Intervention Model for Health Behaviour Change

Work Package: Capacity Building in PHAs
GoA 2.2: Creating the intervention model
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Collaborative partners: Seinäjoki University of Applied Sciences, Flensburg University of Applied Sciences, Society of Estonian Family Doctor

Guidelines for Public Health Authorities

The BaltCityPrevention project aims to develop and test a model of health behaviour change aimed to support the public health authorities (PHAs) in prevention of lifestyle-related non-communicable diseases. The proposed model is built upon existing frameworks on health interventions and it provides a general framework for developing the interventions of health behaviour change on the individual or group level by using both a theory-driven and a participatory approach when developing the interventions. This document is a summary guide on how to use the model by focusing on health intervention planning more.

When implementing the participatory approach, it is important that in all stages the participants of the target group are included in all stages of the intervention development. The intervention development begins with intervention planning by starting to **explore** the situation when selecting different tools for user needs assessment from the toolbox. Intervention is a specific set of activities developed with the intent of producing health behaviour change (training, sessions, provision of preventive services, youth advocacy events, etc.). Specific tools for health behaviour change have to be considered which can be used to implement particular activities for the planned intervention. It is essential to develop the intervention **design** involving behavioural change techniques that may influence health behaviours. The provided toolboxes combines both the conventional participatory methods and e-tools that should be used for the intervention design.

To ensure that the intervention **operates** well into practice, the development of a logic model when aligning intervention resources (inputs), activities, and process indicators (outputs) with planned results (outcomes) for the intervention objectives is necessary.

Testing the intervention design within the planned activities is crucial before starting the **acting** phase when the implementation of the whole intervention by including all participants of the target group should be carried out. Each intervention must be completed with the **checking** phase when the achieved results are carefully evaluated by using well-planned methods and finally disseminated to both stakeholders and the user group of the intervention.

The following figure shows a visual overview of the intervention model (Figure 1*Figure 1*).

