GENERATION H

Funded by the European Union

Multi-Component Intervention to Reduce Unhealthy Diets and Physical Inactivity among Adolescents in Ghana and Kenya

Report on the adoption and implementation outcomes, a matrix of change objectives

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Project Abstract

The fragile health systems in urban sub-Saharan Africa (SSA) are already overwhelmed with NCDs. Despite this, the implementation of the evidence-based WHO Best Buys policies for NCDs prevention in the African region has been found to be off-track. Additionally, less attention has been given to adolescents and yet this is a period in life where behavioural patterns of NCDs risk factors are established and track into adulthood. There is also a gap in our understanding on how to implement and scale up effective diet and physical activity interventions in real world settings in SSA.

Our project therefore aims to reduce two important modifiable risk factors for NCDs: unhealthy diets and physical inactivity and their underlying social determinants among adolescents (aged 10-19 years) living in mixed socio-economic urban communities in two SSA countries (Ghana & Kenya) by designing, deploying, and evaluating strategies for implementation of evidenced and theory based interventions mapped on to the WHO Best Buys. We selected the two countries because they represent different cultural contexts of nutrition transition (East and West Africa), and both countries are undergoing rapid economic development, urbanisation and increases in NCD prevalence. The intervention delivery will take a multi-sectoral approach to increasing the capability, opportunity and motivation of adolescents to eat healthier and be more physically active. We will focus on three settings to enhance the reach: secondary schools and, family/community/faith-based settings and the digital environment using social media.

Together, this project will increase opportunities, awareness, knowledge and health literacy, motivate adolescents to increase self-efficacy, guide self-regulatory actions and adopt positive health behaviour (such as dissuasion from physical inactivity and sedentary behaviours, or unhealthy food choices) to prevent NCDs.

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List of Abbreviations

Abbreviation	Definition
CFIR	Consolidated Framework for Implementation Research
FBO	Faith-Based Organisations
FGDs	Focus Group Discussions
KII	Key Informant Interviews
LMICs	Low- and Middle-Income Countries
NCDs	Non-Communicable Diseases
PE	Physical Education
PTO	Parents and Teachers' Organisations
SCT	Social Cognitive Theory
SES	Social Economic Status
SSA	Sub Saharan Africa
WHO	World Health Organisation

Executive Summary

Non-communicable diseases (NCDs) remain a significant global health challenge, with low- and middle-income countries disproportionately affected. Adolescents in urban areas of sub-Saharan Africa face increasing exposure to modifiable risk factors, such as unhealthy diets and physical inactivity, which may be carried on to adulthood. Despite the availability of WHO “Best Buys” recommendations for NCD prevention, adolescents in these settings have received limited attention in the implementation of physical activity and/or nutrition interventions. The Generation-H intervention was developed in response to this gap as a multicomponent, evidence-based initiative designed to improve dietary and physical activity behaviours among adolescents aged 10–19 years in urban Kenya and Ghana. The implementation mapping concept (1) is applied in the development of Generation-H intervention’s implementation plan, in order to optimise its adoption, delivery and continuity in the two countries.

This report presents the results of objective 1 and 2 (task 3.1) of the work package 3, which include; conducting a needs assessment, identifying program adopters and implementors; identifying the implementation outcomes, performance objectives, determinants and matrices of change objectives.

Guided by the Consolidated Framework for Implementation Research (CFIR) (2) and Social Cognitive Theory (SCT) (3), a comprehensive needs assessment was conducted from June to August (Kenya) and September to November (Ghana) 2025. This involved qualitative interviews (29) with government officials, school and faith-based organisation (FBO) leaders, community leaders, food vendors and health workers; and focus group discussions (12) with community health volunteers/nurses, parents, school and FBO staff and adolescents in Buruburu and Kibra sub counties in Nairobi, and Ayawaso and Ga-East districts in Ghana. The interviews and discussions were coded and analysed thematically using CIFR and SCT (2,3). This process identified the potential actors in Generation-H implementation, their expected roles, and the contextual and behavioural factors likely to influence the implementation of the Generation-H intervention.

