World Health Organization

European Region

Implementation research for prevention of noncommunicable disease risk factors in the WHO European Region: experiences and lessons learned from the pilot projects in Kyrgyzstan and Uzbekistan

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Abstract

Implementation research (IR) is a recent scientific approach used to assess implementation of health policies, programmes and services and investigate factors that may affect policies or interventions during their implementation or use in real-life settings; defined as aiming "to support and promote successful application of interventions demonstrated to be effective" by describing implementation processes, including contextual factors that may affect or alter them. The WHO Regional Office for Europe is engaged in actively assisting to build countries' IR capacity and to enable effective implementation of recommended noncommunicable disease (NCD) policies through supporting Member States in identifying and closing gaps between evidence and practice.

This report aims to outline how IR can accelerate progress towards reducing the prevalence of NCDs and premature mortality due to them, aligned to WHO and Sustainable Development Goal targets of a 33% reduction. It describes terminology related to IR and its role in improving implementation of health policies, programmes and services, and presents lessons learned from the initial phases of two pilot IR projects: school nutrition policies in Kyrgyzstan and Uzbekistan, and brief interventions for NCD risk factors within primary care in Uzbekistan. Also covered are strategies to improve stakeholder involvement, and capacity-building activities aimed at supporting meaningful engagement between researchers and policy-makers to reduce gaps between theoretical approaches and on-the-ground capacity for implementation of NCD policies across central Asian countries and the WHO European Region.

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Abbreviations

BMI	body mass index
CVDs	cardiovascular diseases
IR	implementation research
NCDs	noncommunicable diseases
PHC	primary health care
SDGs	Sustainable Development Goals
SSBs	sugar-sweetened beverages
SNI	Special Initiative on Noncommunicable Diseases and Innovation
ST	systems thinking
TDR	the Special Programme for Research and Training in Tropical Diseases

Executive summary

Noncommunicable diseases (NCDs) present a significant challenge for public health in the WHO European Region. NCD-related deaths account for approximately 90% of all deaths and 85% of years lived with disability in the Region, and 85% of this NCD burden is caused by behavioural and biological risk factors. The prevention and control of NCDs can only be made possible through the implementation of evidence-informed and cost-effective policies, programmes and services that seek to reduce the impact of NCDs and NCD risk factors across the life course and for all people in the Region.

The field of implementation research (IR) offers a scientific approach that countries can utilize to assess the implementation of their health policies, programmes and services in real time alongside implementation. The WHO Regional Office for Europe aims to strengthen country-level capacity, including how to use IR to scale up and improve the adoption of NCD policies,and how to accelerate the implementation of effective interventions by identifying what does and does not work within the context of improving NCD prevention and control within specific national contexts.

This report seeks to create more awareness and to build up knowledge and understanding concerning the needs and advantages of carrying out IR to assess NCD policies and interventions. It highlights the role that IR plays in providing evidence for delivering effective interventions to mitigate the current burden of NCDs and improving the delivery of health services at both primary care level and throughout specific societal and public settings.

The report begins by presenting the concepts, taxonomies, principles and characteristics of IR – including its complexity. It highlights different approaches to IR and how a systems thinking approach can be complementary to IR. Further, it provides a deeper analysis of the IR work that has been advanced by the WHO Regional Office for Europe. In particular, it presents a comprehensive overview of two pilot projects assessing barriers and facilitators of brief interventions for NCD risk factors in primary care in Uzbekistan and school nutrition policies in Kyrgyzstan and Uzbekistan.

The main results from the report corroborate the fact that the development of countries' capacity to implement health interventions at scales that lead to sustainable and effective implementation is often hindered by multiple factors:

- limited executive financial commitment;
- fragmented information system;
- inconsistent methods for data collection;
- lack of monitoring systems;
- limited human resources within settings;
- lack of incentives for staff members to lead the implementation of interventions;

- weak multisectoral coordination; and
- a lack of regulatory frameworks to enforce quality of delivery of health programmes and services.

Nonetheless, the report's outcomes do provide insight into ways to improve stakeholder involvement, enhance capacity-building activities and advance research approaches. In addition, as the main research outcomes and lessons learned from the two pilot projects, theories of change can serve as an inspiration for the participant and other countries to employ IR in tackling NCDs at the regional and global levels.

The WHO Regional Office for Europe has sought to provide capacity-building and collaboration opportunities at country level among national leading research institutions and local research teams, national policy-makers, world-renowned experts on IR and WHO teams.

The WHO Regional Office for Europe will strive to increase awareness on making use of and investing in IR approach and high-quality translation of current IR materials to increase the availability of the resources and support opportunities for meaningful engagement of researchers and policy-makers to reduce the gap between theoretical approaches and on-the-ground capacity for effective implementation across central Asian countries and the entire WHO European Region.

Introduction

Noncommunicable diseases (NCDs) present a significant challenge for public health in the WHO European Region. In 2019 NCDs accounted for approximately 90% of all deaths and 85% of years lived with disability in the Region, and 85% of NCD burden is caused by major behavioural and biological risk factors *(1)*. The prevention and control of NCDs is feasible through the implementation of evidence-informed and cost-effective policies, programmes and services seeking to reduce the impact of NCDs and their risk factors across the life-course and for all people in the Region.

In 2023, in response to these challenges, the WHO Regional Director for Europe established the Special Initiative on NCDs and Innovation (SNI), which responds to the growing urgency to accelerate actions aimed at meeting NCD-related targets ahead of the 2030 Sustainable Development Goals' (SDGs) deadline and supports Member States in their work to free the Region from the burden of avoidable NCDs. The SNI recognizes the urgency for immediate action and the need for a visionary paradigm shift that puts NCDs higher on future generations' political and health agendas. The employment of a dual-track approach has allowed the SNI to promote accelerated progress towards NCD-related SDG commitments for 2030 (RACE to the finish) while simultaneously championing the key generational shifts required to address NCDs within the observed permacrisis (Vision 2050) and achieve a sustainably healthier WHO European Region.

The SNI's commitment is to support Member States to achieve healthier populations and to close the gaps in NCDs, including cancer, cardiovascular diseases (CVDs), chronic respiratory diseases, and diabetes that persist within countries and across the Region.

Additionally, the 100 Week Challenge, launched at the 73rd Regional Committee in Astana, Kazakhstan, in 2023 aims to accelerate the implementation of NCD-related policies and programmes with the potential to save the maximum number of lives. The 100 Week Challenge represents the collective effort of Member States to make every week count to achieve internationally agreed NCD targets.

The WHO Regional Office for Europe has been working to produce high-quality IR to support country capacity-building and accelerate the implementation of the WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013–2020 (now extended until 2030) *(2)*, WHO best buy *(3)* interventions, as well as national policies and programmes seeking to reduce premature mortality for NCDs by 33%, which in turn will contribute to the achievement of the SDGs; particularly SDG 3.4 by 2030.

IR provides an excellent opportunity to evaluate and identify during implementation whether policies and programmes are having the intended effects on the ground, which is vital to designing evidence-informed programmes that are efficient, flexible, effective and of contextual relevance. This report has been produced to create more awareness about the need and advantages of carrying out IR and its contribution to scaling up NCD policies and interventions. It presents the concepts, principles and characteristics of IR, including

its complex structure and showcases the work on IR that has been advanced in Kyrgyzstan and Uzbekistan. It concludes by providing insights about systems thinking as a complement approach for IR, ways to improve stakeholders' involvement, enhance capacity-building activities and advance research approaches for using IR to assess policy implementation in real-time and real-world settings.

Aim of the report and target audience

This report provides examples of IR pilot projects that demonstrate how the IR approach has been used in the WHO European Region and beyond to improve the implementation of programmes and interventions on NCD prevention and control in close collaboration with national stakeholders. The report presents the pilot projects assessing and evaluating barriers and facilitators of brief interventions for NCD risk factors in primary care in Uzbekistan and school nutrition policies in Kyrgyzstan and Uzbekistan. It highlights different strategies for stakeholders' involvement, capacity-building activities and research approaches, as well as the main research outcomes and lessons learned.

The target audience of this report are researchers, policy implementers and policy-makers who are willing to explore practical aspects of IR for optimizing the delivery of evidence-informed interventions for NCD prevention and control.

1. Basics of IR

The following section provides a brief overview of defining characteristics of IR and its significance, along with several practical examples of IR in the WHO European Region (Box 1). It highlights various IR approaches, elaborates on how systems thinking could be a complementary tool for IR and how WHO has been engaged in the field of IR.

1.1 What is IR?

IR approach is relatively new for researchers in public health and particularly for public health practitioners and policy-makers; therefore, its definition and terminology are still evolving. The aim of IR is defined as "investigating the various factors that affect how a new policy or intervention may be used (or implemented) in real-life settings" *(4)*. IR is also described as a field of study that aims "to support and promote the successful application of interventions that have been demonstrated to be effective" by describing the processes for the implementation of programmes or interventions, including the contextual factors affecting them *(5)*. The systematic study of implementation processes can provide concise and compelling findings that policy-makers, researchers and practitioners can deploy to address recurrent gaps between theory and practice *(6)*. These findings are also necessary to improve the efficiency and resilience of health systems and the quality of health services for all people *(7)*.

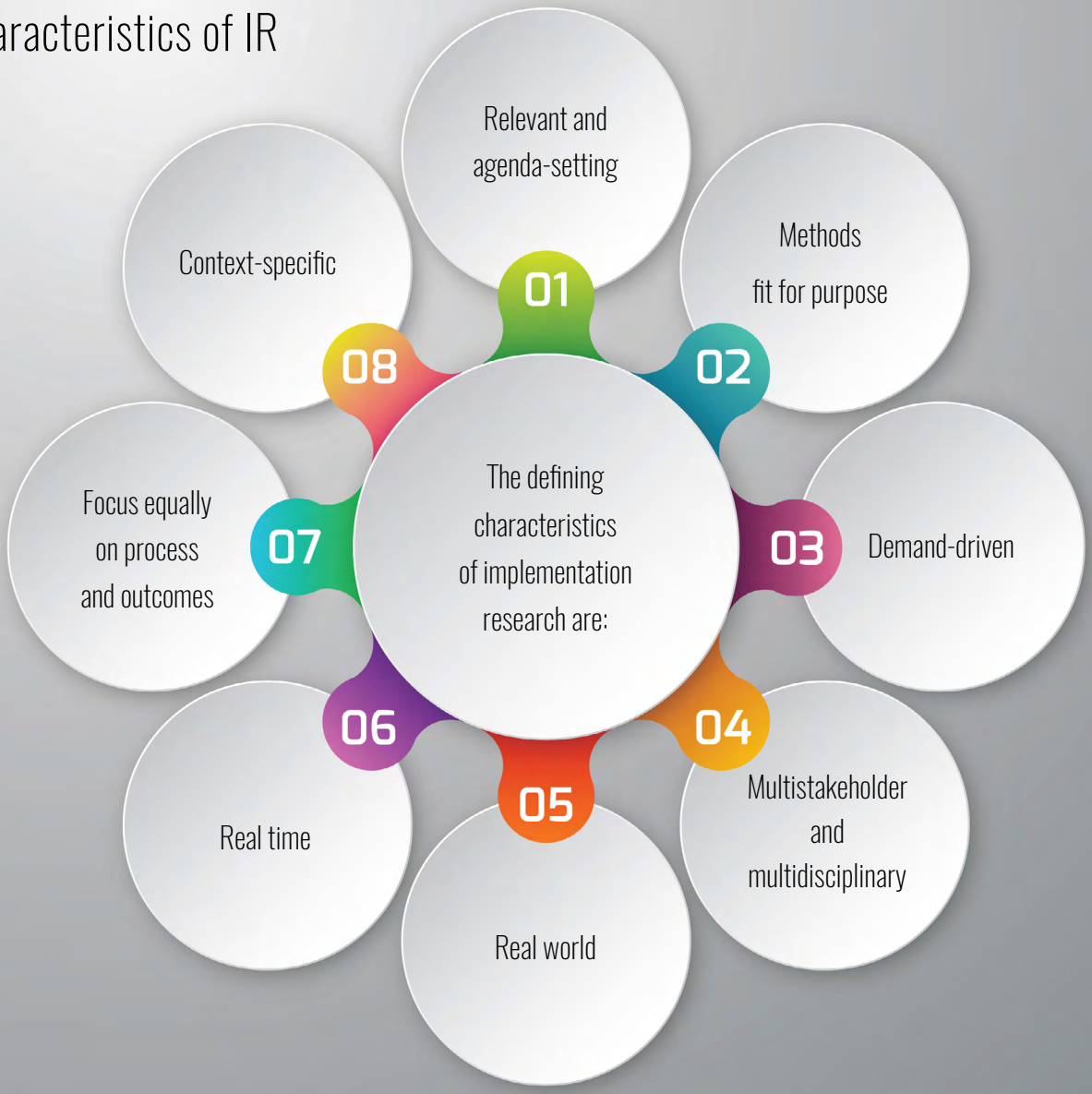
IR has several distinct characteristics (Fig. 1). It is primarily a participatory approach as it provides to conten opportunities for researchers, practitioners and key stakeholders to collaborate, exchange knowledge and experiences and stir the process during the implementation of a specific research project. The type of knowledge derived from these interactions can help others respond more adeptly to challenging interactions among stakeholders, build trust and strengthen partnerships *(7)*.

Further, IR analyses factors that arise during the process of implementation or from the outcomes of implementation including the uneven distribution of resources, inadequate coverage or supply and demand barriers that hinder evidence-informed practices from adapting to the local context *(7)*. The objective is to understand why some interventions succeed and others fail by answering what, why and how implementation works in real-world settings *(6)*. Therefore, pragmatism, understanding the local context and thoughtfulness in framing the questions are crucial and act as the starting point for introducing and discussing complex, priority challenges and factors influencing interventions in the health systems while contributing to health research.

An interesting feature of IR is that it provides opportunities for both investigator- and practitioner-led inquiry and shared governance of research enterprise among multiple stakeholders. Additionally, the participants of the study in these interventions are directly affected by the outcomes and although the results of the intervention may not always be beneficial, all findings are vital and contribute to informed learning and improving the development of future interventions. Areas of focus within the analysis of intervention outcomes may include acceptability, adoption, appropriateness, feasibility, mutual trust, implementation cost, coverage and sustainability *(6)*.

Fig. 1

The defining characteristics of IR



Source: Theobald et al. *(7)* with permission from Elsevier.

Although IR focuses on the context and location where the intervention is implemented, many of the challenges it addresses provide valuable insights that may be adapted to other settings where similar problems affect a particular population or operations of the health system *(8)*.

1.2 Why is IR needed?

There is a considerable gap between available resources for evidence-informed interventions and their successful practical implementation in different health areas, including concerning NCDs. This gap is even wider in low- and middle-income countries *(5)*.

There are several global and national NCD commitments and frameworks in place, namely a target of 33% reduction in premature mortality and disease burden related to NCDs as per the WHO Action Plan for the Prevention and Control of NCDs in the WHO European Region 2016–2025 (now extended until 2030) *(2)* which sets targets for the achievement of the SDGs *(9)*, as well as practical tools, such as the list of best buys and other suggested interventions for the prevention and control of NCDs *(3)*. However, the current level of implementation of these suggestions and interventions remains low. Furthermore, even if some of these interventions are initiated in countries, the process and impact of the implementation process varies *(10)*. For example, the extent of implementation of best buys to reduce unhealthy diets, in particular to reduce population salt/sodium consumption, differs across Member States of the WHO European Region *(11)*. According to the 2022 NCD progress monitoring report this indicator has not yet been achieved in 21% of participating Member States, partially achieved in 41%, and fully achieved only in 38% of WHO European Region Member States *(11)*.

BOX 1

Box 1. The need for IR: practical examples from WHO European Region Member States

In 2019 during the IR workshop on Strengthening capacity for NCD IR in the WHO European Region *(12)*, Member States formulated project proposals identifying circumstances where the application of IR was needed and how it could be used to address them.

BELARUS: less than half of all hypertensive patients are currently taking appropriate medication. Stakeholder mapping and qualitative interviews will be used to understand the factors that influence the use of anti-hypertensives to increase access and adherence.

ESTONIA: uptake of free breast cancer screening among women is currently less than 50%. Qualitative research methods will be used to explore the factors that influence uptake. The team will also consider studying why current implementation strategies are not producing the desired outcomes. National statistics will be used to assess whether subsequent interventions and adaptations would successfully increase participation.

FINLAND: despite relatively high health literacy and supportive legislation, 4–5-year-old children in day care in Finland consume only 1.5 portions of fruit and vegetables per day. An ambitious food service reform is being piloted in 12 centres. The team will study procurement arrangements, stakeholder relationships and the barriers that impede existing implementation strategies. Over the course of 6 months, a traditional evaluation will monitor dietary changes in children and their families, as well as attitudes among families and staff.

KYRGYZSTAN: with the aim of reducing road traffic injuries, the team plans to study multisectoral collaboration using stakeholder analysis. They hope to identify potential policy solutions by looking at neighbouring countries and then developing an adaption strategy for Kyrgyzstan. They also expect that stakeholder analysis will identify mechanisms to increase intersectoral cooperation and strengthen political resolve.

MALTA: sugar consumption in Malta is three times higher than WHO suggested levels across all age groups, and sugar-sweetened beverages (SSBs) are a major contributor. The team is exploring how best to adapt SSB taxation for the national context. They will use stakeholder analysis, surveys and interviews to identify barriers, facilitators and opportunities for action, as well as studying how other countries have progressed in this area.

REPUBLIC OF MOLDOVA: Sodium intake is a leading NCD risk factor and is twice as high as WHO-suggested levels. The prevalence of hypertension is 46%, yet 74% of hypertensive patients are not on appropriate medication. The team will use literature review, policy analysis and discussion with other countries to identify potential policy options for reducing salt consumption. They will then conduct stakeholder analysis to assess the level of support for and opposition to each measure from different constituencies. They will use mixed methods to assess the appropriateness and feasibility of each measure and then plan to evaluate adoption, support and effectiveness once a policy has been introduced.