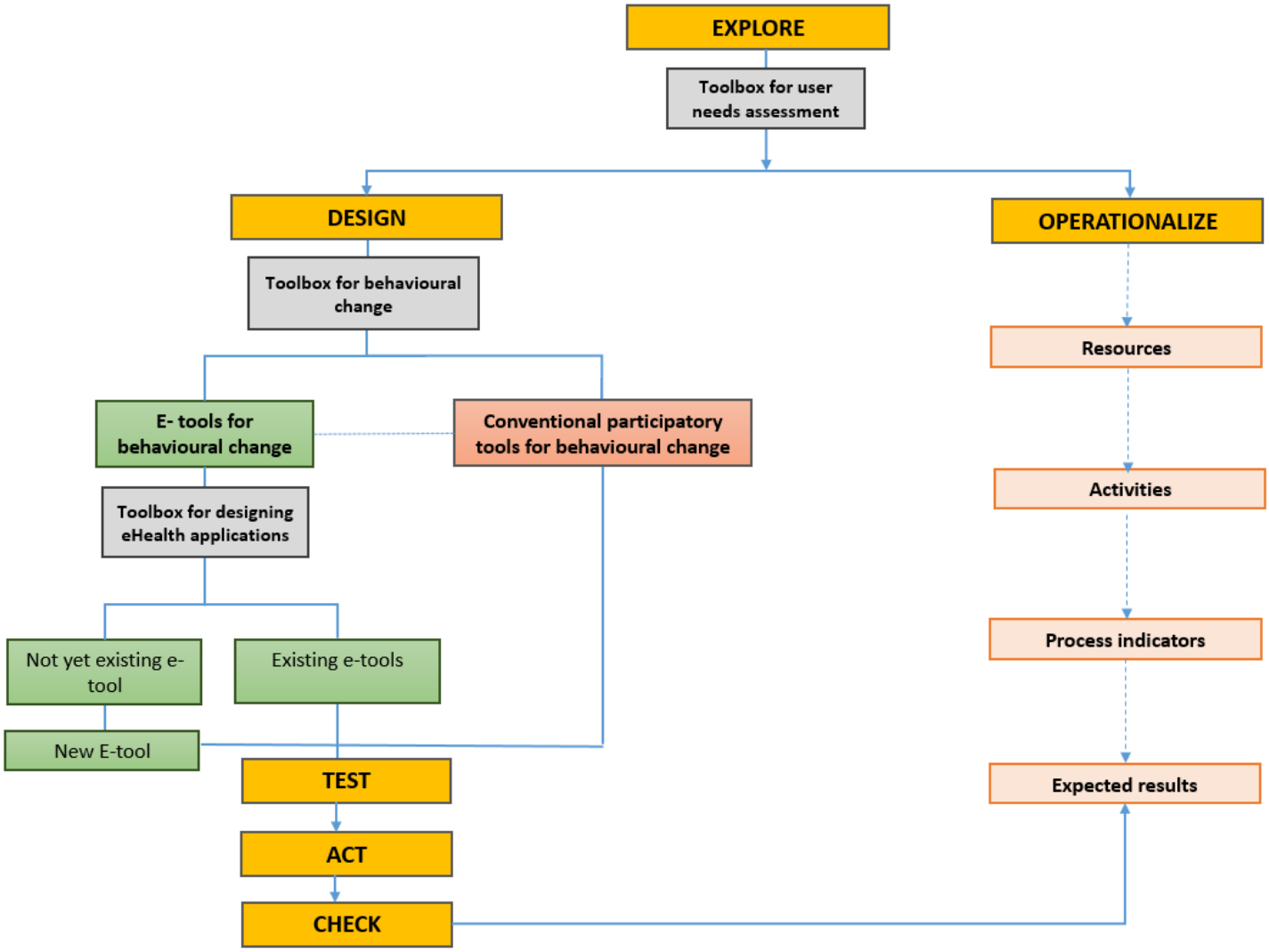

Figure 1. Intervention model: The BaltCityPrevention project

DEVELOPING HEALTH BEHAVIOUR CHANGE INTERVENTIONS

A health intervention can be defined as "an *act performed for, with or on behalf of a person or population whose purpose is to assess, improve, maintain, promote or modify health, functioning or health condition"* (WHO, 2018). There are different types of public health interventions for the management of diseases, health risks, health systems, and health behaviours. The health behaviour change interventions aimed at different behavioural domains is in the focus of the BaltCityPrevention project. The BaltCityPrevention project aims to test a participatory and user-oriented approach to develop a health behaviour change intervention[1] on the individual level for life-style diseases prevention by paying a particular focus on adolescents (https://www.baltcityprevention.eu/). The participatory approach is a developmental process engaging with user group[2] individuals or communities for joint action and development.

The intervention planning should begin with **establishing a participatory planning team** or group managing the development of the intervention planning.

The health intervention planning team should involve both:

- The targets of change (individuals in the user group) and the target settings of the intervention (schools, primary health practices, etc.)
- The agents of changes (stakeholders, policy makers, professionals in the field, community members, media, etc.).

It is important to start with building partnerships and engaging in cross-sectoral collaboration and participation already in the very beginning of managing the planning process.

Figure 2 shows the main management areas of the intervention planning team. It is needed to determine the roles and the range of participation of each stakeholder or individual and involve them in a meaningful way.

[1] Hereafter called as „health intervention"
[2] Within the BaltCityPrevention project, the „target group" is Public Health Authorities (PHAs), but the „user group" is the group of individuals, which is in the focus of health interventions implemented by the PHAs.