Three categories of implementation actors emerged: i *Adopters* responsible for making key adoption and implementation decisions, such as head teachers, pastors, imams and community leaders, with their main roles as endorsement of the intervention, allocating and approval of implementation staff and resources in their institution; ii. *Implementors*, including teachers, coaches, youth leaders, community health promoters/nurses and food vendors, responsible for the daily delivery of Generation-H components such as facilitation of peer clubs, physical activity sessions, community events and provision of healthy foods and clean drinking water; and iii. *Maintainers*, including school boards, faith-based organisation leadership, government officials and local political leaders, with their

roles as ensuring long-term sustainability through approval decisions, technical support, resource allocation and integration of Generation-H activities into the existing government and institutional structures. Across both Kenya and Ghana, the there was strong alignment in core stakeholder structures and roles, with minimal differences such as a stronger emphasis on political stakeholder involvement in Ghana (e.g Assembly members) than Kenya.

Analysis of determinants revealed several barriers that may influence the implementation. *At the individual level*, inadequate knowledge and skills related to adolescent nutrition and physical activity, competing priorities, low motivation, expectations of monetary incentives and low confidence in undertaking new tasks were commonly noted. *Inner-setting constraints* included fixed schedules, limited infrastructure, inadequate resources (e.g. staff, space, equipment) and potential slow institutional buy-in. *Outer-setting barriers* comprised socio-cultural norms, religious and gender-based beliefs and misperceptions about physical activity and nutrition, safety and security concerns, and challenges linked to affordability and availability of healthy foods (fruits and vegetables). *The key facilitators* included a strong recognition of the need for programmes supporting healthy diets and physical activity for adolescents to address the growing consumption of unhealthy food and sedentary behaviour. Additionally, alignment of the intervention with existing school and faith-based values (health and wellbeing), the presence of supportive government policies and programmes (e.g school meals) and existing school, FBO and community structures that the intervention can be anchored on, were discussed as potential facilitators. Barriers related to competing priorities for school/FBO staff, resource constraints, and socio-cultural influences were common in both countries. However, country level and socioeconomic differences emerged as potential slower stakeholder buy-in in higher-income settings, structural constraints (lack of fences in primary schools) in Ghana, and greater emphasis on peer dynamics in Kenya.

Drawing on SCT, determinants were categorised into knowledge, attitudes, skills, self-efficacy, outcome expectations, and social/environmental conditions. Change objectives were subsequently formulated to address these determinants and support both implementors and adopters in fulfilling their implementation roles. The change objectives emphasise strengthening technical knowledge and practical skills, enhancing confidence and motivation, addressing socio-cultural misconceptions and expanding expectations beyond financial incentives among the implementation team (adopters, implementors), building partnerships and liaison with potential maintainers (e.g government, private sector), and enhancing the institutional structures to support implementation activities in the implementing institutions (schools and FBOs).

Overall, the findings from task 3.1 provided an understanding of the actors, behaviours and contextual factors that should be addressed to ensure successful implementation of the Generation-H intervention. These findings will form the basis for subsequent development of theory-informed implementation strategies and materials (Task 3.2 and Task 3.3).

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INTRODUCTION AND CONTEXT

Background

Non-communicable diseases (NCDs) are a major global health burden (4). Low-and middle-income countries (LMICs) have been affected disproportionately, contributing nearly 80% of all NCD deaths (5). The highest burden of NCDs in LMICs is skewed to urban areas, largely driven by poor lifestyles such as unhealthy diets and physical inactivity (4,5). Diets and physical activity are among the major modifiable risk factors for NCDs (6). Extensive research demonstrates that the underlying modifiable risk factors of NCDs emerge at a young age, including adolescence (7,8). Adolescence is a developmental stage where extensive cognitive abilities are developed, including the capacity to make independent choices and development of lifestyles that are often carried on to adulthood, including diet and physical activity behaviours (9,10). Adolescence therefore offers a vital opportunity for effective actions to prevent NCDs, through the reduction of harmful exposures, such as poor diet and physical inactivity (11). In response to the growing burden of NCDs, the WHO has developed evidence-informed “WHO Best Buys”, which are recommendations for policies and interventions to address common NCD risk factors, including unhealthy diets and physical activity (6). However, limited attention has been given to adolescents in the implementation of interventions that map onto the WHO Best Buys and other recommended interventions particularly in LMICs (12), partly due to evidence gaps on the implementation and wide scale adoption of the WHO best buys, especially in the sub-Sahara African (SSA) contexts and among the adolescent population. To address this gap, the Generation-H intervention, a multicomponent evidence-based intervention (figure 1) was developed through a participatory co-design process (task 2.1-2.3) guided by the WHO Best Buys, to reduce two NCD risk factors including unhealthy diets and physical inactivity among adolescents (10-19 years), living in various socio-economic urban communities in SSA (Kenya and Ghana).