RUSSIAN FEDERATION: Recent data show that the use of electronic nicotine delivery systems is growing, particularly among young people. The Government has recently committed to regulating these products. The team aims to study the factors that influence the adoption, acceptability, appropriateness, trust, coverage and sustainability of different options for effective regulation. They will use policy analysis, stakeholder analysis and interviews to select the most appropriate policy and develop an effective implementation strategy.

Health systems in the Region have experienced complex disruptions over recent years, due to the COVID-19 pandemic and regional humanitarian and political crises. These events are anticipated to have detrimental effects on current and future progress towards health goals, such as the achievement of SDG 3 on health and well-being. IR offers methods and approaches that can draw on innovative interventions to address current challenges while monitoring ongoing interventions to prevent and control NCDs at country and regional levels. These actions are required to achieve national commitments for universal health coverage (UHC) and the SDG agenda, particularly SDG 3. A central element of these efforts is the development of countries' capacities to implement health interventions at scales that lead to sustainable and effective implementation *(10)*. This strategically links to the European Programme of Work, 2020–2025, which aims to enhance the leadership of health authorities and improve health intelligence and evidence and is of relevance to WHO's core priority 3 – promoting health and well-being *(13)*.

1.3 Different approaches to IR

IR is rooted in many disciplines (management, education, social and health services, etc.) that encompass several research traditions and utilize qualitative, quantitative and mixed-research methods *(7)*. Therefore, the field is known for providing analysis derived through multiple perspectives and multisectoral insights. Since 2020, the field has received growing attention, which is reflected in the increasing number of publications associated with these terms (Fig. 2).

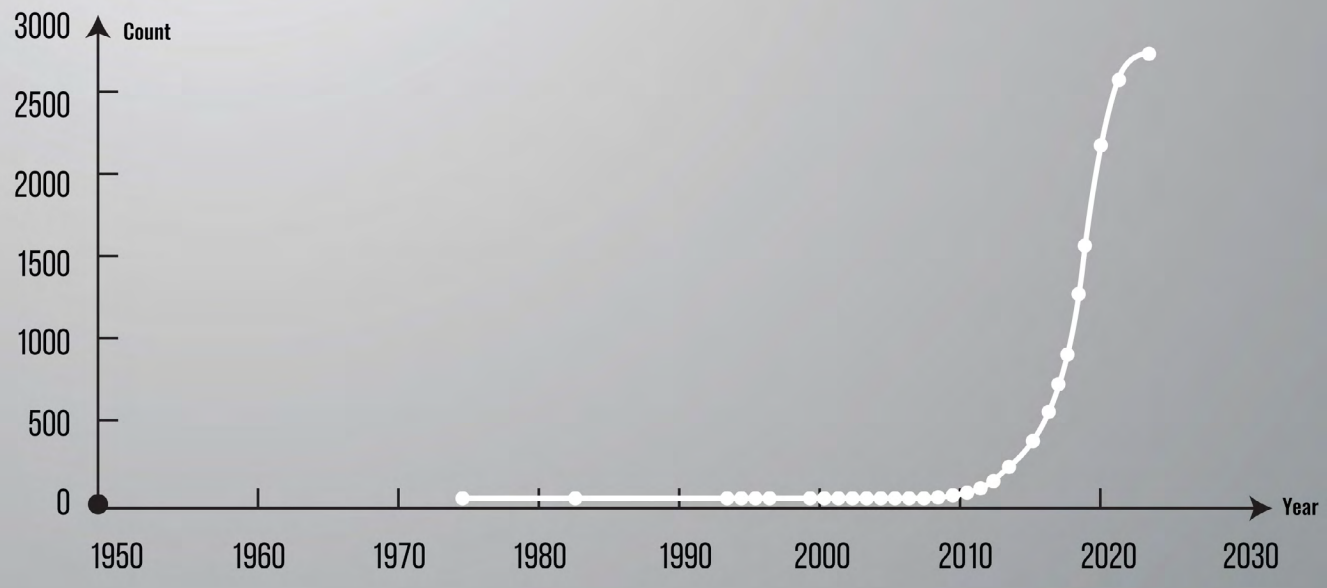
While for some scholars, the multidisciplinary nature of IR is viewed as a strength, others see this as an issue that could affect clarity of scope and efficacy *(5)*. Recent increases in IR-based publications have been matched by increased numbers and variety in the different theories, models and tools used within IR. The breadth of resources available provides a beneficial opportunity for identifying appropriate tools for specific research questions, but can also create challenges in identifying the most effective framework for the local context, particularly when limited resources are available. This is particularly relevant for low-income countries, where local research capacities for multidisciplinary teams are often limited. Therefore, the development of these competencies should remain a priority *(8)*.

In general, three overarching aims of theories, models and frameworks used in implementation science can be differentiated and identified between the following approaches (Fig. 3):

- describing and/or guiding the process of translating research findings into practice and policy (process models);
- understanding and/or explaining what influences implementation outcomes (determinant frameworks, classic theories, implementation theories); and
- evaluating implementation (evaluation frameworks).

Fig. 2

Number of publications on IR on PubMed

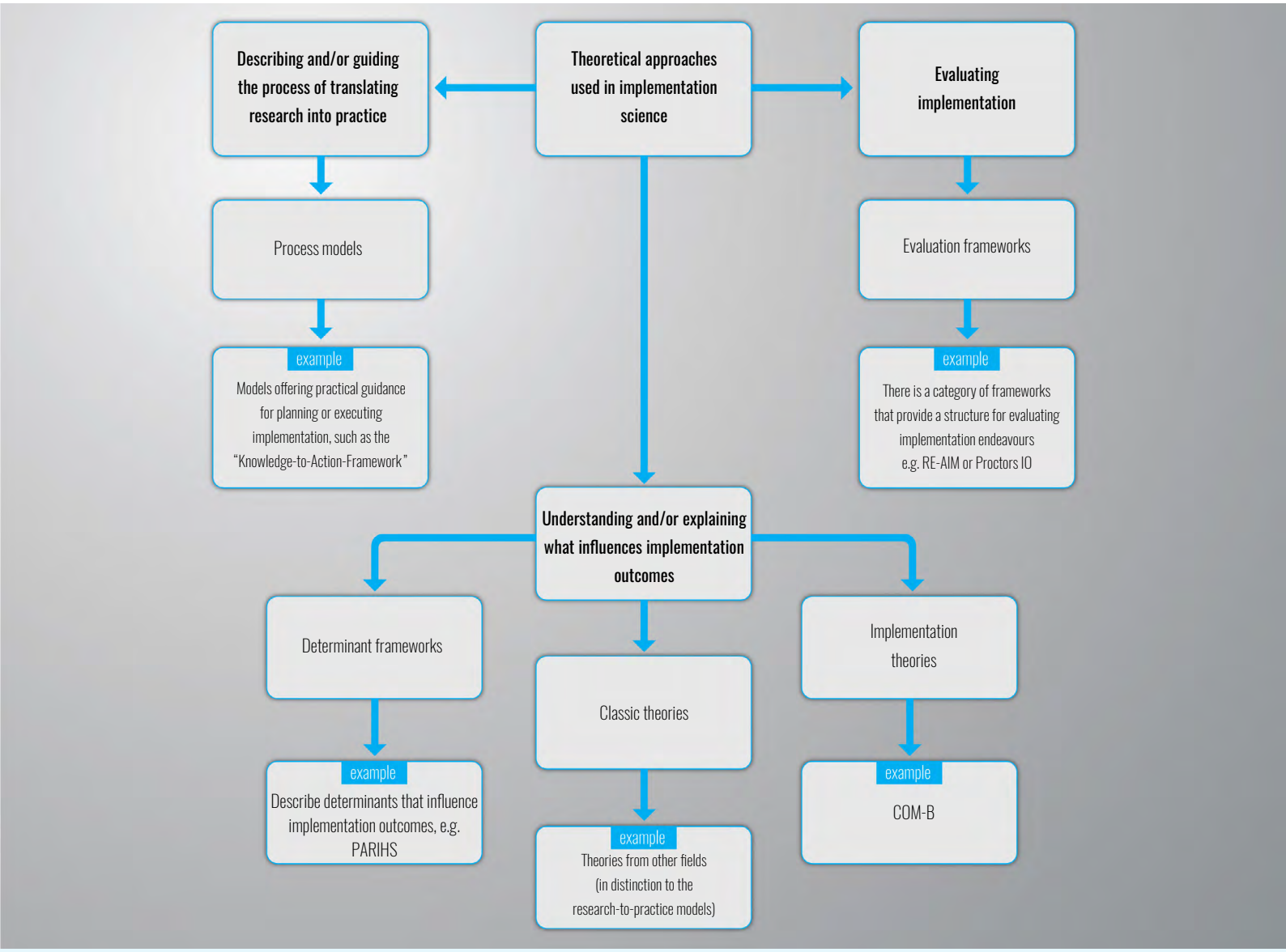


Search query: "Implementation Research" OR "Implementation Science"
OR "Dissemination and Implementation Research" OR "Dissemination and Implementation Science"

These categories overlap, and terms are sometimes used interchangeably. Researchers in IR argue that a single theory will miss important parts that are vital for understanding and explaining the different aspects that play a role in influencing the implementation process *(14)*.

Fig. 3

Categories of theories, models and frameworks used in implementation science



Source: Nilsen P *(14)*.

Notes:

RE-AIM - Reach, Effectiveness, Adoption, Implementation, Maintenance
Proctor's IO - Proctor's Implementation Outcomes
PARIHS - Promoting Action Research Implementation in Health Services
COM-B - Capability, Opportunity, Motivation, Behaviour

Therefore, it can be concluded that IR is an umbrella term for different approaches and methodologies which serve distinct needs, as they answer different questions. However, for all different IR approaches, the key characteristics and the overarching goal, as outlined above, should stay the same. The identification and application of the adequate framework and theory are guided by not only the research question itself, but also by the availability of capacities and resources, including time, finances and expertise.

Making use of available tools from the field and beyond continues to advance and contribute to strengthening the implementation of interventions and research *(15)*.

1.4 IR and systems thinking

There is a growing awareness of the complexity of the nature of public health challenges, meaning that systems-based approaches in public health are receiving increased attention.

When compared with IR characteristics of IR outlined previously, the overlap between IR and systems thinking (ST) becomes apparent. Recent studies have suggested conceptualizing both approaches as complementary on this basis. ST accounts for dynamic processes occurring at multiple levels, recognizing interdependencies, feedback loops, nonlinearities and tipping points; while IR offers conceptual frameworks for translating evidence-informed interventions into programmes that are applied in the real world *(16,17)*.

ST provides tools for health researchers and practitioners to map complex public health topics by identifying positive and negative feedback loops across different settings and providing new ways to conceptualize complex problems affecting a system and specific populations, and then intervening in the system to promote positive change *(17)*. Complex systems are constantly changing and undergo systemic, institutional or operational transitions which are difficult to conceptualize through linear and simple approaches. However, these can be addressed through the use of models that are pragmatic and facilitate collaboration across government, disciplines, sectors and organizations *(18)*. The aim is to bring together government and different disciplines to inform both policy-makers and practitioners and their relationship with the health system itself.

IR often addresses interventions, while systems science tackles complex problems in the context of the larger public health system. ST can improve understanding of the complex myriad of ways in which policy implementation functions in practice, and how it impacts the health system and in turn the populations which are affected. This learning is derived from real-life experimentation or simulations that can be traced through models, with the potential to identify the workings of system structures and dynamic complexities involving human behaviour(s) *(19)*.

1.5 How has WHO been engaged in the field of IR?

Health systems and other determinants of health are complex, as are the interactions among the various stakeholders whose decisions ultimately shape the way health systems operate. Providing answers about the ways health systems adapt, change and progress is the types of incentive that drive researchers and practitioners to engage in IR.

WHO has long-standing experience in the field of IR spanning several different areas. In 2013 WHO, together with the Alliance for Health Policy and Systems Research, published a practical guide on IR that highlighted the relevance of IR to support effective implementation of interventions to improve health at the national, regional and local levels *(5)*. In 2014 the Special Programme for Research and Training in Tropical Diseases (TDR) released an

Implementation Research Toolkit *(20)*, which was complemented by an online second-edition training course published in 2018. In 2016 WHO published the first guide on applying IR to the prevention and control of NCDs *(4)*. In 2019 a meeting was conducted to bring together key stakeholders from academic and policy-making communities to initiate discussion on how to strengthen IR capacities for NCD prevention and control, and promoting health throughout the life course in the WHO European Region *(12)*. Important outcomes from this meeting were several requests from Member States: to develop further materials to support and facilitate IR, to foster an implementation network between researchers and policy-makers and to connect technical experts with countries. Following up on these requests, IR pilot projects for NCD prevention were initiated to act as possible exemplars for other projects to follow.

1.6 Take-away messages

- IR is a relatively new approach with continuously evolving definition and terminology;
- IR aims to investigate the various factors that affect how a new policy or intervention may be used (or implemented) in real-life settings and is defined as a field of study that supports and promotes the successful implementation of interventions that have been demonstrated to be effective;
- IR is needed due to the current gaps between available resources for evidence-informed interventions and the lack of their successful practical implementation in different health areas, including NCDs;
- ST and IR are complementary approaches: ST accounts for dynamic processes occurring at multiple levels – recognizing interdependencies, feedback loops, nonlinearities and tipping points; and
- IR offers conceptual frameworks for translating evidence-informed interventions into programmes that are applied in the local context and real time.

1.7 Useful resources

- Peters DH, Tran NT, Adam T. Implementation research in health: a practical guide. Geneva: Alliance for Health Policy and Systems Research, World Health Organization; 2013 (https://iris.who.int/handle/10665/91758, accessed 13 September 2023).
- Strengthening capacity for noncommunicable disease implementation research in the WHO European Region. Copenhagen: WHO Regional Office for Europe; 2019 (https://iris.who.int/handle/10665/346451, accessed 28 August 2023).
- Implementation Research resources [website]. Geneva: World Health Organization; 2023 (https:/implementationscience-gacd.org/who-ir/, accessed 13 September 2023).
- World Health Organization, UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases. TDR Implementation Research Toolkit (second edition) [website]. Geneva: WHO Special Programme for Research and Training in Tropical Diseases; 2018 (https://adphealth.org/irtoolkit/, accessed 13 September 2023).
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- Peters DH, Peters MA, Wickramasinghe K, Osewe PL, Davidson PM. Asking the right question: implementation research to accelerate national noncommunicable disease responses. BMJ. 2019;365:l1868. doi: 10.1136/bmj.l1868.

- Collins T, Akselrod S, Berlina D et al. Unleashing implementation research to accelerate national noncommunicable disease responses. Glob Health. 2022;18:6. doi: 10 1186/s12 992–021–00790–5.

2. Pilot projects on IR for NCD prevention

NCDs, including CVDs, cancers and diabetes are the leading causes of death in Kyrgyzstan and Uzbekistan. In 2019 they accounted for over 80% of all mortality in those countries *(21,22)*. The average Kyrgyz or Uzbek citizen has over 22% chance of dying prematurely (before age 70) from NCDs *(21,22)*. CVDs are the leading cause of premature deaths in both countries, and over 40% of the adult population (30–79 years) has hypertension – one of the most important and wide-spread risk factors for CVDs *(23,24)*. More than 48% of adults and around 18% of school-aged children (5–9 years) in these countries also live with overweight and/or obesity *(23)*.

The shared behavioural risk factors of NCDs include alcohol consumption, tobacco use, physical inactivity and unhealthy diet *(25)*. Those risk factors can be measured by the following indicators:

- **alcohol consumption:** current alcohol users include the percentage of population aged 15 and older who have consumed alcoholic beverages in the previous 12-month period; and heavy episodic drinking is the pattern of alcohol consumption defined as consumption of 60 g or more grams of pure alcohol on at least one single occasion per month *(26)*;
- **tobacco use:** the current tobacco use indicator provides information on the prevalence of current use among people aged 15 years and over *(27)*;
- **insufficient physical activity:** the prevalence of adults aged 18 years old and over engaging in less than 150 minutes of moderate-intensity physical activity per week *(28)*; and
- **unhealthy diet:** excessive salt intake among adults aged 20 years and over (more than the WHO-suggested maximum level of 5 grams of salt or 2 grams of sodium per day) *(24, 29)*.

The prevalence of behavioural NCD risk factors in Kyrgyzstan and Uzbekistan is presented in Table 1.

Table 1. Prevalence of behavioural risk factors for NCDs in Kyrgyzstan and Uzbekistan

Country	Current alcohol users	Heavy episodic drinking	Current tobacco use	Insufficient physical activity	Average amount of sodium consumed per day
Kyrgyzstan	20.8%	11.5%	26%	20%	5.38 g
Uzbekistan	25.9%	8.1%	18.1%	32%	5.63 g

In consultation with WHO, national stakeholders in both countries selected interventions intended to target NCD behavioural risk factors and reduce the burden of NCDs among adults and children, in line with the to the *WHO Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013 – 2020 (25)*. The selection was informed by the list of best buys and other suggested interventions for the prevention and control of NCDs *(3)*. As a result, pilot projects to apply the IR approach were initiated for two selected interventions: brief interventions for NCD risk factors in primary care; and school nutrition policies.

It was additionally envisioned to foster and support strong networks on IR at national level through dedicated capacity-building activities. To explore the range of different national contexts, these interventions cover different levels of implementation of the proposed topics. In the following chapter, the research and the capacity-building components are explained in more detail.