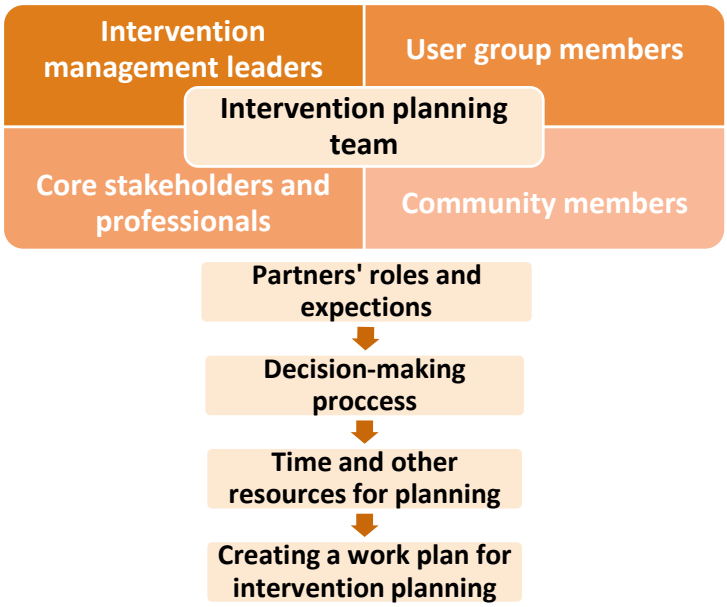

Figure 2. Major management areas of the intervention planning team

A transparent decision-making process for the intervention core-planning group is important. The participation levels in the decision-making process may be different; however, only the level of "deciding together" really corresponds to the full participation approach followed by "acting together" and "supporting."

Health interventions may require different resources. It is important to determine the overall requirements and expectations for the health intervention as regards timing and needed resources (expertise, space, equipment, etc.) in order to plan the intervention efficiently. In the end, the intervention planning team should develop a work plan for the intervention planning process by identifying specific tasks, responsibilities, timelines, and resources required for each task.

In general, the health intervention development is a process composed of three main phases: planning, implementation and evaluation that can be specified into separate stages (Figure 3). All the phases are an integral part of health intervention development cycle.

Developing health interventions supporting changes in health behaviours requires systematic planning. The intervention planning is the process that consists of "explore," "design," "operationalize," and "test" stages, and each of those involves particular strategic and operational decisions.