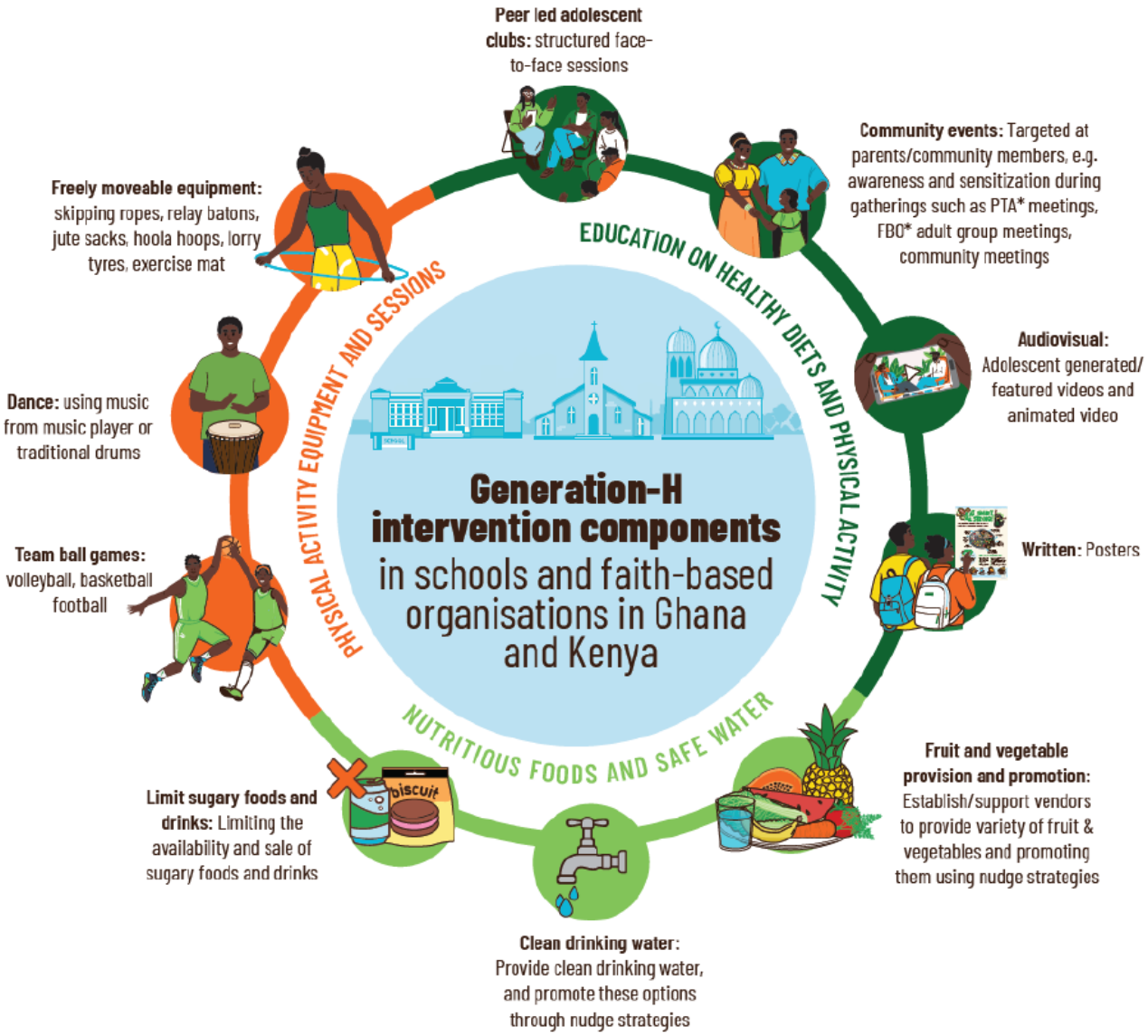

Figure 1: Generation H intervention components (findings of a participatory co-design process emerging from Tasks 2.1-2.3).

Implementation mapping

Implementation mapping is a systematic five step guide for planning the implementation process and developing implementation strategies (1,13). It was chosen to guide the development of WP3 implementation plan (task 3.1-3.4).The first step involves an implementation needs assessment to identify the resources and stakeholders who will be involved in the implementation of the intervention, including the maintainers, adopters, implementors. Maintainers are senior level stakeholders such as national and subnational

government officers who are involved in policy and programming level who may make the decision to adopt/adapt or integrate the intervention or intervention components/learnings in long term policies and programs for sustained implementation beyond the project period. Adopters represent heads of institutions, organisations or communities (e.g. head teachers, managers, community leaders) targeted by the intervention, who may make the final decisions regarding the delivery of the intervention as well as critical implementation decisions e.g., allocation of resources for implementation within their institutions. The implementors represent the actors within the implementing institutions who are involved in the actual day to day implementation activities, e.g. teachers in a school-based intervention.