2.1 Research component in the pilot projects

The WHO Regional Office for Europe initiated pilot projects on IR to assess and evaluate barriers to the successful and efficient implementation of both brief interventions and school nutrition policies in Uzbekistan, and school nutrition policies in Kyrgyzstan (Fig. 4). Due to limited resources, Azerbaijan was not formally included in this step; however, national representatives were invited to closely follow the process with a view to informing future activities and capacity-building events.

2.1.1 Brief interventions for NCD risk factors in primary care

Brief interventions are a set of intervention components designed to initiate changes in unhealthy behaviours such as smoking, alcohol consumption, unhealthy diets

or physical inactivity. They are usually implemented in, but not limited to, a primary health-care (PHC) setting *(30–32)*. While there is no single formal definition of a brief intervention, it generally includes measuring and raising patients' awareness of specific NCD risk factor(s), assessing patients' willingness to change, providing personalized information designed to increase motivation to improve health-related behaviour and, if needed, referral to specialized care. Brief interventions can range from three minutes of brief feedback and advice to more than 10 minutes of brief counselling *(33–35)*. Brief interventions usually consist of two intervention components: (i) measurement of exposure to a behavioural (tobacco use, alcohol consumption, unhealthy eating and physical inactivity) or a physiological (increased BMI) risk factor; and (ii) discussion, including advice as appropriate, about helping change exposure to the risk factor as well as referral to further in-depth counselling or treatment if needed *(36)*.

2.1.2 School nutrition policies

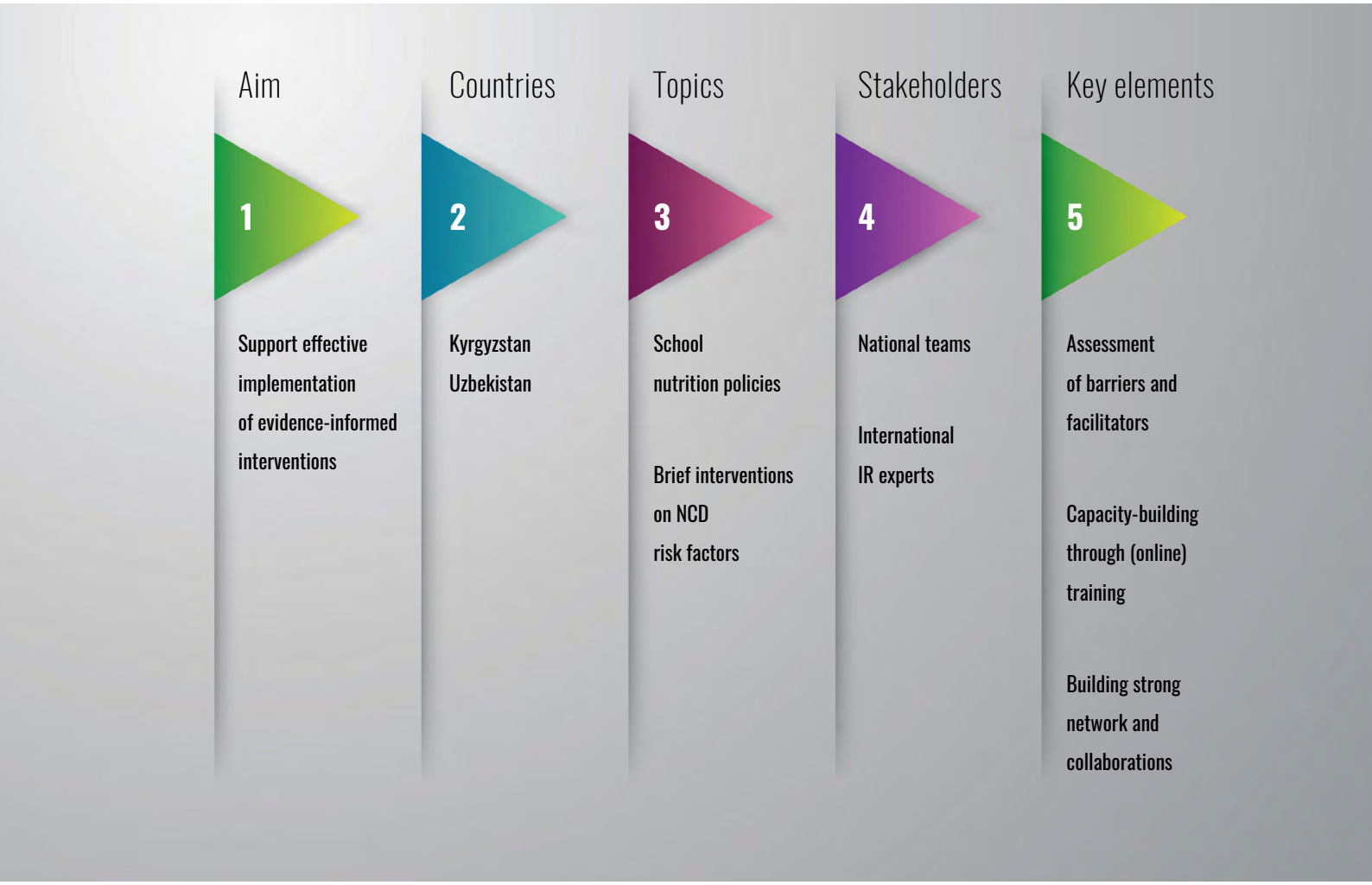
School nutrition policies are developed and implemented at the national and/or local levels to improve the health and nutrition status of students. They may include a variety of actions, such as providing healthy foods and beverages, restricting certain foods or beverages, setting nutrient standards for foods sold outside school meal programmes and providing guidance and direction for schools. Priority interventions in school nutrition policies include food policies *(37–39)*, such as the provision of nutritional standards whether food-, energy- and/or nutrient-based for menu composition, direct provision of healthy foods/beverages, meal plans *(40)* and regulating unhealthy foods *(41)*. Other priority interventions in school nutrition policies include nutrition health education for school staff and administrative personnel, students and their parents; screening and monitoring children's health indicators; and staffing, policy implementation and support strategies designed to foster supportive school food environments *(42)*.

These interventions have been shown to effectively address targeted behaviours and create positive health outcomes such as increased attempts to quit smoking, reduced mean weights, increased consumption of healthier diets and/or reduced total fat and sodium intakes. However, the availability of these interventions alone is not sufficient and effective implementation is needed to achieve population-level impact *(40)*. Effective implementation is influenced by context, including the availability of resources and support systems. These are factors that can be both facilitators and barriers towards achieving impact with interventions. They can affect dynamic interactions between intervention and context, which may call for variation in strategies during the diverse stages of implementation.

Due to these factors, the main outcome of this research project was to develop a theory of change for the implementation of brief interventions and school nutrition policies in Uzbekistan and school nutrition policies in Kyrgyzstan, as well as to describe facilitators and barriers to implementing these interventions using an IR approach. A theory of change model outlines the relationships among a set of outcomes that must be fulfilled for a programme goal to be achieved. It makes explicit the assumptions under which such outcomes are obtained and the contextual factors that influence the relationships among these outcomes *(41,43)*. The theory of change model helps to identify relevant implementation strategies and IR outcomes that lead to more effective implementation of the brief intervention programmes and school nutrition policies and help the better understand the pathways leading from these interventions to their impact in Kyrgyzstan and Uzbekistan.

Fig. 4.

Overview of the IR pilot projects in Kyrgyzstan and Uzbekistan



2.2 Approach of the pilot projects

A multi-method approach was applied independently in both countries to generate theories of change for the large-scale implementation of brief interventions and school nutrition policies in Kyrgyzstan and Uzbekistan, combining document review, a participatory theory of change workshops and key informant interviews (Fig. 5). A final multistakeholder regional meeting was convened to validate and contextualize the theories across the WHO European Region.

First, relevant stakeholders involved with the brief interventions and school nutrition policies in each country were identified between April 2021 and April 2022. This effort was led by the WHO country offices, working across sectors to support the planning and implementation of these interventions in the countries. The identification and selection of stakeholders was guided by the criteria and policy considerations

defined in Annex 1. Stakeholders identified (*n* ~ 11 for brief interventions and *n* ~ 15 for school nutrition policies in Uzbekistan and *n* ~ 7 in a core group and ~ 14 more in an expanded group for school nutrition policies in Kyrgyzstan) included representatives from the following agencies (for more detailed information see Annex 3):

- Ministry of Health
- Ministry of Education
- WHO country offices
- schools
- professional associations (e.g. family physicians).

These representatives were also invited to participate in the capacity-building component described in the next chapter.

Secondly, a document review worksheet was developed using the Proctor's framework for specifying implementation strategies *(33)* and the Consolidated Framework on IR *(34)* to extract information on the intervention and strategy components that form part of the brief interventions and school nutrition policies, and the processes, settings and activities involved in their implementation (Annex 2). Stakeholders were asked to complete the worksheets for both the brief interventions and the school nutrition policy programmes drawing on their experience, information from accessible grey literature and data based on their role as high-level ministry officials. About 20 government documents and data sources were consulted during the process of completing the brief intervention worksheet, and nine documents and data sources were consulted for completing the school nutrition policies worksheet in Uzbekistan. About five documents (including decrees, regulations and orders) and data sources were consulted for completing the school nutrition policies worksheet in Kyrgyzstan.

Thirdly, based on the information extracted from the worksheets, initial drafts of the theory of change models were developed for specific interventions that formed key components of the brief interventions and school nutrition policies in Uzbekistan and the school nutrition policies in Kyrgyzstan. The theory of change models were developed by listing and sequencing the relevant overall health goals and outcomes at various levels (individual, community, primary care settings, schools) linked to the interventions and the policy advocacy activities that support the adoption of the interventions.

Fourthly, two participatory virtual workshops (one for brief interventions and another for school nutrition policies) were organized with the relevant stakeholders to further develop and validate the initial drafts of the theory of change models for the implementation of specific interventions that formed the brief interventions and school nutrition policies in Uzbekistan. A third participatory virtual workshop was organized with relevant stakeholders for the school nutrition policies project in Kyrgyzstan. Each workshop was 90 minutes long and the model-building activities were conducted using Miro software *(44)*. The workshops were led by John Hopkins University experts in IR and the discussion was focused on clarifying the specified outcomes and the relationships among the outcomes given the real-life implementation context in both countries.

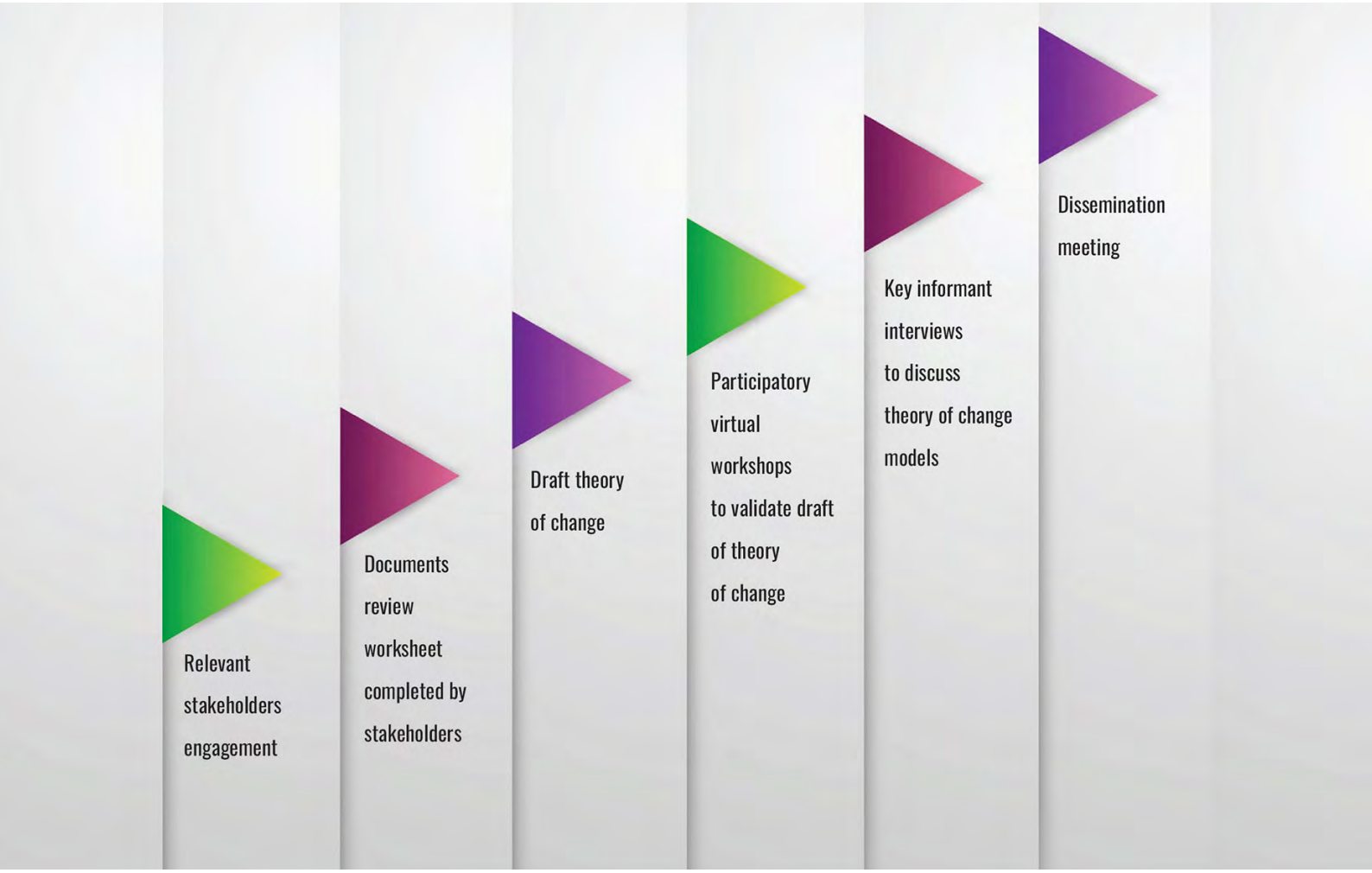
Fifth, key informant interviews (*n* = 2 for brief interventions and *n* = 2 for school nutrition policies in Uzbekistan; and *n* = 2 in Kyrgyzstan) were conducted to further clarify the relationships described in the theory of change models and salience of specific facilitators and barriers for the implementation of brief interventions in Uzbekistan and school nutrition policies in Kyrgyzstan and Uzbekistan. The interviews were conducted virtually over Zoom by the research team. Each lasted about 60 minutes and was framed around specific questions on the plausibility of relationships between key outcomes in the draft theory of change models, clarifying assumptions and ongoing challenges during implementation and identifying

any context-specific implementation strategies that may have been used to overcome those challenges in real-time.

Lastly, a combined dissemination meeting was organized with WHO Regional Office for Europe, WHO country offices and key stakeholders from Kyrgyzstan and Uzbekistan to review and validate the final drafts of the theory of change models and contextualize them for the region (i.e. qualitatively evaluate whether the relationships, challenges and strategies described are relevant for other similar countries). All workshops, meetings and interviews were conducted in English and Russian with simultaneous interpretation.

Fig. 5.

Multi-method approach in IR pilot projects in Kyrgyzstan and Uzbekistan



2.3 Results of the pilot projects' initial phase

2.3.1 Brief interventions to address the behavioural risk factors of CVDs and other NCDs in Uzbekistan

Brief interventions in Uzbekistan: programme components

Since 2018, Uzbekistan has been undergoing a comprehensive health system reform. One of the essential reform components is strengthening the role of PHC by introducing a PHC model that is team-based, patient-centred and community-oriented, with an increased focus on promoting health and preventing diseases.

Currently, the brief interventions programme is in the process of being implemented at the primary care level in a pilot region (Sirdaryo), where a new model for organizing the health system and state medical insurance mechanisms (President's Decree #4890, 12.11.2020) was introduced in 2021. The model incorporates a system of disease prevention and patronage implemented by PHC teams which work within established catchment areas and consist of a family doctor, practice and patronage nurses with expanded roles, as well as a midwife.