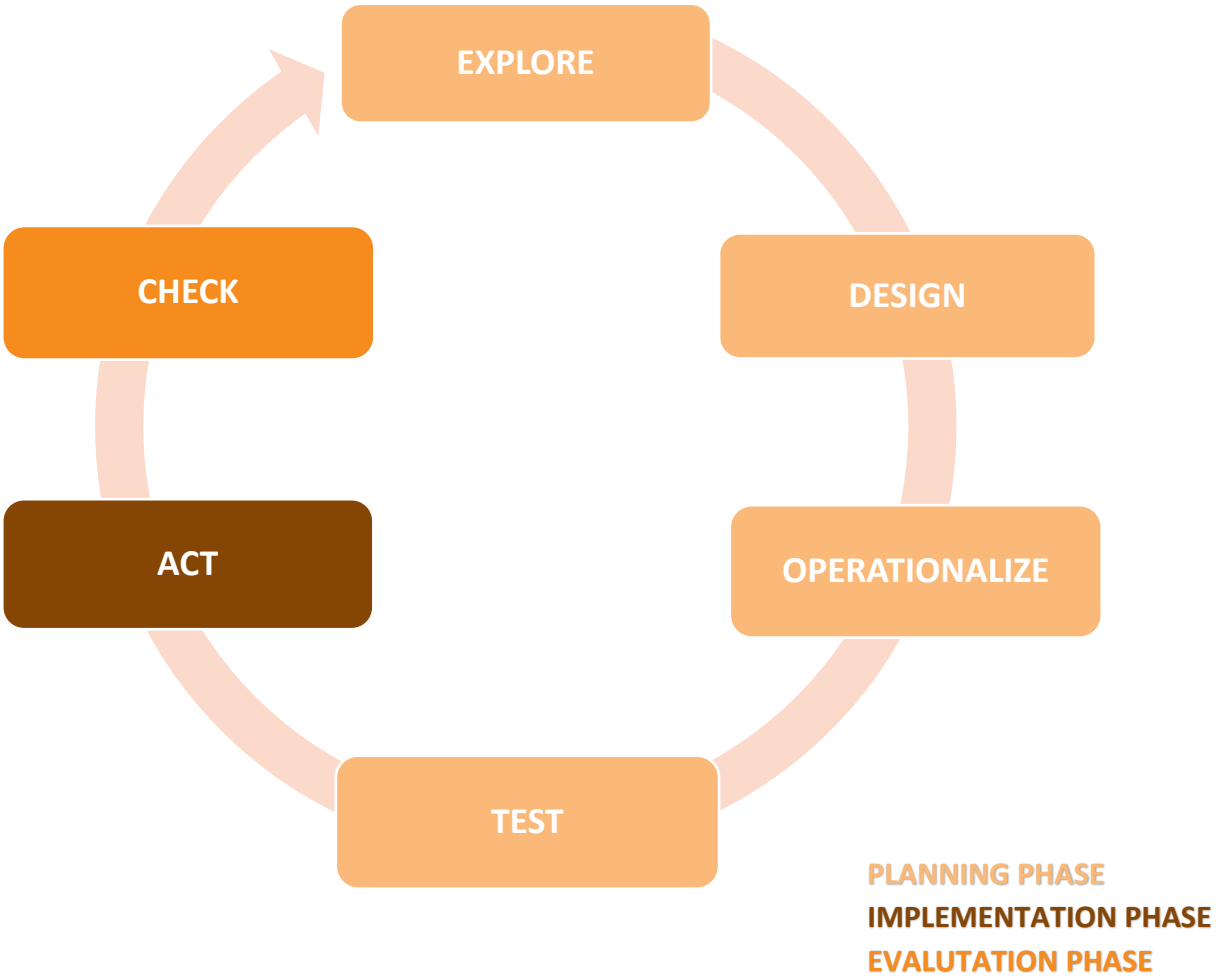

Figure 3. Process of health intervention development

HEALTH INTERVENTION PLANNING

Figure 4 shows the stages of health intervention planning starting from exploring the situation and completing with testing by ensuring the intervention to operate effectively.

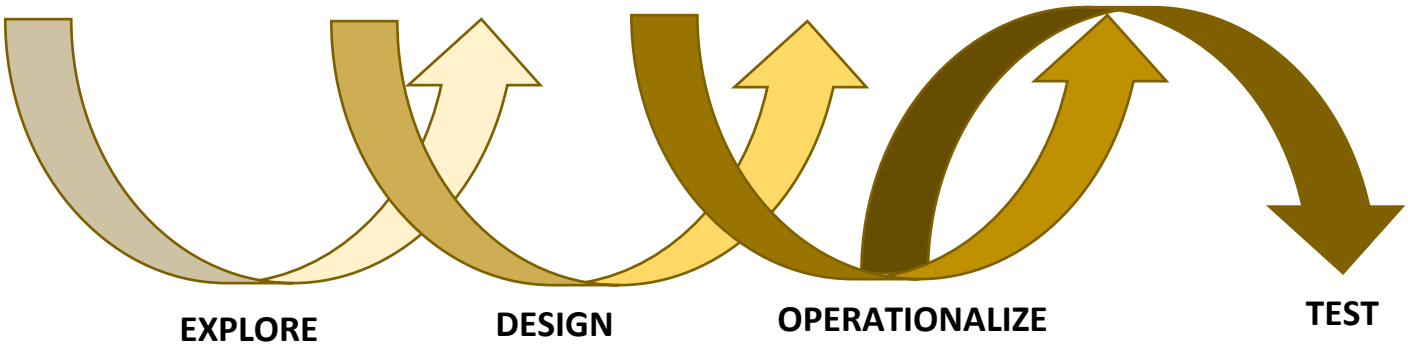

Figure 4. Health intervention planning stages

The health intervention planning process is not linear; often, the more steps are needed to be taken in parallel. However, it is important to acknowledge the main components of the planning process to apply a systematic approach in the development of the intervention.

Both, an evidence-based[3] and a participatory approach can be used in the health intervention planning. A participatory approach actively involves the user group in the health intervention development process **starting from the inception of the idea** for the health intervention through to use and evaluation. The participatory planning approach builds trust and a strong base for the intervention in the user group; however, a participatory process may take a longer time, and it requires appropriate skills and knowledge of leadership and partnership to ensure that everyone's ideas and opinions are respected. Participation may vary according to one's evolving capacities and levels of involvement.

[3] Evidence-based refers to existing evidence and research, including epidemiological data, past reports, and evaluations, theories, or models.

Participation makes sense for user group individuals if:

- Individuals are able to engage in areas that are meaningful for them;
- Individuals are allowed to take on responsibilities;
- Individuals feel safe;
- Participation ensures equity and transparency.

The user group might be approached in a different stage of the intervention planning process:

- "**Explore**" stage aims to understand what are the problem/-s and needs of the user group, and how does the user group address the problem/-s.
- "**Design**" stage aims to understand which are the underlying factors shaping the problem and how the problem needs to be framed in to be relevant for the user group.
- "**Operationalize**" stage aims to know if the user group is motivated to engage in particular activities of the intervention plan.
- "**Test**" stage aims to know whether the intervention design (methods, tools, and services) are engaging the target audience, and how it might be improved.