Step two of the implementation mapping involves identification of the implementation goals (implementation outcomes) and specific tasks and roles (performance objectives) of each stakeholder in the implementation, identification of implementation determinants (potential barriers and facilitators of implementation), development of change objectives (changes needed to overcome the determinants/barriers) and create matrices of change.

Step three involves identification of theoretical framework (theoretical techniques of implementing the final intervention) and the implementation strategies (practical steps of operationalising the theoretical techniques).

Step 4 involves the development of the implementation protocols and materials (e.g. teaching aids, schedules/timetables etc.) corresponding to the implementation strategies chosen, while the final step (step 5) involves the evaluation of the implementation outcomes (1).

This report covers step 1 and 2 of the implementations mapping process (Task 3.1), which include conducting a needs assessment to identify the implementation stakeholders/actors; identifying the implementation outcomes, performance objectives and potential determinants; and development of the change objectives.

Objectives

The main objectives include;

1. Conduct an implementation needs assessment and identify programme adopters and implementers;
2. Identify adoption and implementation outcomes and performance objectives, determinants and create a matrices of change objectives

METHODS

STEP 1: IMPLEMENTATION NEEDS ASSESSMENT

The main aim of the needs assessment was to identify the implementation stakeholders (adopters, implementers, maintainers), their potential roles and resources needed as well as the factors (barriers and facilitators) that may influence the delivery of the Generation-H intervention. It involved community-based approaches including focus group discussions and interviews with various community representatives and government officials with experience, expertise and/or interest in adolescent nutrition and physical activity.

Guiding frameworks

The needs assessment process including the development of interview guides, data collection, analysis and synthesis was guided by the Consolidated Framework for Implementation Research (CIFR) (2) and social cognitive theory (SCT) (3). CIFR is a comprehensive determinants framework that guides the assessment and analysis of factors influencing intervention implementation across five main domains (individual level, inner setting, outer setting, intervention design, and intervention processes) and 39 constructs (Figure 2) (2). In WP3, the CIFR framework was applied in the assessment of contextual and individual level factors that may influence the implementation of the Generation-H intervention (15–19). SCT is an interpersonal theory that covers the individual level determinants of behaviour and the process of behaviour change (19). It posits that human behaviour is a result of interactions between cognitive/interpersonal factors, environmental events/factors and individuals' behaviour, and broadly categorises the determinants of human behaviour as personal/cognitive factors, environmental factors and behavioural factors (25). SCT guided the identification of the potential determinants (barriers/ facilitators) of the implementation behaviour encompassing the performance of implementation tasks by the implementation actors and subsequently the change objectives and the implementation strategies for the Generation-H Intervention (15,16,18,20–23).