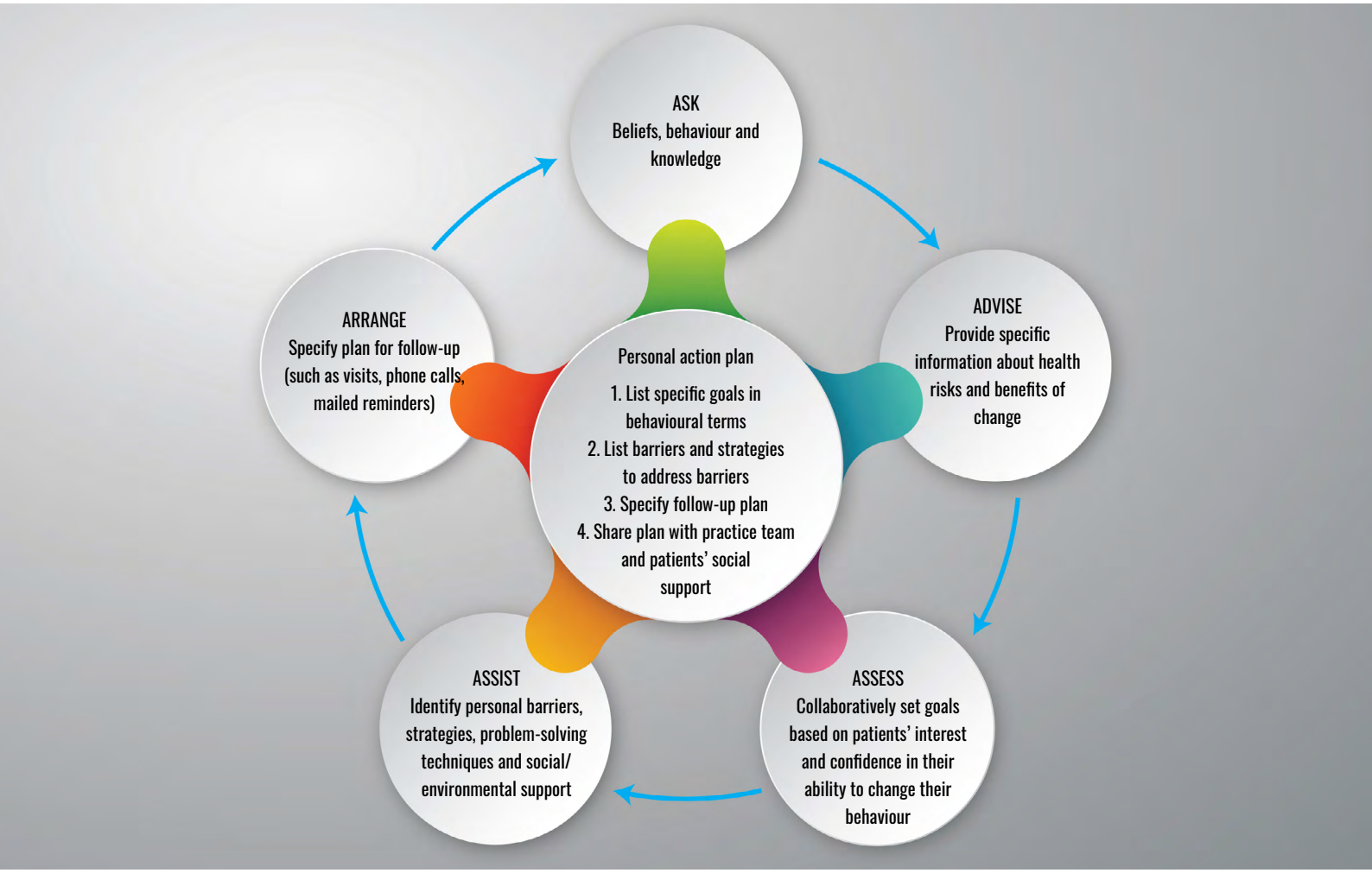
Sirdaryo region was selected as a pilot site for assessing the implementation of brief intervention programme because of its strategic location, bordering Kazakhstan, Tajikistan and the Jizzakh and Tashkent regions of Uzbekistan, and a balanced presence of both urban and rural populations, approximately 896 600 people.

Brief interventions in this context are being implemented at primary care level. Important components of the interventions include training of health service providers (HSPs) on how to:

- conduct brief behavioural change counselling using the 5 As toolkit – ask, advise, assess, assist, arrange (Fig. 6). If the patient is not yet ready to change their behaviour, the 5 Rs toolkit (*36*) – relevance, risks, rewards, roadblocks and repetition – is used to help them to go through the process of behavioural change;
- conduct supportive supervision; and
- use interactions during supportive supervision to provide feedback for improving the programme delivery.

Fig. 6

Five A's brief intervention model



Source: WHO *(36)*, adapted from Glasgow et al. *(45)*

Assessment of patients and counselling takes place during primary care visits in the form of face-to-face consultations, lasting between three and 20 minutes. These consultations are further guided by a clinical protocol which provides a step-by-step guide on how to implement CVDs risk assessment and stratification for adult patients attending primary care visits based on the WHO package of essential NCD (PEN) interventions protocols *(46)* and the HEARTS technical protocol for cardiovascular diseases management in primary care *(47)*. Based on the identified CVD risk groups, follow-up visits are scheduled by practising nurses together with patronage nurses who work jointly with *makhallas* [local communities] and conduct home visits for people with NCDs.

Brief interventions in Uzbekistan: managing structure

At national level, the planning of brief intervention programmes is overseen by a federal agency managing the State Compulsory Health Insurance Fund under the Cabinet of Ministers from the Ministry of Health in conjunction with the Centre for the development of professional qualification of medical workers that is responsible for training and introduction of modern medical technology for NCD prevention and control nationally.

At regional level, the Regional Health Department is responsible for the efficient implementation of brief interventions. Health commissioners and chief experts or main specialists, who are part of the Regional Health Department, participate in supportive supervision activities, such as training of physicians and nurses, monitoring and evaluation, data collection and data analysis.

At the primary health care (PHC) facility level, trained chief doctors, heads of departments and teams (comprising of a family doctor and nurses) established within the facility provide brief interventions to patients.

Brief interventions in Uzbekistan: implementation process and activities

In Sirdaryo region, a training programme on brief interventions was developed with the support of WHO to train health-care providers including physicians, family doctors/general practitionersand nurses at primary care level. The training was based on the PEN and HEARTS protocols developed by WHO and approved by the Ministry of Health and Department of Higher Medical Education. First, training-of-trainers workshops were conducted by WHO experts to train chief experts in endocrinology, radiology, internal medicine, primary care physicians and nurses. As a next step, these trainers carried out training with other health-care providers in the region. Supervisory visits were then carried out by the chief experts based at the Regional Health Department to provide support to health-care providers and monitor progress.

Structured indicators such as population coverage and assessment of cardiovascular risks are currently being monitored to track the progress of brief interventions, in addition to screening for diabetes, hypertension and other health conditions. Data from these indicators such as coverage of people with risk assessment for CVD and diabetes and prescription of medication for people aged 40 years and above is used to develop further educational and training programmes in Uzbekistan.

The brief intervention programme is planned to be scaled up to two additional regions in 2023 and multiple other regions by 2024, as per the President's direction *(37,38)*. As of February 2023, a total of 350 health-care providers (77 primary care physicians and 273 nurses) have been trained in the Sirdaryo region and there are ongoing plans to train another 325 health-care providers (46 primary care physicians and 279 nurses) later in the year.

Brief interventions in Uzbekistan: theory of change

Fig. 7 below describes the long-term goals for the implementation of the brief interventions and the interconnections within relationships among outcomes at the individual, community and primary care levels. The figure describes the key components of the brief interventions, key implementation strategies and the implementation outcome variables that are important for understanding the pathways leading from these interventions to population-level impacts.

The implementation pathway to achieve large-scale impact of brief intervention programmes operates through various intermediate and implementation outcomes at different socioecological levels, including individual-level changes such as reduction in alcohol use and smoking, increases in physical activity levels and changes in body mass index (BMI); community-level changes such as changes in the level of knowledge of NCD risks and changes in behaviours; and primary care-level changes such as in awareness of clinicians that provide counselling for NCD risk factors and changes in practice. These intermediate outcomes are mediated by implementation outcomes, including acceptance of the brief interventions by clinicians, patients and community members; adoption and adaptation of the interventions by clinicians; adherence (fidelity) to the WHO brief intervention protocols; coverage at eligible primary care practices and implementation costs. The main policy advocacy outcome that determines this pathway centres on readiness (human resources, technical and financial capacity) of the Ministry of Health, alongside resources and support from higher levels of government, other ministries and the WHO to implement this programme. It is important to highlight that some of these implementation strategies are currently not in place in Uzbekistan, for example:

- provision of performance guidelines;
- building capacity of clinicians to conduct quality improvement studies and to have a better appreciation for and use quality improvement data; and
- provision of performance incentives to clinicians to improve quality.

Similarly, there are currently no tools or mechanisms to systematically collect data and assess changes with time on the implementation outcomes such as:

- acceptability of brief interventions by clinicians;
- adherence (fidelity) to the WHO brief intervention protocols; and
- other outcomes identified along the implementation pathways as specified in the theory of change.

Further, some key assumptions may need to be empirically tested to explain impact pathways in Uzbekistan:

- the Ministry of Health and key stakeholders will prioritize brief interventions;
- clinicians possess availability and motivation to implement brief interventions; and
- most young people and adults in Uzbekistan attend PHC visits at least once a year.

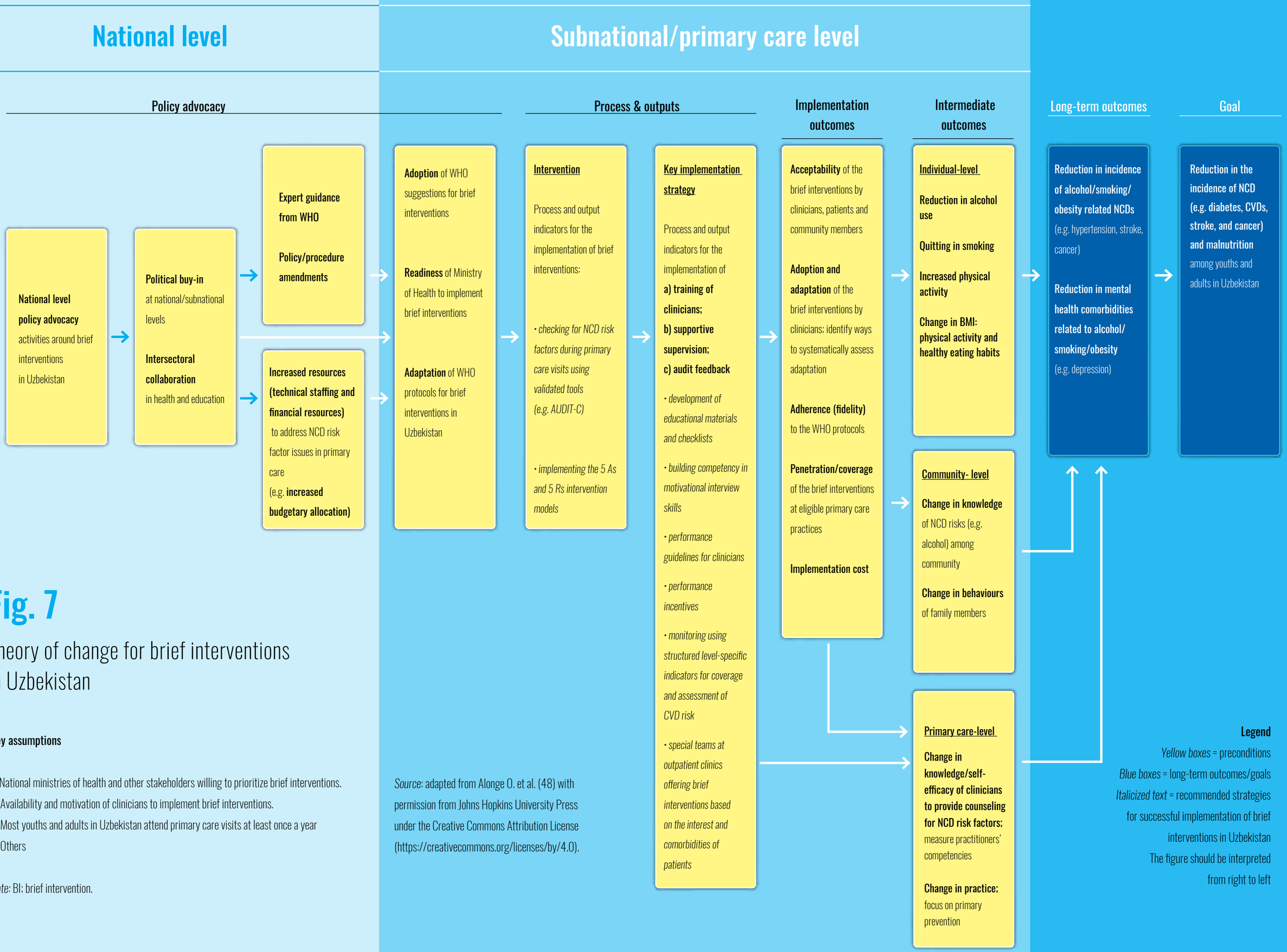


Fig. 7

Theory of change for brief interventions in Uzbekistan

Key assumptions

1. National ministries of health and other stakeholders willing to prioritize brief interventions.
2. Availability and motivation of clinicians to implement brief interventions.
3. Most youths and adults in Uzbekistan attend primary care visits at least once a year
4. Others

Note: BI: brief intervention.

Brief interventions in Uzbekistan: implementation barriers

Based on the key informant interviews, implementation of brief interventions programme is affected by the following factors:

- limited human resources within primary care;
- fragmented information system and inconsistent data collection and analysis;
- data collection is done manually on paper, resulting in inaccurate data entry and loss of data;
- excessive data are collected without further use;
- continuous monitoring is not ensured due to lack of expertise and implementation of quality improvement practices on an ongoing basis;
- perception among clinicians and health providers that data collected as part of the brief interventions can lead to sanctions; and
- lack of incentives to facilitate the additional work burden as part of the implementation process.

These challenges are consistent with the implementation gaps identified as part of the theory of change modelling exercise. Hence, it is important for challenges to be carefully considered and addressed through a participatory design and test of implementation strategies to move forward.

Brief interventions in Uzbekistan: policy considerations and next steps

- Assess the facilitators and barriers for the brief interventions based on theory of change.
- Design, package and test selected implementation strategies (including performance incentives) for addressing gaps in the theory of change, identified implementation challenges and systematic barriers that will be identified from the barrier assessments.
- Develop tools and mechanisms to systematically collect and analyse data and assess changes through time on the implementation outcomes (e.g. acceptability of brief intervention by clinicians, adherence to WHO brief intervention protocols) and other outcomes identified along the implementation pathways as specified in the theory of change for brief interventions in Uzbekistan.
- Build capacity of health providers in quality improvement methods for ongoing learning and improvement of the brief interventions implementation and strengthening health services delivery more broadly.
- Develop a plan to scale up brief interventions to other regions, including training, supervision mechanisms and quality improvement activities.

2.3.2 School nutrition policies to address the behavioural risk factors of NCDs in Uzbekistan

School nutrition policies in Uzbekistan: priority interventions

Priority interventions as part of school nutrition policies in Uzbekistan include the provision of healthy food for school-aged children through a school meal programme, and sale restrictions/prohibitions on the sale of foods in schools outside of the meal programme. These interventions were developed by the Government of Uzbekistan in consultation with relevant ministries and stakeholders, including parents and school administrative staff.

Under the programme, the provision of healthy food for each school is outsourced to contractors who provides healthy meals according to stipulated standards. The safe indicated daily food consumption provides the optimal ratio of nutrients: proteins, fats and carbohydrates ratio should be 1:1:4, respectively, and the ratio of calcium to phosphorus should be 1:1.5 *(49)*. Children studying at boarding schools received five meals a day while those at day schools received two.

School nutrition policies in Uzbekistan: implementation process and activities

Healthy meals for school-aged children are provided based on an approved monthly meal plan developed by a contractor in accordance with the established norms and standards set by the Ministry of Health of Uzbekistan.

Monitoring and enforcement measures are taken to ensure contractors' compliance with sanitary rules, norms and hygiene standards in terms of the food products, their preparation and equipment use; as well as to ensure that kitchen staff at schools comply with the established rules for working in a food preparation area. The main agency responsible for monitoring and enforcement of standards is the Sanitary–Epidemiological Welfare and Public Health Service under the Ministry of Health (since January 2023, officially known as the Sanitary–Epidemiological Welfare and Public Health Committee). The agency oversees any prohibition and standardization of food sold within schools but outside of school meal programmes, and takes part at the commission to organize tenders for selecting local food contractors. The contractor's selection is based on demonstrated quality, hygiene and safety requirements set by the committee.

The programme currently covers around 10% of school-aged children, as it is being implemented only in elementary and secondary schools that are part of the Agency for Presidential, Creativity and Specialized Schools under the Cabinet of Ministers of the Republic of Uzbekistan. It encompasses 141 specialized day schools and 19 specialized boarding schools in 12 regions of Uzbekistan. The government covers the cost of meals during the school days and as well as during the weekends and holidays for children studying at boarding schools.

In the pilot regions – Republic of Karakalpakstan and Khorezm region – the government covers meals once a day for children from the first to the fourth grades. There are plans to build another 25 specialized boarding schools by 2024, and also introduce the school meals programme to all schools to cover school-aged children 7–11 years old in Uzbekistan in 2023.

School nutrition policies in Uzbekistan: theory of change

Fig. 8 below describes the long-term goal for the implementation of school nutrition policies and the interconnection of relationships among outcomes at individual and school levels for achieving this goal. It describes the key components of the priority interventions as part of school nutrition policies, key implementation strategies and implementation outcome variables that are important for understanding the pathways leading from the interventions to population-level impacts.

The long-term goal for implementing school nutrition policies is to reduce incidence of NCDs among children, adolescents and adult population In Uzbekistan, by targeting improvements in metabolic measures (blood lipids, blood glucose, blood pressure) and reduction in the prevalence of overweight and obesity among school-aged children and adolescents. These policies are anticipated to improve at individual level the habitual consumption of the targeted food; nutrient content of foods consume; caloric intake/ and lead to changes in BMI (intermediate outcomes).

Intermediate outcomes at school level will be improvement of food safety (hygiene and sanitary standards), the nutritional practices in schools and restriction of access to unhealthy foods in school settings. These intermediate outcomes are mediated by implementation outcomes, including implementation adherence (fidelity) to the nutritional standards and implementation guideline by the food contractors, acceptability of the school nutrition policies interventions by students, parents, teachers and staff and sufficient coverage of the policies across eligible schools in Uzbekistan.

It is important to highlight that some of these implementation strategies are currently not in place in Uzbekistan, for example:

- training of contractors and provision of reference standards;
- performance guidelines; and
- incentives to guide the contracting process and quality improvement.

Similarly, there are currently no tools or mechanisms to systematically collect data and assess changes with time on the implementation outcomes, such as:

- acceptability of healthy meals by students, parents and administrators;
- adherence (fidelity) to nutrition standards and implementation plans; and
- other outcomes identified along, implementation pathways as specified in the theory of change.

Further, some of the key assumptions (for example, that national ministries of health and key stakeholders will prioritize school nutrition policies and availability and motivation of contractors and school personnel to implement school nutrition policies) may need to be empirically tested to explain the impact pathways in Uzbekistan.