To involve the user group in all stages of the intervention planning process corresponds to full participation in the intervention planning process.

Explore Stage

The starting point for intervention design and plan is the **"explore"** stage. This stage is for *identifying* the problem and *defining* the related behaviours and environment, and associated determinants from the perspective of the user group and evidence-based knowledge. The "explore stage" may encompass different perspectives (individual, epidemiological, behavioural, and social) aimed to understand the profile of a user group. The "explore" stages relates to the process of user needs assessment, which is a systematic process involving collecting, analysing, synthesizing, communicating, and discussion data. The user needs assessment provides an opportunity to engage with different user groups, communities and enable to implement a participatory intervention

planning. The situational assessment also provides an opportunity for cross-sectoral partnerships when developing creative and effective interventions.

The following sub-steps are important for the "explore stage":

1) to identify the questions to answer for user needs assessment;
2) to develop an information collection plan;
3) to collect the data;
4) to analyse and synthesize the data;
5) to consider how to use the information efficiently when proceeding with intervention planning.

Both participatory and evidence-based research methods can be used in the "explore" stage for the **user group needs assessment** (Table 1.). These may involve a combination of both qualitative and quantitative research methods to collect original information from the user group (primary data), or adapting and transferring what is already known or available (secondary data). Not only convention tools but also e-tools can be used for user group needs assessment. Usually, various types of data using a combination of different methods and accessing various sources are considered for obtaining a broader view of the current situation and user group (-s). The toolbox for user group needs assessment different methods is available at https://www.betterprevention.eu/toolbox/.

Table 1. Examples of methods for user group needs assessment

Conventional methods		***E-tools***
Primary data	***Secondary data***	
Interviews	Statistical data	Available apps
Focus groups	Census reports	Mind mapping
Delphi method	Previous studies	Participatory design
Brainstorming, etc.	Administrative records	Interactive prototype
		End-users feedback
		E-games

The ***primary user group***[4] and the major intervention goal often might be set up e.g., by the project funders, public health authorities, stakeholders. However, specific **objectives** and **activities** should be defined based on a review of the user needs assessment results.

Objectives are statements that describe ***the expected results*** (*outcomes*) to be achieved. Usually multiple objectives are needed to address a single goal.

The objectives include four components:

1) **who**m to change (user group);
2) **what** to change (outcome);
3) by **how** much (changes);
4) by **when** (time).

Good objectives should follow the SMART criteria:

- **S**pecific (clear and precise, related to the intervention goal)
- **M**easurable (quantify or at least suggest an indicator of progress)
- **A**ppropriate (aligned with user group expectations and theory)
- **R**ealistic (reasonable within the availability of resources)
- **T**ime-limited (linked to a timeframe)

Outcome indicators are the measures of the outcome objectives, and they should be consistent with the objective they measure and identified already during the intervention-planning phase in order to check the intervention results successfully during the evaluation phase.

Once the intervention design has been developed, logical connections between the goal, objectives, activities, and outcomes should be well elaborated and reviewed in the "operational" stage.

Activities are the planned events (organizing trainings, exercises, online support groups, meetings, etc.) that take place as part of the intervention to reach the objective. Different methods can be used to implement specific activities that relates to the development of intervention design.

[4] The primary user group is the group of concern for health behavioural or health status changes. For example, if the goal is to reduce tobacco smoking prevalence among adolescents, in this case the primary user group is adolescents. However, also secondary audiences could be targeted within the intervention like peers, teachers, schools, health care practitioners, etc., which may have the influence on the primary user group.

Design Stage

When developing health interventions, it is important to understand the casual and specific contextual factors associated with a problem. Thus, when approaching the user group within specific settings, it is essential to understand the contributing factors shaping the problem of a particular user group for the intervention and how does the problem needs to be framed in to be relevant for them. For individual-based health interventions, individual factors are into the focus by emphasizing individual capabilities and motivation. However, the intervention usually is planned to operate in some system – different settings (school, health care practice, etc.). Thus, it is worthwhile to consider how the system is likely to interact with the intervention and whether the system needs for some prior modifications as well. The levels of the intervention need to be identified already during the "explore" stage.