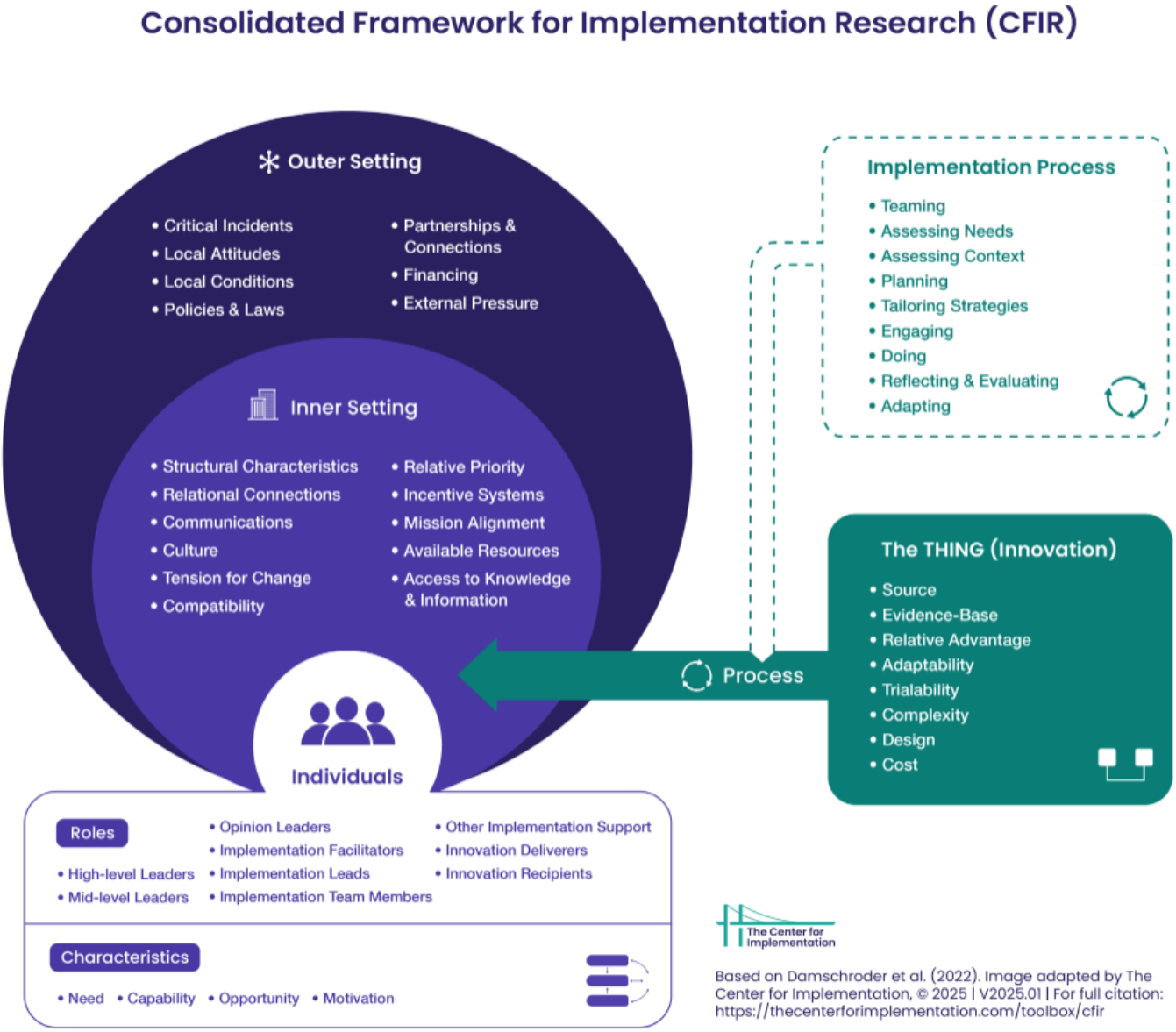

Figure 2: The consolidated Framework for Implementation Research (reproduced from Damschrode.,2022)

Data collection

Data collection involved qualitative interviews and discussions with key stakeholders at i) school/FBO, ii) community, iii) government national and sub-national levels and iv) adolescents.

Data were collected in June to August 2025 in Kenya and September to November 2025 in Ghana.
Purposive quota sampling was used to select eligible participants in each of these focus areas that were relevant to the implementation of the Generation-H intervention; nutrition, physical activity, education (schools), faith-based organizations (FBOs), community health strategies (community / households), food vendors, adolescents, this was complemented by snowballing to identify eligible participants who were not included in the initial participant selection.

Eligible participants were invited to take part in interviews or group discussions via phone calls or email by Generation-H researchers in Kenya and Ghana. Community, school, and faith-based organization (FBO) leaders also supported participant mobilisation. While the sampling and recruitment process aimed to ensure representation across all stakeholder groups in each country, some of the identified participants were unavailable for interviews. Follow-up efforts will be undertaken to include these individuals in subsequent stakeholder engagement activities. Table 1 summarises the number of qualitative interviews and group discussions conducted in Kenya and Ghana.

***Table 1**: Number of qualitative interviews and group discussions in Kenya and Ghana*

Interview	**Level**	**Stakeholder group**	**Kenya**		**Ghana**	
			Kibra	Buruburu	Ga East	Ayawaso
KII	Community	Community leaders	1	1	1	1
		Religious/FBO leaders	2	1	2	
		School leaders	2	2	2	1
		Food vendors	3	3		
		Teacher			2	
		FBO staff			2	
FGD	Community	Adolescents	2	2	1	2
		parents	1	1		1
		FBO staff	1	1	1	

		Food vendor			1	1
		Teachers	1	1	1	1
		Community health promoters/nurses	1	1	1	1
KII	Sub-county /district/ municipal government	Health (community health, nutrition, physical activity)	3	3	2	2
		Education	3	2	1	2
KII	County/National government	Education	1		1	
		Health	1		1	
		FBO	1			
			41		31	
• *FBO- Faith based organisations*						

Key informant interviews –KIIs

Key informant interviews (n=29 Kenya, 20 Ghana) were conducted with officials in the county/ region and subcounty/ district level representing potential maintainers of the intervention. These interviews focused on exploring the potential implementation stakeholders (adopters, implementors and maintainers), implementation barriers, facilitators and factors within the outer setting (e.g., major events, conditions, existing policies/ regulations/ plans, financing, partnerships) that may influence the delivery of the Generation-H intervention as well as the recommended strategies of addressing these factors. KII lasted between 60-90 minutes.