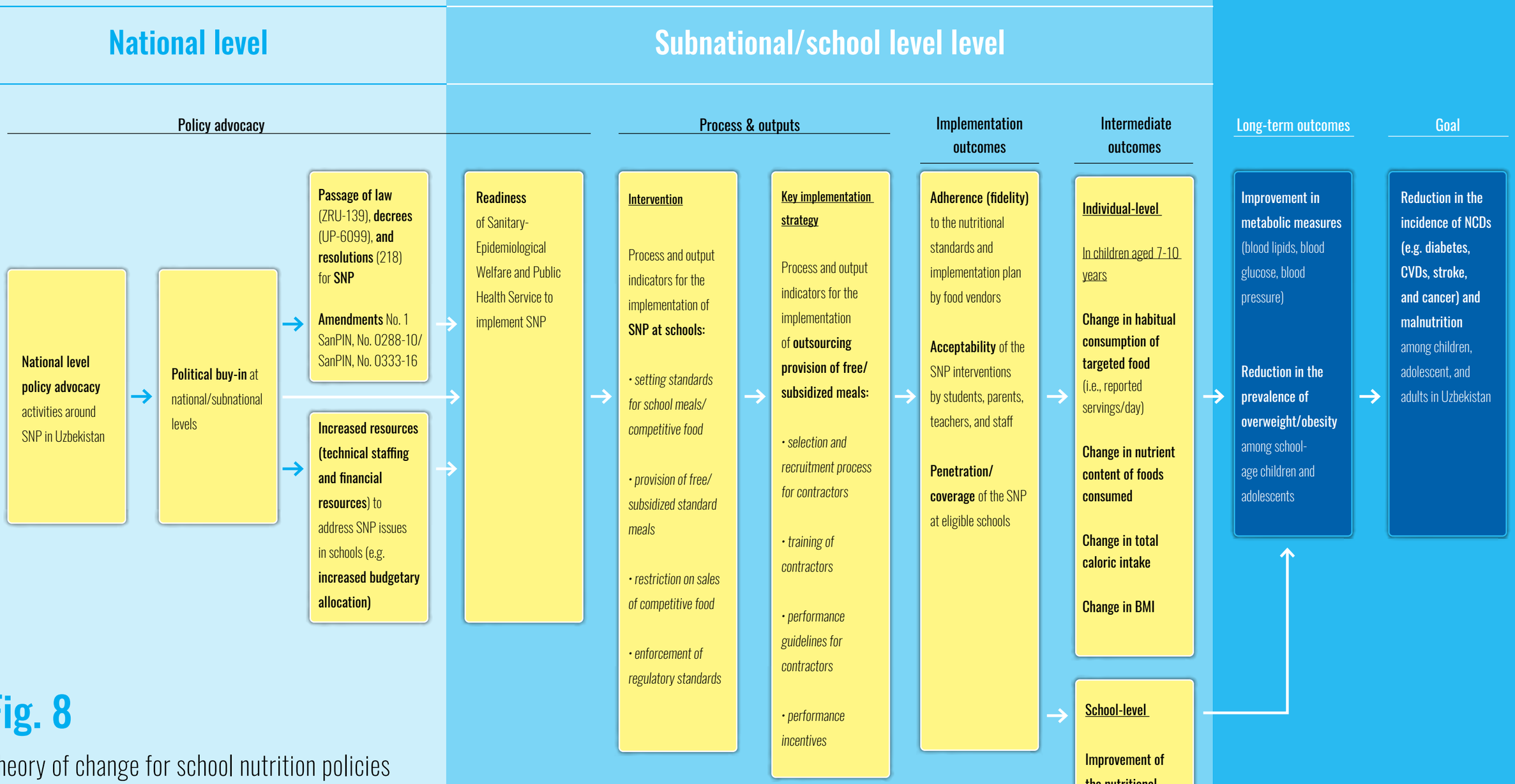


Fig. 8

Theory of change for school nutrition policies in Uzbekistan

Key assumptions

1. National ministries of health and other stakeholders willing to prioritize school nutrition policies.
2. Availability and motivation personnel connected with school environment to implement school nutrition policies.
3. Most children attend schools under the Agency for the Development of Presidential, Creative and Specialized Schools System.
4. Others

Note: SNP; school nutrition policies.

Source: adapted from Alonge O. et al. (50) with permission from Johns Hopkins University Press under the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0).

Legend

Yellow boxes = preconditions
Blue boxes = long-term outcomes/goals
Italicized text = recommended strategies for successful implementation ofschool nutrition policies in Uzbekistan
The figure should be interpreted from right to left

School nutrition policies in Uzbekistan: implementation barriers

Based on the key informants' interviews, implementation challenges to school nutrition policies included:

- limited governmental financial commitment to the programme;
- challenges in multisectoral coordination between the ministries of health and education;
- fragmented contracting arrangements for the provision of healthy meals;
- fragmented information system and irregular data collection to monitor the programme; and
- lack of a legislative framework to guide the enforcement and conduct of surveillance of the contracting services.

Hence, it is important for challenges to be carefully considered and addressed through design and testing of implementation strategies in order to move forward.

School nutrition policies in Uzbekistan: policy considerations and next steps

- Further define the priority interventions and strategies included in the school nutrition policies (e.g. define healthy meal plans by a reference standard, contracting and tender system and enforcement regimes, specify each actor's role, describe performance guidelines and incentive for different actors, describe the accountability system).
- Design, package and test selected implementation strategies (including performance incentives) for addressing gaps in the theory of change and the identified implementation challenges.
- Develop tools and mechanisms to systematically collect data and assess changes through time on the implementation outcomes (e.g. acceptability of school nutrition policies, adherence to performance guidelines) and other outcomes identified along the implementation pathways as specified in the theory of change.
- Build capacity of educators in quality improvement methods for ongoing learning and improvement of the school nutrition policies' implementation, and strengthening health service delivery more broadly.

2.3.3 School nutrition policies to address the behavioural risk factors of NCDs in Kyrgyzstan

School nutrition policies in Kyrgyzstan: priority interventions

The prioritized school nutrition policies in Kyrgyzstan consist of the provision of school meals to students in grades 1–4 at the state and municipal schools. The programme is implemented by the Kyrgyz government with technical support from the United Nations World Food Programme (WFP) and the Mercy Corps.

School nutrition policies in Kyrgyzstan: implementation process and activities

Among state and municipal schools in Kyrgyzstan, 74% are currently implementing the optimized school meal programme (also known as the hot meal programme). Technological charts (food/menu reference standards) were developed in 2016, and revised in 2019 by the Institute of Nutrition in the Russian Federation and approved by the ministries of health and Education of Kyrgyzstan. Schools are required to use these charts to develop menus guided by the recipes and information on the nutrient and caloric content for each dish. The programme is led by the Ministry of Education and Science in cooperation with the Ministry of Health and technical support from development partners such as WFP and the Mercy Corps. The intervention is funded and implemented through the district's Department of Education (DoE). The DoE administers relevant contracting tenders and oversees the contractors who are contracted to provide free meals according to the menu plans developed by the schools. The selection of contractors is administered by a committee established by the DoE and consisting of physicians, nurses and representatives from local government and educational authorities. The heads of local state administrations and local self-government bodies organize the purchase of food products in accordance with legislation on public procurement.

The remaining 26% schools do not provide free hot meals to students in grades 1–4 due to shortage of adequate kitchen equipment and supply of water and gas. Hot meals are substituted by a warm drink such as milk, tea and baked products. These schools are funded only with 7–10 som (US$0.08-0.13) per child per day directly provided from the government.

Although school nutrition policies were initiated so that schools could purchase food supplies independently, the initiative could not be implemented across all schools due to limited human resources and the requirement for additional staff to manage the tenders. The Ministers of Education and Health of Kyrgyzstan have suggested the cancellation of the tender system for the free meals programme and proposed instead to have independent stores/warehouses that could be certified to provide fresh foods to schools.

Parents and communities are actively engaged in many school programmes, and contribute with financial support for renovations, reopening of school canteens and provide input on the menus and meals offered to students. Monitoring revealed that students belong to varied socioeconomic status groups but most of them do not receive fruits and vegetables in their meals at home. Therefore, meals provided at school also need to be balanced and healthy to ensure positive impact on overall health.

School nutrition policies in Kyrgyzstan: theory of change

Fig. 9 below describes the long-term goal for the implementation of school nutrition policies and the interconnection of relationships among outcomes at the individual and school levels. The figure describes

the key components of the priority interventions as part of school nutrition policies, key implementation strategies and implementation outcome variables that are important for understanding the pathways leading from the interventions to population-level impacts.

The long-term goal for implementing the school nutrition policies is to reduce the incidence of NCDs (e.g. diabetes, CVDs, stroke and cancer) among children, adolescents and adult population in Kyrgyzstan by targeting reduction in the prevalence of malnutrition and anaemia. These policies are anticipated to improve at the individual level the habitual consumption of the targeted food, nutrient content of foods consumed, caloric intake and lead to changes in BMI (intermediate outcomes).

Intermediate outcome at school level will be improvement of the nutritional practices in schools (hygiene and sanitary standards) and restriction of access to unhealthy foods in school settings. Intermediate outcome at the community level will be change in knowledge attitudes and practices of community members with regards to nutrition, increased participation of local food vendors in the supply of school meals and change in local governance (allocation of additional funds for school nutrition ain their jurisdiction). These intermediate outcomes are mediated by implementation outcomes, including implementation adherence (fidelity) to the nutritional standards and implementation guideline by the food contractors, acceptability of the school nutrition policies interventions by students, parents, teachers and staff and community organizations and sufficient coverage of the policies across eligible schools in Kyrgyzstan.

It is important to highlight that some of these implementation strategies are currently not in place in Kyrgyzstan, for example:

- training of contractors and provision of reference standards;
- performance guidelines; and
- incentives to guide the contracting process and improve quality.

Similarly, there are currently no tools or mechanisms in place to systematically collect data and assess changes over time on implementation outcomes such as:

- acceptance of healthy meals by students, parents and school administrators;
- adherence (fidelity) to nutrition standards and implementation plans; and
- other outcomes identified along the implementation pathways as specified in the theory of change.

Additionally, some of the key assumptions (for example, national ministries of health and key stakeholders will prioritize school nutrition policies and availability and motivation of contractors and school personnel to implement school nutrition policies) may need to be empirically tested to explain the impact pathways in Kyrgyzstan.

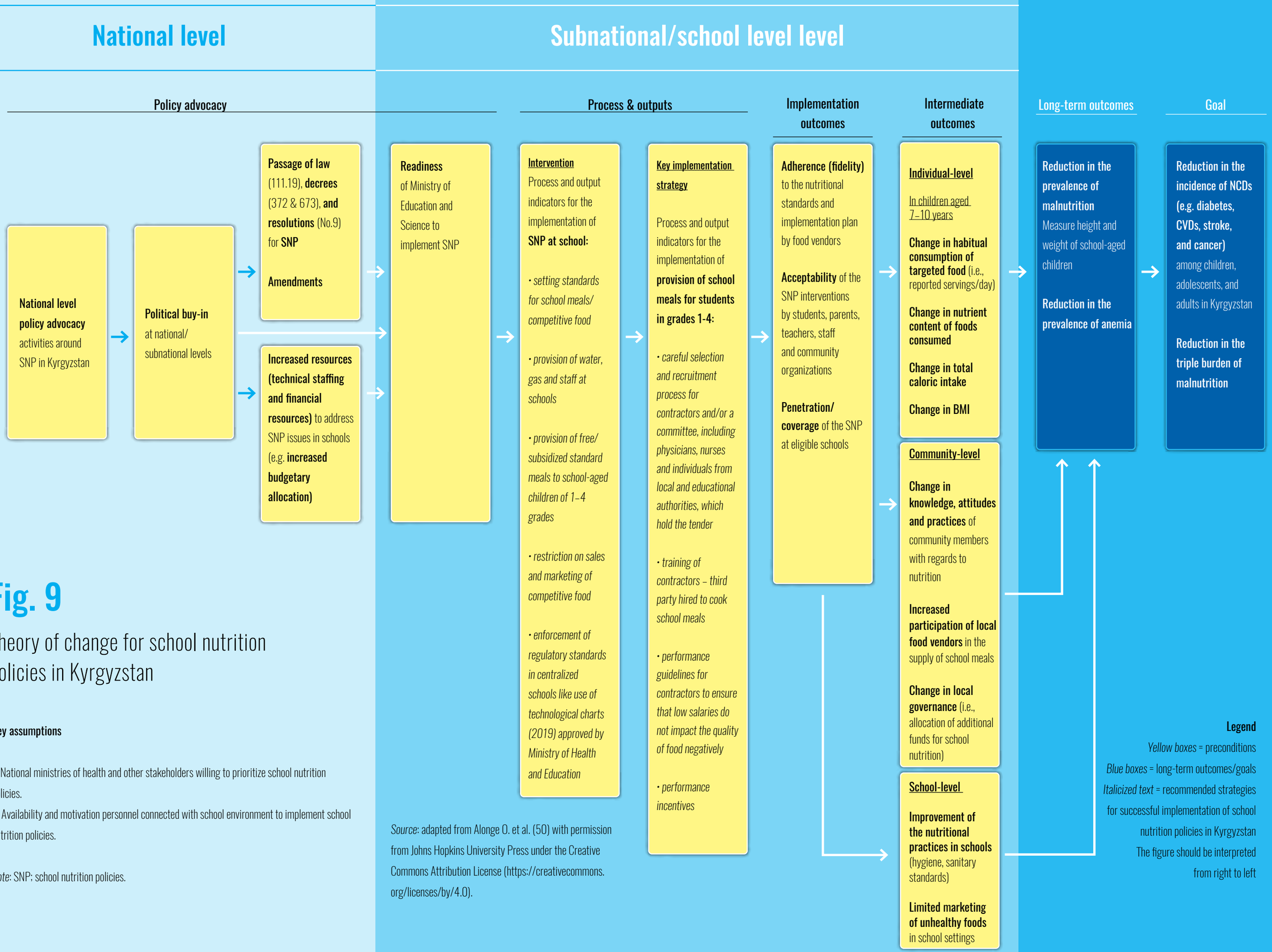


Fig. 9

Theory of change for school nutrition policies in Kyrgyzstan

Key assumptions

1. National ministries of health and other stakeholders willing to prioritize school nutrition policies.
2. Availability and motivation personnel connected with school environment to implement school nutrition policies.

Note: SNP: school nutrition policies.

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School nutrition policies in Kyrgyzstan: implementation barriers

Based on the key informants' interviews, implementation challenges to school nutrition policies included:

- fragmented contracting arrangements for the provision of healthy meals which results in inefficiencies and low quality of meals;
- inefficiencies in tender systems;
- lack of oversight of the activities of contractors and food standards;
- limited human resources and capacity;
- fragmented information systems; and
- inconsistent data collection to monitor and evaluate the programme.

Hence, it is important for the challenges to be carefully considered – and implementation strategies designed and tested to address these challenges moving forward.

School nutrition policies in Kyrgyzstan: policy considerations and next steps

- Further define the priority interventions and strategies included in the school nutrition policies (e.g. develop a healthy meal plan defined by a reference standard, define the contracting and tender system and enforcement regime, specify each actor's role, describe performance guidelines, including key performance indicators and incentive for different actors, describe the accountability system).
- Systematically assess the facilitators and barriers for the school nutrition policies based on the theoretical frameworks developed for the school nutrition policies as part of this pilot phase of work.
- Design and test selected implementation strategies (including performance incentives) for addressing gaps in the theory of change and the identified implementation challenges.
- Develop tools and mechanisms to systematically collect data and assess changes through time on the implementation outcomes (e.g. acceptability of school nutrition policies, adherence to performance guidelines) and other outcomes identified along the implementation pathways as specified in the theory of change for the school nutrition policies in Kyrgyzstan.
- Develop consistent monitoring and evaluation mechanisms to maintain standards across both state, municipal and private schools.
- Build capacity of educators in quality improvement methods for ongoing learning and improvement of the school nutrition policies implementation and strengthening health services delivery more broadly.
- Develop a plan for the scale-up of school nutrition policies, including training, supervision mechanisms and quality improvement activities.

2.3.4 Take-away messages

- The theory of change models for brief interventions in Uzbekistan and school nutrition policies in Kyrgyzstan and Uzbekistan identified key outcomes, implementation gaps and assumptions that should be addressed and targeted with implementation strategies to facilitate the effective large-scale implementation of these interventions in both countries.
- There are significant health system challenges, including limited human resources and capacity to use data, poor/outdated data systems, lack

of accountability of contracting and tender processes and challenges with coordinatieon among different relevant sectors, all of which call for multisectoral action.

- The identified pathways, theories and IR outcomes will facilitate systematic learning and evaluation of NCD prevention and control programmes.

2.4 Capacity-building component

There is a common agreement that stakeholder engagement is vital to enhance policy knowledge and improve processes of implementation. Nonetheless, actively engaging stakeholders is a persistent challenge and can hamper opportunities for meaningful engagement between researchers and policy-makers, usually impaired due to a lack of capacity for stakeholder engagement and shaped by limited financial resources, time and leadership interest *(36)*. However, the benefits that result from consistent and close engagement between community members, multiple actors, HSPs and researchers can result in a unified vision to work towards common goals during policy-making and implementation plans and processes. Creating sustainable engagement and strengthening partnerships between researchers and policy stakeholders may reduce the gaps between theoretical models and on-the-ground capacity for effective implementation *(36)*.

For these reasons, the IR pilot projects were closely accompanied by capacity-building activities for the stakeholders identified for the research component, as well as other national stakeholders with an interest on the topic of IR (Box 2). These activities included:

Seminar series on IR

The seminar series had the aim of introducing national stakeholders to research projects that applied an IR approach in practice. The online seminar series took place from September–October 2022 and comprised four lectures on the following topics:

- policies promoting healthy school foods;
- advancing UHC through IR;
- training IR in Rwanda: evaluation, challenges and lessons learned; and
- IR: strategies and process for stakeholders and community engagement.