Various methods and tools can be used to implement specific activities (training sessions, educational classes, etc.) for the planned intervention. *For example,* training is a usual activity within the intervention, but different methods like group discussion and role-play method might be used for training. In addition, online support group might be created, and motivational interviewing as a counselling approach might be planned for the intervention. Usually, more methods and tools are being combined to change health behaviours. It is important to select the most effective considering the evidence and appropriateness for a particular user group and context. Traditionally, behaviour change interventions have been delivered using face-to-face counselling or training. The current advances in technology provide opportunities to deliver also e-health interventions for health behaviour change using mobile devices, computers, tablets, etc. Applying new innovative methods using e-tools offers unique opportunities to target the complexity of behaviour phenomena more effectively.

The intervention methods should be theory-based techniques that effectively may affect health behaviours; however, it is essential to select the most appropriate tool for a particular user group and context. There are different participatory conventional and e-tools available, which can be used

for health behaviour change on the individual level (Table 3). The toolbox for behaviour change different methods is available at https://www.betterprevention.eu/toolbox/ .

Table 2. Examples of methods and tools for health behaviour change

Groups of methods	*Tools*
Interaction-based groups	Life style groups for behavioural changes Coordinated memory group Counselling group Group therapy
Health appointment	Health examination Follow-up appointments Motivational interview Individual meeting with health care provider
Functional groups	Skipping Hearts (rope skipping) Healthy nutrition groups Physical activity groups Educational meetings
Technology assisted methods	Mobile applications Social networking platforms E-games Chabot

For the intervention, it also possible to develop a new e-health tool jointly with the user group. The examples of tools for initiating and organizing the design of new eHealth applications are shown in Table 4. Examples of tools for e-Health design, and more details are available at https://www.betterprevention.eu/toolbox/ .

Table 4. Examples of tools for e-Health design

Approaches	*Methods*
Design thinking	Brainstorming
PDCA/Deming Cycle	Mind map
	Brainwriting
	World café
	Problem tree analysis
	SCAMPER

Operationalize Stage

The well-planned intervention design should be ready and able to operate into practice. When working on separate issues and parts of an intervention, it might not be easy to overview the planning process and final plan in general. At the "**operationalize"** stage, the final plan of intervention is being reviewed, considering the logic of designed intervention by aligning intervention resources, activities, and expected results for the intervention goals and objectives.

It is necessary not only to define the objectives and set expected results but also to identify the process indicators that are the key for successful tracking of the intervention. *Process indicators* (*outputs*) describe the processes during the intervention that contribute to the achievement of expected outcomes, and those should be related to the planned activities.

The short example of goal setting with associated activities and indicators for behavioural change is shown in Table 5.

Table 5. Health intervention goal setting example with associated activities and indicators for change

Goal	Promote physical activity among adolescents
Objective	Increase the level of physical activity up to 25% among adolescents at 3-month follow up by implementing the m-health intervention
Expected results	% of those adolescents increasing the level physical activity up to 25% within 3-months in comparison with baseline physical activity
Activities	Baseline measurements of physical activity Personal physical activity plans Training on how to use a specific m-Health-linked wearable activity tracker Create a Facebook group Linking with parents
Process indicators	*Quantitative:* participants' daily step counts, percentage of days wearing the activity tracker, syncing the device, FB engagement data including "likes", comments, and adolescents' posts to the FB group page; number of newsletters issued to parents *Qualitative:* acceptability and satisfaction of the intervention

Different logic model formats can be used for planning the interventions, but all logic models include the following components (Figure 5):

- ✓ Resources (*inputs*) – needed to conduct intervention activities (e.g., funding, staffing, trained personnel, office supplies, transportation);
- ✓ Activities – actions conducted with the intent of producing health behaviour change (e.g., workshops, sessions, training, youth advocacy event)
- ✓ Process indicators (*outputs*) – products that result from the activities (e.g., number of leaflets messages released, number of service recipients, number of training or workshops conducted, number of youths participating in the event)
- ✓ Expected results (*outcomes*) – results directly related to the intervention objectives and goals (e.g., improvement of knowledge and skills, change of health-related behaviour)