Key informant interviews were also conducted with the senior leadership within the schools/FBOs, representing the intervention adopters. These KIIs focused on understanding the potential stakeholders who would be involved in the implementation the Generation-H intervention in schools/FBOs; the perceived factors in the inner setting (schools/FBOs) and other external factors that would influence the intervention delivery;

the potential implementation barriers and facilitators from a decision-making perspective; and their proposed strategies of addressing the barriers.

Focus group discussions

Focus group discussion (n=12 Kenya, 9 Ghana) were conducted with FBO staff, school staff and community health promoters/nurses and food vendors representing potential implementors of the intervention. Within the schools, the discussions targeted both teaching and non-teaching staff involved in nutrition and physical activity. The focus of the FGDs was similar to that of the above-mentioned KIIs, but from an implementor's perspective. In addition, FGDs were conducted with adolescents and parents representing the intervention recipients. These discussions mainly focused on exploring their perspectives on potential barriers, facilitators and other factors that may influence their participation in the proposed intervention activities, and their recommendations on addressing these barriers.

Data management and analysis

The interviews were audio recorded and transcribed verbatim by a professional transcriber. Swahili audio files were translated to English during the transcription process.

Thematic deductive coding and analysis were undertaken, based on the CIFR framework, using the NVIVO software. First, one researcher read through 20% of the transcripts and developed the initial codebook outlining the themes and subthemes emerging for each CIFR domain and constructs. This was reviewed and discussed with two other researchers and updated accordingly. The codebook was then applied in coding of the rest of the transcripts while continually expanding and refining it to include new subthemes. Coding was conducted by six members of the project. To ensure consistency in the interpretation and application of the codebook, they all first coded two transcripts, which were then compared using the coding comparison query in NVIVO. This yielded at least 90% rate of agreement in most of the codes and the discrepancies identified were discussed and addressed. Furthermore, the coding team had weekly meetings to review the coding process, discuss, address and/or agree on any emerging issues and ideas. Thematic analysis and synthesis of the data were subsequently undertaken to identify ideas, concepts and themes relating to task 3.1 including *i)* potential implementation stakeholders and their roles and ii) potential barriers and facilitators of the implementation based on CIFR domains and constructs (individual, inner, outer setting and innovation), and *iii)* determinants of the implementation tasks based on the SCT (cognitive, behavioural, environmental).

RESULTS

Implementation stakeholders

Task 3.1 objective 1: Conduct an implementation needs assessment and identify programme adopters and implementers

Actors likely to be involved in implementing the Generation-H intervention, including maintainers, adopters, and implementers, were identified through data from the needs assessment and earlier intervention co-creation workshops (task 2.3, work package 2) conducted with community representatives and government officials.

During the needs assessment, participants' perspectives on the people who would be involved in leadership and high-level decision making regarding the implementation of the intervention (adopters), day-to-day implementation of the intervention activities (implementors) and ensuring that the implementation of the intervention activities continued beyond the project period (maintainers), were sought. Similarly, one of the co-creation workshop' discussion points focused on 'who' the codesign group thought could be involved in the proposed intervention components (Task 2.3). As such, these discussion (task 3.1 and 2.3) were synthesised to define *i)* the potential actors who would be involved in the implementation process and *ii)* their roles in the implementation process.

In Kenya, head teachers/board of governors (schools), and Bishops/Imam/Sheikh/lead pastors (FBOs) were identified as potential adopters of the education intervention component (*Figure 1: Education on nutrition and physical activity*), with their main responsibilities as approving the implementation activities, providing implementation resources within the school/FBOs, disseminating intervention-related information to staff and enforcing the implementation of the intervention activities in their institutions. Teachers (e.g. those teaching nutrition/physical activity) in schools and youth leaders/ Sunday-school teachers/Ustadh in FBOs were identified as potential day-to-day implementors of the intervention activities. Their main roles would be to coordinate the intervention activities and integrate them into daily timetables and activities. Peer leaders/champions/mentors were also identified as potential day-to-day implementors, mainly leading the peer clubs' activities with the adolescents. The peer leaders were discussed as older and respectful adolescents, young adults, or recent graduates from the schools, that the adolescents would look up to.