Each session started with a presentation introducing the topic and was followed by a group session where participants were divided into small groups and had the opportunity to apply research methods relevant to the topic and context they were familiar with. The meetings were held in English and Russian languages with simultaneous translation if needed.

Massive open online course on IR

A six-week massive open online course (MOOC) course in Russian on basic methods of IR was offered to the participants. This course was developed by TDR, adapted for NCDs and translated into Russian. The course was offered in collaboration with Astana Medical University experts, who moderated the discussion in the online forum. Every week, a new session was uploaded and participants could study it at their own pace. The estimated workload per session was one hour. The last two weeks covered the development of an original research proposal in teams. During the course, participants had the opportunity to discuss and engage with other colleagues in the online forum. At the end of the successful completion of the course, participants received a certificate.

Box 2. IR capacity-building workshop in Kyrgyzstan, 2022

In June 2022, the WHO Regional Office for Europe organized a subregional workshop in Bishkek, Kyrgyzstan, to introduce the key IR concepts and methods to support countries to prevent and tackle NCDs in the central Asia and Caucasus regions. This workshop presented a practice-oriented overview of the IR approach, of experiences on IR in the regions and of the opportunities that this approach can offer to address NCDs. Participants from Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan explored practical tools and became familiarized with how to use them by engaging in group work and discussions.

During the workshop discussions, country representatives acknowledged IR as a useful tool to put research results into practice and to identify and overcome implementation barriers. However, insufficient capacity for IR in the regions was discussed as a major barrier. It was agreed that IR could be useful for the assessment and refinement of existing ongoing programmes as well as for introduction of new projects or programmes. Further discussions in the workshop emerged around the existing barriers for the adaptation and implementation of the WHO best buys and other suggested interventions, as more research from low- and middle-income countries is needed to inform and support these processes.

Besides lectures and discussions, participants had the opportunity to work in small groups to identify NCD-related topics and a real-life interventions or bottlenecks within the programme in their countries that could be evaluated with the use of an IR approach. Participants also gained practical experience in IR by developing a logic model describing the immediate and intermediate outcomes and long-term impacts of the research on the following topics identified by the participants:

- low awareness concerning healthy nutrition among students;
- sedentary lifestyles and lack of physical activity;
- harmful effects of alcohol;
- high mortality rate from CVDs due to arterial hypertension;
- challenges in optimization of early childhood nutrition;
- cervical cancer; and
- consumption of SSBs.

Participants called for consultative support in conducting joint IR at country level, where youth involvement in IR was particularly encouraged. The applied methods, in this case the theory of change, should serve as a useful tool; therefore, it should be revised and adapted to participants' needs.

The subregional workshop was followed by a technical meeting with the representatives from the pilot countries of the IR projects: Azerbaijan, Kyrgyzstan and Uzbekistan, where stakeholder engagement was recognized as one of the key factors of IR success and overall outcomes of the projects were discussed.

To provide support to Member States in stakeholder mapping, StakeholderNet was introduced to the participants. This tool is intended to identify key stakeholders in the project, who they engage with, analyse gaps and opportunities within the identified stakeholder network and specify the types of connections among all stakeholders. The tool can foster better understanding of the structure and operation of

the stakeholder network to improve its efficiency, effectiveness and sustainability.

Outputs of this technical meeting will become a basis for stakeholder surveys in each country's IR project. Data captured within this process would allow production of visualized materials such as graphical layouts of stakeholder network, diagrams and charts.

The main outcomes of pilot projects include practical suggestions to improve implementation of policy/intervention in countries, publications, project reports, establishment of networks for IR at local, subregional and international levels and increased capacity and knowledge on IR. Participants recognized that IR is a useful tool when applying research evidence to practice and identifying and overcoming implementation barriers. However, it is still hindered by the limited capacity in WHO regions, which is only now starting to grow as national research institutions begin to explore the IR approach.

2.4.1 Take-away messages

- Customized online capacity-building seminars on IR with basic principles and concepts were highly appreciated by participants at the beginning of the pilot projects and contributed to national capacity-building.
- IR project teams can benefit from existing informational resources such as MOOCs on IR and StakeholderNet.
- Participants called for consultative support in conducting joint IR at country level, where youth involvement in IR was particularly encouraged.

2.5 Lessons learned from the project

Countries face distinctive challenges in implementing NCD policies and recommendations and IR conducted on the ground could help to overcome barriers and accelerate implementation *(51)*. Based on the experience collated during the pilot phase of the IR projects the following aspects for further discussion emerged.

The balance between different stakeholders' interests as well as management of various expectations requires careful attention

IR involves bringing together a broad variety of stakeholders from different backgrounds. Close engagement with stakeholders from the early stages of the project provides several benefits which positively distinguishes this approach from more traditional

BOX 2

research methods. However, potential conflicts of interest can emerge and need to be carefully considered throughout and addressed from the beginning.

One challenge could be the differing interests and goals of people from different sectors involved in the process, namely between researchers, practitioners and policy-makers. For researchers, as described in the literature, participation in the IR process can be challenging on many levels: academic structures may not prioritize implementation in real settings and it may be more challenging to publish papers focused on IR *(52)*. This is in line with observations from the pilot projects and discussions with the researchers involved, where the high level of time required for the projects was also identified as a barrier. In addition, working in IR requires a shift in mindset from classical research where the researcher is the main actor, towards a more participatory approach where the practitioners are in the driving seat.

For practitioners working hands-on on the topic of concern, involvement in a research project has been described to lead to confusion around scientific language and theoretical concepts. For example, certain challenges emerged related to understanding and using terms such as outcome and output (first, where definitions may be unfamiliar to participants, and secondly, where understanding may be further complicated by the interchangeable usage of such terms, particularly under translation). Another obstacle emerged in connection with timing and social norms; in particular, the available time required to build connections in a research group and formality of interaction *(53)*. This was also observed during these IR projects, including uncertainty regarding methodology and underpinned theoretical concepts, requests from stakeholders on clear practical implications and recommendations they could take for their work and tangible results which could be applied in practice as an outcome of the project.

Policy-makers require solutions that are context-sensitive, relevant and well-timed in order to be able to assimilate and apply information *(54)*. Engagement in a long process, including several rounds of discussions with stakeholders and capacity-building exercises, can be challenging to align with policy-makers' needs and requires additional investment into maintaining levels of motivation and involvement from the project team.

These conflicting interests and barriers need to be carefully considered when planning a project, and there is a need to revise plans on a regular basis and maintain close consultation with stakeholders to make sure that activities meet their needs. It is essential that research outcomes are meaningful and relevant for country stakeholders. A bottom-up participatory approach and prior advocacy activities could also ensure the required level of engagement and high level of interest and motivation later in the project's span.

Changing contexts and circumstances may hamper the implementation of the project

As IR operates in a real-life setting, changes in any social, cultural, political, economic or ecologic determinants require immediate adaptation of the project.

During the pilot phase of the IR projects, the WHO European Region experienced a humanitarian crisis which led to severe consequences for all countries *(55)* and this had particular impact on the global food supply chain. Rising costs for food and energy were of major concern for the teams working on the school nutrition policies project and forced them to readapt to the situation. As the core team involved had limited expertise in food security, external support was sought to complement the knowledge and ensure appropriate adaption of the project. Therefore, the team was able to critically evaluate and adapt the approach taken to make it relevant for the new and unexpected emerging challenges.

Overcoming the language barrier in an emerging field and operating online can be challenging

As the vast majority of the resources on IR are presented in English, translation and adaptation of the materials to other languages can pose additional challenges.

The working language for the pilot IR projects in Kyrgyzstan and Uzbekistan was Russian; however, there are limited resources available on IR in this language. Therefore, there are few materials that participants could refer to for further information and/or for distribution of the content in their national settings. Some of the other pressing issues in this regard are related to the terminology, as there is currently no agreed term for the interpretation of "implementation research" and other technical terms, such as "outcomes" or "outputs", which were sometimes interpreted interchangeably when translated from English into Russian.

This barrier has been described in other fields of research before *(56)*; nevertheless, there have been very limited efforts made to address this gap.

One of the ways the WHO Regional Office for Europe sought to overcome this barrier was by creating capacity-building opportunities and collaborations with other WHO teams that work on similar topics with Russian-speaking countries. These joint efforts to connect experts on IR with national leading research institutions, as well as investment in high-quality translation of existing materials will, lead to increased availability of the resources and support the capacity on IR in the WHO European Region.

Moreover, these projects were launched and conducted during the COVID-19 pandemic; therefore, the majority of interactions with stakeholders was held online. Even although simultaneous translation services were provided, limited stakeholders capacity in the area of IR, ununified and highly scientific terminology of the field and a lack of additional resources in Russian language were further amplified by the online nature of the interactions, which jeopardized understanding and hindered informal collaboration and in-depth engagement.

2.5.1 Take-away messages

- The balance between different stakeholders' interests as well as management of various expectations requires careful attention during the whole process of project implementation.
- Changing contexts and circumstances may hamper the implementation of the project, entail changes and require adaptability.
- Overcoming the language barrier in an emerging field, operating online and capacity-building processes can be challenging and require additional time and resources.

3. Conclusion and outlook

This report provides examples of IR tools, strategies to improve stakeholders' involvement, capacity-building activities and the main research outcomes and lessons learned from the pilot projects in Kyrgyzstan and Uzbekistan, which can serve as an inspiration for both the participant countries and for other countries at the regional and global levels. It also includes insights obtained from the theory of change that was developed to identify the relevant implementation strategies and IR outcomes in real time to improve the implementation of brief interventions and school nutrition policies in both countries and understanding of the pathways leading from the intervention to the impact.

The main results from the report provide evidence that the development of countries' capacities to implement sustainable and effective health interventions at scales are often limited by financial resources, weak and unreliable data collection approaches and lack of monitoring systems, little awareness on how to lead effective implementation of interventions, weak multisectoral coordination and lack of regulatory framework to enforce the quality of delivery of health programmes and services.

Several recommendations are worth contemplating, taking into consideration the local context of the intervention. Countries can assess the facilitators and barriers identified in their interventions and programmes using a theory of change and IR approach to identify challenges, systematic barriers and gaps. This can potentially lead to the development of tools and mechanism to systematically collect and analyse data and assess changes through time of the implementation outcomes (e.g. use of WHO guidelines and technical tools) and other outcomes identified along the implementation pathways as specified in the theory of change. Employing IR approaches will build capacity of health providers and policy-makers, which may lead to quality improvement methods for ongoing learning and strengthening health services delivery more broadly and scale up interventions to other regions, including training, supervision mechanisms and quality improvement activities.

IR requires the involvement of multiple stakeholders from varying sectors and backgrounds and results in a number of positive outcomes for the prioritization of effective implementation across real settings and the development of evidence for research and practical purposes. However, in practice the participatory approach and involvement of researchers, policy-makers and politicians is far from being a smooth process; therefore, a high level of leadership and shift mindset of the participants is needed throughout these projects. Scientific language may also pose challenges in establishing effective collaboration between practitioners and policy-makers and requires

additional investment towards maintaining high levels of motivation and involvement at country level and with implementation researchers and national leading research institutions within and outside the country.

IR projects are unique in the sense that they operate in a real-life setting, which means that changes in any social, cultural, political, economic or ecologic determinant require an immediate adaptation of the project and that the participants involved in the project be flexible in adapting to and meeting these unexpected emerging challenges.

The WHO Regional Office for Europe has sought to provide intense capacity-building opportunities and collaborations at country level and to provide Russian-speaking countries with world-renowned experts on IR and national leading research institutions. The NCD Office will continue to increase awareness in investing in high-quality translation of current IR materials to increase the availability of the resources in Russian-speaking countries, to support opportunities for meaningful engagement between researchers and policy-makers and to reduce the gaps between theoretical approaches and on-the-ground capacity for effective implementation of NCD and NCD risk factor interventions across central Asian countries and the WHO European Region.

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Annex 1. Practical steps for stakeholder engagement: how is it done?

Selection of stakeholders

Identifying a core team of champions

Identify two to three experts on the field/topic of intervention. They must be passionate individuals who are genuinely interested in the topic so that their interest for improving and strengthening the implementation process can move forward and serve as a natural force to motivate the rest of the team. A successful core team depends on available capacities within the country and agency involved, interest in the topic, structural factors including hierarchies, as well as individual factors such as personality and motivation.

Identifying the broader group

After the core team of champions is established, they may use their existing networks to identify suitable candidates. The broader group can include 10 to 15 people.

It is vital that the group is well represented by:

- **Researchers:** individuals with a scientific background e.g. senior researchers or professors, who can act as leaders and multipliers but also junior researchers with basic knowledge and understanding on research methods (training can be provided to build up their expertise).
- **Providers:** individuals that are deeply involved in their field and have a pragmatic and broader understanding of the real-world obstacles across implementation, e.g. teachers and other school staff members for school nutrition policies or health-care professionals for brief interventions.
- **Management:** individuals working at management level can identify the practical constraints in planning resources for conducting interventions at local level e.g. chief of medical facilities for BIs, headmasters or administrative managers for school nutrition policies.

- **Public policy officers:** individuals who are responsible for decision-making. They can share their perspective on obstacles from a macro perspective; consider involving policy-makers of different levels, e.g. national and subnational levels, if appropriate.

Representatives from the following groups might be an asset for the team, however this will depend on existing networks and structures in the country.

- **People concerned:** these individuals might provide helpful insight on the perspective of those affected by the intervention; the best option would be to involve representatives from recognized organizations, e.g. patient representative groups for brief interventions; schoolchildren or parents groups for school nutrition policies; consider involving affected people or the public directly.

- **Advocacy:** individuals with experience in advocacy (e.g. from nongovernmental organizations) might be helpful for disseminating the results and/or for highlighting certain topics of concern (e.g. the perspective from disadvantaged groups).

- **Public health services:** representatives from public health services interested in the topic should be involved to support the uptake of the results in practice and policy.

- **Payers:** representatives from health insurance companies might have an interest in these processes, particularly on brief interventions; however, their involvement might bring some conflict of interests that should be cautiously considered.

Additional groups can be identified by asking the following questions:

- who will be involved in the implementation of the intervention?
- who will be served or affected by the intervention?
- who is intended to use the results of the research process?

Other steps to consider:

- Aim for a balanced representation of different age groups, gender and professional backgrounds and disciplines. Also, consider other underrepresented groups such as those that may experience health inequities.
- The composition of the group can be dynamic and flexible if needed.
- Due to limited resources practicality aspects should be considered (e.g. not enough time of stakeholders to participate in the training) but alternative ways for engaging stakeholder can be identified (e.g. participation only in discussion rounds without training modules or individual consultation).

Case study 1

Stakeholder involvement in IR within the REDRESS Programme (strengthening people-centred health systems for people affected by severe stigmatising skin diseases in Liberia)

REDRESS is a demand-driven implementation research (IR) study based in Liberia, West Africa, which seeks to strengthen integrated care for people affected by skin neglected tropical diseases (NTDs). REDRESS centres the co-production of knowledge and has core values to facilitate these processes including trust-building equity and joint ownership to support meaningful stakeholder involvement within IR. REDRESS demonstrates the eight characteristics of IR *(1)*, through the adoption of United Nations Children's Fund (UNICEF) core community engagement standards *(2)*.

Jointly led by the Liberian Ministry of Health, research and implementing partners and people with lived experience of skin NTDs, REDRESS involves a range of 'communities'. Relevant stakeholders were mapped to ensure inclusion of people caring for and affected by skin NTDs and potential avenues for engagement (see Fig. A1.1).

Community advisory boards include multistakeholders such as representatives of people with lived experience, health workers at different levels of the health system, informal providers (including faith and traditional healers) and more typical decision-makers (Country Health Team). These boards enable two-way communication to review findings and provide guidance to ensure IR is context specific to county level needs.

Ministry of Health technical advisory boards provide platforms to build on local capacity, ensuring multidisciplinary collaboration, for adaptability and localization of existing interventions within the Liberian context, such as the integration of mental health within case management for people affected by skin NTDs.

Fig. A1.1.

Priority avenues for community engagement

1. Establishing community advisory boards within each Implementation county and at national level

2. Establishing a Ministry of Health technical advisory board which inludes key stakeholders from relevant divisions within the Ministry of Health

3. Involving people affected, and other community actors as peer researchers

4. Using participatory methods to elevate and listen to community voices

5. Sharing learning with other NTD actors and the general public in Liberia and beyond

Source: REDRESS Liberia

IR within REDRESS is grounded in the real world through empowerment and ownership among people affected by skin NTDs and community level stakeholders with their active participation throughout all stages of the participatory action research cycle and their role as co-researchers.

REDRESS uses quantitative, qualitative and participatory methods fit for purpose. Power and gender differentials are considered and minimized through participatory methods, to elevate often unheard yet critical voices for the care and support of people affected by skin NTDs, e.g. traditional and faith healers.

Maintaining a focus on IR process and outcomes guides REDRESS to capture best practices in the introduction of new interventions. Short feedback loops encourage real time adoption of learning within the Ministry of Health, Liberia, policy and programming and regional and global networks.

REDRESS maintained demand-driven and real-time focus by responding to local health systems needs for COVID-19 related research. REDRESS sought to involve stakeholders in these ways to ensure research is relevant to and co-produced with people affected and responds to needs within the health system and community.

Sourse of case study: www.redressliberia.org

Case study 2

Over-prescription of antibiotics for acute conjunctivitis: stakeholder mapping exercise on appropriateness of antibiotic prescribing for acute conjunctivitis at a specialist eye hospital in Ghana

Antibiotic prescription remains standard practice for curing conjunctivitis that usually heals within 14 days without any medication in uncomplicated cases. Antibiotic resistance has become a public health concern and overuse and inappropriate use of antibiotics is known as a driven factor. This study assessed the use of antibiotic prescription patterns in managing acute conjunctivitis in an eye hospital in Ghana *(3)*.

