to see a thriving population, therefore war must be seen as a public health threat. This article provides several frameworks to help in contextualising public health interventions in a country. Most of these frameworks are inter-related and acknowledge the role of wider determinants of health, and partnership working.

The selected public health interventions described above (a)-(f), are only an overview and serve as examples. Each deserve detailed examination, as a stand-alone article, so are many other public health interventions, which other public practitioners will build upon.

## CONCLUSION

The overall health of a nation is influenced by a wide range of factors, including socio-economic factors (wider determinants of health), access to quality health care, and healthy behaviours. Effective delivery of essential public health functions, as described by the WHO, help developing countries towards improving the health of their populations. Several public health priorities for interventions were identified for consideration and they include: stopping and preventing wars, offering free school meals, access to universal health care through an

integrated primary care model, addressing the threats of commercial determinants of health, embracing new technologies, and monitoring population health.

**Conflict of interest:** None

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