"Number one, on the pillar on education on healthy diets and physical activity, some of the facilitators are the parents, teachers and even the management of the schools. Parents in letting their children participate in some of these programs like school health programmes; teachers in educating and passing that

information and the school management in allowing such programs to be run in the schools" (KII with community leader, Kibra". KII-CL_KI-FO-04)

In Ghana, the proposed implementation actors for the education intervention component were similar to that of Kenya. In schools, head teachers were identified as the overall leads of school level implementation, providing the necessary permits/approvals for school level implementation and allocating the available resources that may be needed for implementation as well as ensuring continuity (sustainability) after project ends. Teachers with specific roles such as the home economics teacher, guidance and counselling teachers, culture coordinators or health/nutrition coordinators were proposed as the potential implementation focal points providing general oversight of the implementation activities, working closely with the peer educators, whose main role would be to educate their peers and coordinate the club activities. In some of the discussions, school prefects and role models e.g current students with good school performance or recent graduates (from the schools) were suggested as potential peer leaders.

In FBOs, Imams and lead pastors/ Bishops/Reverends were discussed as potential overall leaders of implementation in Muslim and Christian based FBOs respectively. Their roles were seen as ultimate decision making regarding the implementation activities in their institutions, providing the appropriate platforms for the Generation-H activities within the mosque or churches, and incorporating Generation-H related messages (nutrition and physical activity) during the mosque or church meeting/forums. In Muslim FBOs, the IMAM would delegate the day to day implementation of the intervention activities to younger mosque assistants, and youth leaders. In churches, the senior leaders would delegate the coordination of the intervention activities to other junior leaders such as the youth pastor, elders, deacons etc. while the main implementation activities would be led by the youth leaders/ youth organisers, youth presidents and sunday school teachers etc. who work directly with the adolescents. The youth leaders were suggested as people who are passionate about adolescents and young people and have a good track record of similar activities. Furthermore, incorporation of the Generation-H messages on nutrition and physical activities within health talks in churches, led by the church leaders and other health professionals in the churches could be a useful addition.

"we have some adolescents that are very knowledgeable and very smart. The adolescent stage, they tend to listen to their peers more than the elderly. So that would be a very great influence. They will have a great influence when it comes to peer sharing and peer teaching. So I think that will also be very good. (KII with Muslim religious leader, Ga East KII.FBO.01102025).

"So, with the mosques, you can have Imams. Some Imams are the key focal persons. So, we engage them, then they give us the platform where whoever wants to give the education can go in and give the education". (KII with municipal official, Ayawaso. AWMHD.170925.AYAWASO.WEST)

"Churches also have deacons or elders, because the deacons and the leaders also tend to supervise the Sunday school, the youth and all that. If they are mandated to ensure that this project works, it should fly. …For the pastors, they just give the green light but the work itself lies on the deacons and the health professionals or the Sunday school teachers or the youth president. (KII with Christian religious leader, Ga-East. KII.FBO.11102025.GA-EAST)

For the community events sub-component in Kenya, community leaders and gate keepers including chiefs/elders/*nyumbakumi*/chairmen/court leaders (Buruburu sub-county) were identified as potential adopters responsible for community level approvals and supporting/enforcing community mobilisation, engagement and dissemination activities. Community health promoters were identified as day-to-day implementors of the intervention activities with their roles encompassing organisation of the community events, mobilisation of participants, facilitation of community meeting sessions and awareness creation regarding the Generation-H intervention in the community.

"The community leaders will tell parent to release their adolescent children to go for the education … In the mosques the sheikh will make the final decision, but they will delegate the running of the intervention to the Ustadh to help implement the program ….In church the pastor will make the final decision and then delegate to the Sunday school teacher to run the intervention" (FGD with adolescents, Kibra. FGD-ADL-KI-EW-018)

In Ghana, various cadres of community leaders were identified as potential focal people, responsible for endorsing and approving the Generation-H related activities at community level, providing platforms for community engagement as well as leading community engagement and mobilisation efforts for Generation-H activities. Some of the proposed community leaders included the assembly members, chiefs, the resident association leaders, and market association leaders. In addition to community leadership, political leaders such as members of parliament were proposed as important stakeholders for resource mobilisation and linkages with government offices that are relevant for Generation-H implementation and sustainability. Community health nurses especially those who manage adolescent corners were also identified key stakeholders in the implementation of community engagements activities with the adolescents and their families.