Methods: researchers extracted data from 201 cases identified as acute conjunctivitis in the electronic medical records at a pilot hospital for the period January to December 2021 and selected all cases with prescribed antibiotics. Use of antibiotics was deemed appropriate in the case of acute bacterial conjunctivitis. Where an antibiotic was prescribed, further assessment was done to determine the AWaRe classification:

Access	First line antibiotics Low resistance potential
Watch	Critically important antibiotics High resistance potential
Reserve	Antibiotics for multidrug-resistant organisms Last-resort antibiotics

Findings: the 55% use of antibiotics in acute conjunctivitis is in line with an expected 50% of possible bacterial causes warranting treatment. However, among patients who received antibiotics, 28.8% were inappropriately prescribed. Furthermore, 56% of the antibiotics prescribed were in the "Watch" category.

Implications and recomendations: the high usage of "Watch" category antibiotics increases the risk of antibiotic resistance. The hospital leadership is advised to run continuous professional development courses for the prescribers to increase awareness of the dangers of overuse of "Watch" category antibiotics. At the pilot hospital (BAMCEC) an antibiotic stewardship team should be established to offer guidance and monitor the use of antibiotics to ensure compliance with best practices. The Ghana Eye Care Secretariat and the National Antimicrobial Resistance team should mandate other eye care practices to replicate this study to strengthen the body of evidence on prescription practices (for acute conjunctivitis) in Ghana.

The scope of the project included publishing an academic article, developing a policy brief based on the publication, the stakeholder mapping template and a description of knowledge management resources for communication, advocacy and research uptake such as:

- A stakeholder map and communication 'plan of action' to identify key decision-makers and influencers that need to be aware of the research.
- A one-page summary handout which is a plain language of the research findings and its implications. It is written in a manner that allows the research to be quickly understood and followed up for more information as required.
- A technical presentation on PowerPoint in less than 10-minute developed on video for use in meetings, conferences and committee meetings.
- A shorter, less than 3-minute presentation for use in meetings and plenaries when time is short and the opportunity is to give key messages and encourage follow-up.
- A written script for a short oral presentation (Elevator Pitch) lasting about one minute. This is intended for use in opportunistic one-to-one conversations when meeting people briefly for example at an event.

The **policy brief** developed for this case study included the following key messages.

- Antibiotics, although often not needed, are overprescribed in acute conjunctivitis which could lead to antibiotic resistance;
- At BAMCEC a high percentage of antibiotics prescribed belong to the category recommended for only specific, limited indications due to their high potential for resistance ("Watch").
- The irrational use of topical antibiotics in managing acute conjunctivitis could lead to antibiotic resistance and increase costs of care for patients and the health system.
- Prescribers need to be sensitized to the WHO aim that less than 40% of the antibiotics prescribed should be from the category "Watch".

References

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2. Minimum quality standards and indicators in community engagement. New York: United Nations Children's Fund; 2020 (https://www.unicef.org/mena/media/8401/file/19218_MinimumQuality-Report_v07_RC_002.pdf, accessed 28 August 2023).
3. Hope PKF, Lynen L, Mensah B, Appiah F, Kamau EM, Ashubwe-Jalemba J et al. Appropriateness of antibiotic prescribing for acute conjunctivitis: a cross-sectional study at a specialist eye hospital in Ghana, 2021. Int J Environ Res. 2022;19(18):11723. doi: 10.3390/ijerph191811723.

Annex 2. Protocols/forms for IR

Brief interventions for NCD risk factors in primary care

Section A. Defining brief intervention
Brief intervention (BI) BI is a set of intervention components usually implemented in a primary care setting to initiate change in an unhealthy behaviour or reduce a disease risk factor e.g. smoking, alcohol misuse and obesity. In this worksheet, **unhealthy behaviour** refers to the substance use or risk factor being targeted by the intervention.
A.1. What unhealthy behaviour does your intervention hope to address? Select all that apply
☐ Alcohol use ☐ Smoking ☐ Obesity ☐ Other (please specify)
For each unhealthy behaviour selected, please complete the following questions:

Unhealthy behaviour: alcohol use
A.1.1 What is the definition you are using to identify and describe this unhealthy behaviour?
A.1.2. What resource(s) did you use to help you develop this definition?
For the *assessment* component
A.1.3. What are the questions that are used to identify the unhealthy behaviour?
A.1.4. Why did you choose this process for asking the assessment questions?
A.1.5. What resource(s) were used to develop these questions?

The following questions are meant to describe the methods and process by which the assessment questions are administered	
A.1.6. Who is responsible for asking the assessment questions?	
A.1.7. What steps does this person follow when asking the assessment questions?	
A.1.8. Who are the assessment questions directed to?	
A.1.9. How do you decide when to use the assessment questions?	
A.1.10. How is the assessment conducted? (e.g. face-to-face, by telephone, etc.)	
A.1.11. How many questions are included in this assessment?	
A.1.12. How much time does the individual spend asking these assessment questions?	

For the *brief intervention* component	
A.1.13. What is the intervention being used to address this specific unhealthy behaviour?	
A.1.14. Why did you choose this specific intervention?	
A.1.15. What resource(s) were used to identify this intervention?	
The following questions are meant to describe the methods and process by which the brief intervention is delivered	
A.1.16. Who is responsible for giving the intervention?	
A.1.17. What steps does this person follow to deliver the intervention?	
A.1.18. What is the intended target of the intervention? i.e. does the intervention target the individual, the community, or other defined group?	
A.1.19. How is the intervention conducted? (e.g. face-to-face, by telephone, etc.)	
A.1.20. What is the dosage of the intervention? Depending on the intervention, please specify the amount, the frequency and/or intensity.	
A.1.21. How much time does the individual spend asking these assessment questions?	
The following questions are meant to describe any pilot-testing, implementation process, and/or evaluation plan for this particular BI	
A.1.22. Please describe the pilot testing plan, if any.	
A.1.23. If additional implementation plan(s) are to be used that were not previously described, please describe them here. Note, please include details of how the team became aware of this particular problem, identified and prepared the appropriate intervention, and chose to implement it. Also, please use the components described in Figure 1 to guide your description of the context.	
A.1.24. Is there a quality improvement plan included for this BI? If yes, please describe.	
A.1.25. Is there an evaluation plan prepared for this BI? If yes, please describe.	
A.1.26. What is the current status of the intervention? Please include details regarding current coverage (number of providers using this BI or target population receiving the BI) and quality of implementation of the BI.	
A.1.27. Is there a plan for scale-up? If yes, please describe.	

The following questions are meant to document the rationale and evidence used to select the BI and its implementation strategies	
A.1.28. Please describe the current burden of the substance use or health behaviour being targeted (e.g. prevalence of excessive alcohol drinking). Note, if possible, please include detailed estimates at the subnational level, and/or comparisons with neighbouring states and global averages.	
A.1.29. Please describe the evidence available for this particular BI and implementation strategies within the country. Note, this includes details, population studied, and effective size.	
A.1.30. If not previously mentioned, please list the data sources used for tracking implementation of the BI and its impact.	

Unhealthy behaviour: smoking	
A.2. What is the definition you are using to identify and describe this unhealthy behaviour?	
A.2.1. What resource(s) did you use to help you develop this definition?	
For the *assessment* component	
A.2.2. What are the questions that are used to identify the unhealthy behaviour?	
A.2.3. Why did you choose this process for asking the assessment questions?	
A.2.4. What resource(s) were used to develop these questions?	
The following questions are meant to describe the methods and process by which the assessment questions are administered	
A.2.5. Who is responsible for asking the assessment questions?	
A.2.6. What steps does this person follow when asking the assessment questions?	
A.2.7. Who are the assessment questions directed to?	
A.2.8. How do you decide when to use the assessment questions?	
A.2.9. How is the assessment conducted? (e.g. face-to-face, by telephone, etc.)	
A.2.10. How many questions are included in this assessment?	
A.2.11. How much time does the individual spend asking these assessment questions?	

For the *brief intervention* component	
A.2.12. What is the intervention being used to address this specific unhealthy behaviour?	
A.2.13. Why did you choose this specific intervention?	
A.2.14. What resource(s) were used to identify this intervention?	
The following questions are meant to describe the methods and process by which the brief intervention is delivered	
A.2.15. Who is responsible for giving the intervention?	
A.2.16. What steps does this person follow to deliver the intervention?	
A.2.17. What is the intended target of the intervention? e.g. does the intervention target the individual, the community, or other defined group?	
A.2.18. How is the intervention conducted? (e.g. face-to-face, by telephone, etc.)	
A.2.19. What is the dosage of the intervention? Depending on the intervention, please specify the amount, the frequency and/or intensity).	
A.2.20. How much time does the individual spend asking these assessment questions?	
The following questions are meant to describe any pilot-testing, implementation process, and/or evaluation plan for this particular BI	
A.2.21. Please describe the pilot testing plan, if any.	
A.2.22. If additional implementation plan(s) are to be used that were not previously described, please describe them here.	
A.2.23. Is there a quality improvement plan included for this BI? If yes, please describe.	
A.2.24. Is there an evaluation plan prepared for this BI? If yes, please describe.	

A.2.25. What is the current status of the intervention? Please include details regarding current coverage (number of providers using this BI or target population receiving the BI) and quality of implementation of the BI.	
A.2.26. Is there a plan for scale-up? If yes, please describe.	
The following questions are meant to document the rationale and evidence used to select the BI and its implementation strategies	
A.2.27. Please describe the current burden of the substance use or health behaviour being targeted (e.g. prevalence of smoking among youth). Note, if possible, please include detailed estimates at the subnational level, and/or comparisons with neighbouring states and global averages.	
A.2.28. Please describe the evidence available for this particular BI and implementation strategies within the country. Note, this includes details such as setting, population studied, and effective size.	
A.2.29. If not previously mentioned, please list the data sources used for tracking implementation of the BI and its impact.	

Unhealthy behaviour: obesity	
A.3. What is the definition you are using to identify and describe this unhealthy behaviour?	
A.3.1. What resource(s) did you use to help you develop this definition?	
For the assessment component	
A.3.2. What are the questions that are used to identify the unhealthy behaviour?	
A.3.3. Why did you choose this process for asking the assessment questions?	
A.3.4. What resource(s) were used to develop these questions?	
The following questions are meant to describe the methods and process by which the assessment questions are administered	
A.3.5. Who is responsible for asking the assessment questions?	
A.3.6. What steps does this person follow when asking the assessment questions?	
A.3.7. Who are the assessment questions directed to?	
A.3.8. How do you decide when to use the assessment questions?	
A.3.9. How is the assessment conducted? (e.g. face-to-face, by telephone, etc.)	
A.3.10. How many questions are included in this assessment?	
A.3.11. How much time does the individual spend asking these assessment questions?	

For the *brief intervention* component	
A.3.12. What is the intervention being used to address this specific unhealthy behaviour?	
A.3.13. Why did you choose this specific intervention?	
A.3.14. What resource(s) were used to identify this intervention?	
The following questions are meant to describe the methods and process by which the brief intervention is delivered	
A.3.15. Who is responsible for giving the intervention?	
A.3.16. What steps does this person follow to deliver the intervention?	
A.3.17. What is the intended target of the intervention? i.e. does the intervention target the individual, the community, or other defined group?	
A.3.18. How is the intervention conducted? (e.g. face-to-face, by telephone, etc.)	
A.3.19. What is the dosage of the intervention? Depending on the intervention, please specify the amount, the frequency and/or intensity).	
A.3.20. How much time does the individual spend asking these assessment questions?	
The following questions are meant to describe any pilot-testing, implementation process, and/or evaluation plan for this particular BI	
A.3.21. Please describe the pilot testing plan, if any.	
A.3.22. If additional implementation plan(s) are to be used that were not previously described, please describe them here.	

A.3.23. Is there a quality improvement plan included for this BI? If yes, please describe.	
A.3.24. Is there an evaluation plan prepared for this BI? If yes, please describe.	
A.3.25. What is the current status of the intervention? Please include details regarding current coverage (number of providers using this BI or target population receiving the BI) and quality of implementation of the BI.	
A.3.26. Is there a plan for scale-up? If yes, please describe.	
The following questions are meant to document the rationale and evidence used to select the BI and its implementation strategies	
A.3.27. Please describe the current burden of the substance use or health behaviour being targeted (e.g. prevalence of obesity). Note, if possible, please include detailed estimates at the subnational level, and/or comparisons with neighbouring states and global averages.	
A.3.28. Please describe the evidence available for this particular BI and implementation strategies within the country. Note, this includes details such as setting, population studied, and effective size.	
A.3.29. If not previously mentioned, please list the data sources used for tracking implementation of the BI and its impact.	

Unhealthy behaviour: other: _____	
A.4. What is the definition you are using to identify and describe this unhealthy behaviour?	
A.4.1. What resource(s) did you use to help you develop this definition?	
For the *assessment* component	
A.4.2. What are the questions that are used to identify the unhealthy behaviour?	
A.4.3. Why did you choose this process for asking the assessment questions?	
A.4.4. What resource(s) were used to develop these questions?	
The following questions are meant to describe the methods and process by which the assessment questions are administered	
A.4.5. Who is responsible for asking the assessment questions?	
A.4.6. What steps does this person follow when asking the assessment questions?	
A.4.7. Who are the assessment questions directed to?	
A.4.8. How do you decide when to use the assessment questions?	
A.4.9. How is the assessment conducted? (e.g. face-to-face, by telephone, etc.)	
A.4.10. How many questions are included in this assessment?	
A.4.11. How much time does the individual spend asking these assessment questions?	

For the *brief intervention* component	
A.4.12. What is the intervention being used to address this specific unhealthy behaviour?	
A.4.13. Why did you choose this specific intervention?	
A.4.14. What resource(s) were used to identify this intervention?	
The following questions are meant to describe the methods and process by which the brief intervention is delivered	
A.4.15. Who is responsible for giving the intervention?	
A.4.16. What steps does this person follow to deliver the intervention? A.4.17. What is the intended target of the intervention? i.e. does the intervention target the individual, the community, or other defined group?	
A.4.18. How is the intervention conducted? (e.g. face-to-face, by telephone, etc.)	
A.4.19. What is the dosage of the intervention? Depending on the intervention, please specify the amount, the frequency and/or intensity).	
A.4.20. How much time does the individual spend asking these assessment questions?	
The following questions are meant to describe any pilot-testing, implementation process, and/or evaluation plan for this particular BI	
A.4.21. Please describe the pilot testing plan, if any.	
A.4.22. If additional implementation plan(s) are to be used that were not previously described, please describe them here.	
A.4.23. Is there a quality improvement plan included for this BI? If yes, please describe.	

A.4.24. Is there an evaluation plan prepared for this BI? If yes, please describe.	
A.4.25. What is the current status of the intervention? Please include details regarding current coverage (number of providers using this BI or target population receiving the BI) and quality of implementation of the BI.	
A.4.26. Is there a plan for scale-up? If yes, please describe.	
The following questions are meant to document the rationale and evidence used to select the BI and its implementation strategies	
A.4.27. Please describe the current burden of the substance use or health behaviour being targeted. Note, if possible, please include detailed estimates at the subnational level, and/or comparisons with neighbouring states and global averages.	
A.4.28. Please describe the evidence available for this particular BI and implementation strategies within the country. Note, this includes details such as setting, population studied, and effective size.	
A.4.29. If not previously mentioned, please list the data sources used for tracking implementation of the BI and its impact.	

Section B. Implementation strategies

Implementation strategies are the methods or techniques applied to facilitate the successful implementation of BI, including social support and incentives to ensure that the intervention and patient referral are completed, and that personal accountability is established.

In this worksheet, **unhealthy behaviour** refers to the substance use or risk factor being targeted by the intervention.

B.1. What unhealthy behaviour does your intervention hope to address? Select all that apply

☐ Alcohol use ☐ Smoking ☐ Obesity

☐ Other (please specify) _____

For each intervention selected, please complete the following questions:

Intervention component / method of focus: alcohol use	
B.1.1. In general terms please describe the intervention component and/or intervention method of focus.	
B.1.2. Please describe the implementation strategy for the specified intervention component / method of focus, using the following prompts. Note: Please refer to the list of strategies available at the end of this document to guide you. If the particular strategy being used is not included in the list, please describe it in your own terms.	
B.1.3. What is the name of the strategy or strategies for implementing this intervention?	
B.1.4. Provide a general description of this strategy or strategies.	
B.1.5. Who is responsible for delivery this strategy?	
B.1.6. What steps or processes are being followed to implement the strategy?	
B.1.7. What is the target of the strategy? What is the unit of analysis?	
B.1.8. When is the strategy being used or applied? Is there a specific order or sequence being followed?	
B.1.9. What is the dosage of the strategy (amount, frequency, intensity)?	
B.1.10. What is the implementation outcome (from the Proctor et al. framework) being targeted?	
B.1.11. What is the rationale for choosing this strategy? Why choose this strategy?	
B.1.12. Where is the strategy meant to operate? E.g. at the individual level, the health-care provider level, the health-care facility level, the community level, the policy level, other?	
B.1.13. What led you to decide on this strategy? E.g. what is the justification for using this strategy to address this intervention component?	

Training: alcohol use intervention and implementation strategy	
B.1.14. In general terms please describe the plan for orienting and training the implementing team on the intervention.	
B.1.15. In general terms, please describe the plan for orienting and training the team on the strategy for implementing the intervention.	
B.1.16. Please describe the training on this intervention component, using the following prompts.	
B.1.17. Confidence/self-efficacy. How are you ensuring that team members are confident in the intervention and the information that they have about the intervention?	
B.1.18. Style. What characteristics make for the ideal delivery of the intervention by a team member? E.g. Empathy, good listening skills	
B.1.19. Content. What are the materials that will be provided to the implementation team for delivering and documenting the intervention?	
B.1.20. Practice. How will team members practice delivering this intervention?	