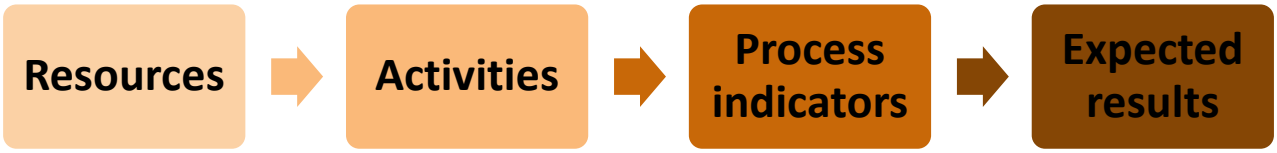

Figure 5. A general logic model for planning health behaviour change interventions

For example, if the motivational interviewing is planned for the health behaviour intervention aiming to engage the user group for smoking cessation (expected result); it might be needed to consider:

(1) How many trained professionals are needed (resources);

(2) What kind of training resources (e.g., tools, time) are available (resources);

(3) Whether individual level or group sessions for motivational interviewing should be planned (activity);

(4) What is the expected number of planned motivational interviewing sessions (process indicator);

(5) What is the expected number of individuals in the user group for motivational interviewing sessions to be achieved (process indicator).

In the "operationalize" stage, the user group should be involved in order to understand how does the user group perceives the proposed intervention, whether they are motivated to test the intervention and do they want to use it by presenting the final intervention design. It may be important also to discuss the ethical considerations and risks together with the user group to ensure safety and trust during the intervention testing and implementation.

Test Stage

Once the initial intervention design and plan is ready, its acceptability to the user group and feasibility needs to be **tested**. The intervention methods and tools with a smaller number of individuals from the user group before starting the full implementation of an intervention should be tested, and both quantitative and qualitative information from the user group individuals can be used. The planned intervention may require repeated testing and adaptation, especially if the intervention is novel or innovative. The methods used for testing should be well planned and focused. There are some critical criteria as regards the planned intervention that needs to be tested: (1) usability; (2) functionality; (3) feasibility; (4) appropriateness; (5) acceptance.
After reviewing the testing results, the intervention design or activities plan should be adjusted to meet the user needs by considering the actions taken in the previous stages. When the tested intervention design and plan are ready, the full implementation or scaling-up of the intervention, if possible and needed, can be started.

Table 6 shows the summary and the examples of potential questions and methods for the health behaviour change intervention planning stages by using both a participatory and evidence-based approach.

Table 6. Examples of potential research questions and methods for the health intervention planning stages

	Participatory approach		Evidence-based approach	
Intervention planning stages	**Examples of participatory research questions**	**Examples of participatory methods**	**Examples of evidence-based research questions**	**Examples of evidence-based methods**
EXPLORE	What are the problem/-s and needs of a user group? How does the user group address the problem/-s? How does the issue manifest personally among the user group members? How does the user group define a successful outcome from the perspective?	Interviews Focus groups Workshops Brainstorming Mobile Diaries	What is the problem? What is the prevalence of the problem? What is the burden of the problem in the user group? What are the key determinants and contributing factors to the problem? What should be the intervention goal? How do objectives relate to the major goal? What are the expected health results and impacts? Which user groups and settings need to be approached?	Surveys Health statistics analysis Administrative records and reports analysis Epidemiological data analysis Consultation with services and experts Literature & policies & reports reviews
DESIGN	How does the problem need to be framed in to be relevant for the user group? Which are the underlying contributing factors shaping the problem?	Focus groups Workshops Brainstorming Mapping	What are the health behavioural theories most relevant to target the audience? Which strategies are the most appropriate to achieve the outcome? What are the best practices and evidence-based knowledge? What are the ethical considerations and risks?	Developing the intervention strategy & selecting methods and tools
OPERATIONALIZE	How does the user group perceive the proposed intervention? Is the user group motivated to test the intervention, and do they want to use it?	Workshops Focus groups Interviews	What is the logic connection between all components of the intervention?	Developing the final design of intervention model Building a logic model
TEST	Are the methods, tools appropriate for the user group? What is the level of engagement, adherence, and satisfaction in the user group?	Usability Testing Pilot Mobile Diaries Interviews	Which tools and strategies can make the most impact? Which tools and strategies are the most appropriate for the user group in order to achieve specific outcomes?	Piloting

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