Intervention component / method of focus: smoking	
B.2. In general terms please describe the intervention component and/or intervention method of focus.	
B.2.1. Please describe the implementation strategy for the specified intervention component / method of focus, using the following prompts. Note: Please refer to the list of strategies available at the end of this document to guide you. If the particular strategy being used is not included in the list, please describe it in your own terms.	
B.2.2. What is the name of the strategy or strategies for implementing this intervention?	
B.2.3. Provide a general description of this strategy or strategies.	
B.2.4. Who is responsible for delivery this strategy?	
B.2.5. What steps or processes are being followed to implement the strategy?	
B.2.6. What is the target of the strategy? What is the unit of analysis?	
B.2.7. When is the strategy being used or applied? Is there a specific order or sequence being followed?	
B.2.8. What is the dosage of the strategy (amount, frequency, intensity)?	
B.2.9. What is the implementation outcome (from the Proctor et al. framework) being targeted?	
B.2.10. What is the rationale for choosing this strategy? Why choose this strategy?	
B.2.11. Where is the strategy meant to operate? e.g. at the individual level, the health-care provider level, the health-care facility level, the community level, the policy level, other?	
B.2.12. What led you to decide on this strategy? e.g. what is the justification for using this strategy to address this intervention component?	

Training: smoking intervention and implementation strategy	
B.2.13. In general terms please describe the plan for orienting and training the implementing team on the intervention.	
B.2.14. In general terms, please describe the plan for orienting and training the team on the strategy for implementing the intervention.	
B.2.15. Please describe the training on this intervention component, using the following prompts.	
B.2.16. Confidence/Self-Efficacy. How are you ensuring that team members are confident in the intervention and the information that they have about the intervention?	
B.2.17. Style. What characteristics make for the ideal delivery of the intervention by a team member? E.g. Empathy, good listening skills	
B.2.18. Content. What are the materials that will be provided to the implementation team for delivering and documenting the intervention?	
B.2.19. Practice. How will team members practice delivering this intervention?	

Intervention component / method of focus: obesity	
B.3. In general terms please describe the intervention component and/or intervention method of focus.	
B.3.1. Please describe the implementation strategy for the specified intervention component / method of focus, using the following prompts. Note: Please refer to the list of strategies available at the end of this document to guide you. If the particular strategy being used is not included in the list, please describe it in your own terms.	
B.3.2. What is the name of the strategy or strategies for implementing this intervention?	
B.3.3. Provide a general description of this strategy or strategies.	
B.3.4. Who is responsible for delivery this strategy?	
B.3.5. What steps or processes are being followed to implement the strategy?	
B.3.6. What is the target of the strategy? What is the unit of analysis?	
B.3.7. When is the strategy being used or applied? Is there a specific order or sequence being followed?	
B.3.8. What is the dosage of the strategy (amount, frequency, intensity)?	
B.3.9. What is the implementation outcome (from the Proctor et al. framework) being targeted?	
B.3.10. What is the rationale for choosing this strategy? Why choose this strategy?	
B.3.11. Where is the strategy meant to operate? E.g. at the individual level, the health-care provider level, the health-care facility level, the community level, the policy level, other?	
B.3.12. What led you to decide on this strategy? E.g. what is the justification for using this strategy to address this intervention component?	

Training: obesity intervention and implementation strategy	
B.3.13. In general terms please describe the plan for orienting and training the implementing team on the intervention.	
B.3.14. In general terms, please describe the plan for orienting and training the team on the strategy for implementing the intervention.	
B.3.15. Please describe the training on this intervention component, using the following prompts.	
B.3.16. Confidence/Self-Efficacy. How are you ensuring that team members are confident in the intervention and the information that they have about the intervention?	
B.3.17. Style. What characteristics make for the ideal delivery of the intervention by a team member? E.g. Empathy, good listening skills	
B.3.18. Content. What are the materials that will be provided to the implementation team for delivering and documenting the intervention?	
B.3.19. Practice. How will team members practice delivering this intervention?	

Intervention component / method of focus: other: _____	
B.4. In general terms please describe the intervention component and/or intervention method of focus.	
B.4.1. Please describe the implementation strategy for the specified intervention component / method of focus, using the following prompts. Note: Please refer to the list of strategies available at the end of this document to guide you. If the particular strategy being used is not included in the list, please describe it in your own terms.	
B.4.2. What is the name of the strategy or strategies for implementing this intervention?	
B.4.3. Provide a general description of this strategy or strategies.	
B.4.4. Who is responsible for delivery this strategy?	
B.4.5. What steps or processes are being followed to implement the strategy?	
B.4.6. What is the target of the strategy? What is the unit of analysis?	
B.4.7. When is the strategy being used or applied? Is there a specific order or sequence being followed?	
B.4.8. What is the dosage of the strategy (amount, frequency, intensity)?	
B.4.9. What is the implementation outcome (from the Proctor et al. framework) being targeted?	
B.4.10. What is the rationale for choosing this strategy? Why choose this strategy?	
B.4.11. Where is the strategy meant to operate? E.g. at the individual level, the health-care provider level, the health-care facility level, the community level, the policy level, other?	
B.4.12. What led you to decide on this strategy? E.g. what is the justification for using this strategy to address this intervention component?	

Training: other: _____ intervention and implementation strategy	
B.4.13. In general terms please describe the plan for orienting and training the implementing team on the intervention.	
B.4.14. In general terms, please describe the plan for orienting and training the team on the strategy for implementing the intervention.	
B.4.15. Please describe the training on this intervention component, using the following prompts.	
B.4.16. Confidence/Self-Efficacy. How are you ensuring that team members are confident in the intervention and the information that they have about the intervention?	
B.4.17. Style. What characteristics make for the ideal delivery of the intervention by a team member? E.g. Empathy, good listening skills	
B.4.18. *Content*. What are the materials that will be provided to the implementation team for delivering and documenting the intervention?	
B.4.19. *Practice*. How will team members practice delivering this intervention?	

School nutrition policies for primary and secondary prevention of NCD risk factors

School nutrition policies are developed and implemented at the state and local levels to provide healthy food/beverages, restrict certain foods or beverages, set nutrient standards for foods sold outside school meal programmes, and to provide guidance and direction for local school boards.

Priority interventions in school nutrition policies *(1)* include:

a. School Food Policies *(2–4)*:

- provision of nutritional (food-, energy- and/or nutrient-based) standards for menu composition;
- direct provision of healthy foods/beverages;
- meal plans (e.g. the united states national school lunch/breakfast programmes *(5,6)*;
- regulating (restrictions/prohibitions/standardization of) competitive foods *(7,8);*

b. Nutrition Health Education;

c. Screening and Monitoring – Children's Health Indicators;

d. Staff, Administrative and Student Education;

e. Policy Implementation and Support Strategies

Section A: Defining school nutrition policies	
A.1.What are the objectives of the school nutrition policies? What does it hope to address?	
A.1.2. What priority interventions are included the in school nutrition policies?	
A.1.3. What is the evidence of the effectiveness or efficacy of the included priority intervention(s)?	
A.1.4. Who were the stakeholders involved in the development of the policy?	
A.1.5. Briefly describe strategies/methods that were adopted to get support from administrators, food services group, and parents, and for avoiding opposition?	
A.1.6. Is there any enforcement included as part of the school nutrition policies package?	
A.1.7. Briefly describe this *enforcement* strategy and the institutions, organizations or individuals involved in maintaining the enforcement.	

For each priority interventions listed (including the enforcement strategy) above, please complete the table below (please copy and paste the table for each subsequent intervention/strategy):

Priority intervention #1	
A.1.8. In general terms please describe the intervention, including its various components and relevant strategies.	
A.1.9. Please describe the implementation strategy for the specified intervention component, using the following prompts. *Note: Please refer to the list of strategies available at the end of this document to guide you. If the particular strategy being used is not included in the list, please describe it in your own terms.*	
A.1.10. What is the name of the strategy/ies for implementing this intervention (or included as part of this intervention)?	
A.1.11. What policy element(s) does the strategy/ies address *(please be specific as much as possible)*?	
Policy elements include *(4)*: • The school community (e.g. parents, teachers/ administrators, food vendors/caterers, local retailers, farmers, community groups, and media group) • School curriculum • The school environment (e.g. school meals, food clubs, vending machines, subscriptions for fruit, vegetable, access to water) • School nutrition and health services	
A.1.12. What food items or standards (food-, energy- or nutrient-based standards) does the strategy/ies focus on?	
A.1.13. Provide any other general description of this strategy or strategies.	
A.1.14. Who is responsible for delivery of this strategy/ ies?	
A.1.15. What steps or processes are being followed to implement the strategy/ies?	
A.1.16. What is the target of the strategy/ies (e.g. students, parents, teachers, administrators, parents, schools, food vendors, district educational agency)? What is the unit of analysis?	
A.1.17. When is the strategy/ies being used or applied? Is there a specific order or sequence being followed?	

A.1.18. What is the dosage *(9)* of the strategy/ies (amount, frequency, intensity)? (How frequently do you use this strategy (e.g. every time the intervention is applied, once in a month, once during the programme cycle?)	
A.1.19. What is the implementation outcome (from the Proctor et al. framework *(10))* being targeted?	
A.1.20. What is the evidence supporting the choice of this strategy?	
A.1.21. Where is the strategy/ies meant to operate? *E.g. at the individual level, the school level, the community level, the policy level, other?*	
A.1.22. What led you to decide on this strategy/ies? *E.g. what is the justification for using this strategy to address this intervention component?*	

Training | Intervention and implementation strategy	
A.1.23. In general terms please describe the plan for orienting and training the implementing team (and other implementers) on the intervention.	
A.1.24. In general terms, please describe the plan for orienting and training the implementing team (and other implementers) on the strategy for implementing the intervention.	
A.1.25. Please describe the training on this intervention component, using the following prompts.	
Confidence/Self-Efficacy. How is it ensured that implementers are confident in the intervention and the information that they have about the intervention?	
A.1.26. *Style*. What characteristics make for the ideal delivery of the intervention by a team member? *E.g. Empathy, good listening skills*	
A.1.27. *Content*. What are the materials that will be provided to the implementation team for delivering and documenting the intervention?	
A.1.28. *Practice*. How will team members practice delivering this intervention?	

Section B: Status of Policy Implementation:	
National and sub-national levels:	
B.1. Is there national and/or state legislations that address the school nutrition policies package described under Section A above?	
B.1.2. What is the degree to which the school nutrition policies package has been implemented at the national and sub-national levels?	
B.1.3. What are the main facilitators (e.g. actors, organizations, institutions, other policies, technologies, political forces, and socio-cultural practices) to policy implementation at these levels?	
B.1.4. What are the main barriers (e.g. actors, organizations, institutions, other policies, technologies, political forces, and socio-cultural practices) to policy implementation at these levels?	
B.1.5. What considerations were made to address inequity in the policy implementation process, e.g. ethnic, linguistic, educational, demographic, and socioeconomic considerations at the national and subnational levels?	
B.1.6. List at least 2–3 unintended consequences of the policy implementation at these levels.	
Community level:	
B.1.7. Is there access to healthy food in the surrounding community?	
B.1.8. What is the proximity of school sites to neighbourhood stores, restaurants, and mobile food vans?	
B.1.9. Do local public agencies have exclusive contracts with soda companies and fast-food vendors?	
B.1.10. What other obesity prevention programmes and policies exist in the community?	
B.1.11. How does education funding impact nutrition in the community's schools?	
B.1.12. What are the community social and cultural norms and beliefs surrounding nutrition?	

B.1.13. How well does the community facilitate or hinder healthy eating?	
School level:	
B.1.14. What is the degree to which the school nutrition policies package has been implemented at the school level?	
B.1.15. How does the school nutrition policies package change the foods and beverages available in schools?	
B.1.16. How does the school nutrition policies package change the resources available for nutrition education in schools?	
B.1.17. How does the school nutrition policies package change the revenue generated from food and beverage sales at the school level?	
B.1.18. Does the school nutrition policies package allow foods and beverages sold for fundraising to encroach on Food Service sales?	
B.1.19. Does the school nutrition policies package influence how food and beverage revenues are used?	
B.1.20. What other school/district-level policies inhibit/ facilitate implementation of the school nutrition policies package?	
B.1.21. What is the perceived importance or acceptance of policy by school administrators, school food service staff, parents, students?	
B.1.22. Were there funding/incentive requirements for implementation of the policy?	
B.1.23. What were the challenges to policy implementation and reactions of students and faculty?	
B.1.24. What are the unintended consequences of the policy?	

Section C: Policy Evaluation:	
School level:	
C.1. How does the school nutrition policies affect student food and beverage consumption in and out of school?	
C.1.2. How does the school nutrition policies affect student fitness levels?	
C.1.3. What are the student attitudes toward the school nutrition policies?	
C.1.4. Does the school nutrition policies impact school meal participation? How?	
C.1.5. Does the school nutrition policies change the student knowledge, practice and/or behaviour regarding healthy nutrition? How?	
C.1.6. How does the school nutrition policies affect student weight and body mass index?	
C.1.7. How does the school nutrition policies affect academic achievement?	
C.1.8. How does the school nutrition policies affect school/classroom related behaviour?	

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Annex 3. List of stakeholders involved in the pilot projects

	Agency	Role/position and level	Relevant to school nutrition policies (SNP) / brief interventions (BI)
Kyrgyzstan – Core group			
1	Ministry of Health	Specialist of the Public Health Department	SNP
2	Department of Disease Prevention and State Epidemiological Surveillance	Specialist on child and adolescent hygiene	SNP
3	United Nations World Food Programme	Programme Policy Officer of School Meals Programme	SNP
4	Ministry of Education and Science	Senior specialist, lead on School Meals Programme	SNP
5	Chui boarding school for orphans and children left without parental care	Director	SNP
6	Republican Centre of Health Promotion and Mass Communication	Nutrition specialist	SNP
7	World Health Organization Country Office	Technical Officer – National Professional Officer on Sexual, Reproductive, Maternal, Newborn, Child, and Adolescent Health	SNP

Kyrgyzstan – Extended group			
1	Ministry of Education and Science	Senior specialist	SNP
2	Ministry of Health	Chief affiliated paediatrician of the Ministry of Health	SNP
3	Department of disease prevention and state epidemiological surveillance	Head of department for supervision of food safety and prevention of alimentary diseases	SNP
4	Republican Center of Health Promotion and Mass Communication under Ministry of Health	Specialist on school health programme	SNP
5	Independent expert on SNP	Independent expert on SNP	SNP
6	World Health Organization Country Office	Technical Officer – National Professional Officer on Noncommunicable diseases	SNP
7	United Nations World Food Programme	Nutrition specialist	SNP
8	Association on Adolescent Health	Director	SNP
9	United Nations Children's Fund (UNICEF)	Health and nutrition specialist	SNP
10	Kyrgyz State Medical Academy	Professor, Lead on the Academic Network of the Scaling up Nutrition Platform in Kyrgyzstan	SNP
11	Independent expert	Former consultant on SNP to Food and Agriculture Organization of the United Nations and the World Food Programme	SNP
12	Food and Agriculture Organization of the United Nations	National project coordinator	SNP
13	Aga Khan Foundation	Health and nutrition programme manager	SNP
14	Mercy Corps	Director of programme	SNP
Uzbekistan			
1	Ministry of Health Republican Specialized Scientific and Practical Centre of Paediatrics	Chief Paediatrician/Ministry of Health Director Head of National Professional association of Paediatricians	SNP
2	Ministry of Health Centre for Professional Development of Medical Workers/Ministry of Health	Chief specialist for Children in Education institutions/Ministry of Health Head of the Department of Paediatrics and Nutrition of Children	SNP

3	Tashkent Paediatric Medical Institute (Education)	Teacher	SNP
4	Tashkent Paediatric Medical Institute	Researcher	SNP
5	Republican Specialized Scientific and Practical Centre of Paediatrics	Researcher	SNP
6	Republican Specialized Scientific and Practical Centre of Paediatrics	Paediatrician	SNP
7	Tashkent Paediatric Medical Institute	Associate Professor	SNP
8	Public fund for the support of children State Health Insurance Fund under the Cabinet of Ministries	Head of the Department Senior Specialist	SNP
9	Ministry of Preschool and School Education	Deputy Head/Department for Coordination of Activities of General Secondary Education Institutions	SNP
10	Ministry of Preschool and School Education	Senior Specialist/Department for Coordination of Activities of General Secondary Education Institutions	SNP
11	Private School "Lieder", Tashkent city	Teacher	SNP
12	School # 5, Fergana city, Fergana region	Director	SNP
13	School # 25, Karshi city, Kashkadarya region	Director	SNP
14	Ministry of Preschool and School Education	Head of the Department	SNP
15	Ministry of Preschool and School Education	Senior Specialist	SNP
16	Ministry of Health	Deputy Head/Department on Prevention and Treatment care (Noncommunicable Diseases sector)	BI
17	Centre for Supporting a Healthy Lifestyle and Increasing Physical Activity of the Population/Ministry of Health	Senior Specialist	BI
18	Centre for Professional Development of Medical Workers/Ministry of Health	Professor/Department of Food Hygiene	BI
19	Tashkent Medical Academy	Professor/Department of General Practice	BI
20	State Health Insurance Fund under the Cabinet of Ministries	Senior Specialist	BI

21	Tashkent Paediatric Medical Institute	Associate Professor/Department of General Practice Member of National Association of General Practitioners	BI
22	Tashkent Paediatric Medical Institute	Senior Lecturer/Department of General Practice	BI
23	Tashkent Paediatric Medical Institute	Researcher	BI
24	Tashkent Paediatric Medical Institute	Senior Teacher	BI
25	Central District Multi-profile policlinic/ District Medical Unit, Boyavut district, Syrdaryo region	Doctor	BI
26	World Health Organization Country Office	Technical Officer – National Professional Officer on Noncommunicable diseases	SNP/BI

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