"And in the communities, the chiefs, the assemblymen, and even the political people also, because they go up to the ground. So, when they are from, let's say, the president, the vice, the municipal executives, and the assembly, and sometimes influential people in the community, or respectable old people, can also gather people so that your people or they themselves can disseminate the information.(KII with a Physical activity expert. KII.PAE.160925 AYAWASO.WEST).

For the food provision intervention component in Kenya (Figure 1: Increasing availability of nutritious foods, limiting the availability of sugary foods and drinks and increasing availability of clean drinking water), head-teachers and school/FBO leadership were

identified as the main adopters responsible for approving, enforcing and providing any resources needed for the sale of healthy foods by school food vendors; peer club patrons and peer leaders for monitoring the clean water points, and food vendors were identified as day-to-day implementors of this component, with their roles as supplying healthy foods and limiting the sale of unhealthy options to adolescents.

"Number one, to start with schools we have food vendors whose role will be to make sure that the nutritious foods are provided. They will also make sure that there is steady supply of the nutritious foods" (KII with community leader, Kibra. KII-CL_KI-FO-04).

"If the school board are the people who make decision on who is to be a vendor in their school, they are the ones who give them the space to sell the food" (KII with sub-county community health strategy coordinator, Buruburu KII-CHS-BU-LA-04).

Similarly, in Ghana, the school and FBO leaders were identified as the main decision makers regarding the promotion of healthy (fruits/vegetables) in schools, with their main role as allowing and giving directives to school-based food vendors on the sale of healthy foods or limiting the sale of unhealthy foods and allocating spaces for food vendors, when needed. In schools, the food vendors within the school were identified as the main implementors with their role of selling /stocking and selling healthy foods at cheaper prices and displaying them attractively for the adolescents. In Christian FBOs, church members or church groups were identified as potential implementors, selling (or managing the sale) fruits and vegetables after the church meetings, by setting up new canteens in the churches or including healthy foods in existing canteens. Muslim participants highlighted that the sale of food within the mosque compound if not allowed, could be done around and close to the mosques at prices that are affordable by the adolescents.

"It's not GES that gives the instructions for how the canteen is set. It's the school where the canteen is sited. so once we bring the head teachers on board and they understand, you won't have any problems.(KII with teacher, Ga -East. KII-ADMIN TEACH 26.09.25)

That (food vendors) would be very unfortunate because the mosque doesn't permit that. The place is purely a place of worship. So, trying to demarcate part of the part of the mosque like inside the mosque as a place for food vendors or selling, the religion will never permit that. (KII with Muslim religious leader, Ga East KII.FBO.01102025)

Coaches/games-teachers or gym instructors were identified as the main day-to-day implementors of the physical activity intervention component *(Figure 1: Provision of physical activity equipment)* in Kenya, responsible for the coordination of the physical activity sessions and management of the physical activity equipment inventory, with support from games captain and peer leaders/ youth leaders/mentors/champions and the

approval of adopters: headteachers/ Bishops/Imam/Sheikh/lead pastors, in schools and FBOs.

"So, subcounty director of education will write to all the principals because he is the head of all the schools... the headmaster will cascade the information to the school board of management and for physical activities he will also direct it to the games master who will implement the physical activities (KII with sub-county ministry of health in-charge Buruburu". KI-MOH-BU-EW-05)

In Ghana, teachers especially the games teachers or the PE coordinators were identified as the coordinators of the physical activity components of the intervention in the schools working closely with the games perfects to organise the logistics and mobilise the students for the activities. The headteacher would approve the implementation of the proposed activities in schools. In FBOs, youth leaders in both churches and mosques were identified as the main implementors, under the guidance and oversight of the church (pastor, deacons, elders) and mosque (imam, mosque leader) leaders.

"But where we, we leave it in the hands of the head teacher, the PE teacher, and the headmaster to man it, when the head is not around, they have easy access to the equipment to pick them. When the teacher is not around, the PE prefect or the class prefect or the school prefect (KII with a teacher, Ga East. KII.TCH.26092025 TAIFA1)

Senior level school and FBO leaderships such as directors, board of governors, parents and teachers' organisations (PTO) in schools, and Bishops, church councils, council of Imams in FBOs were identified as potential maintainers, with the role of approving decisions, budgetary and other resource allocations to support the implementation process, in Kenya. Furthermore, government officials including the health (nutrition, public health) and education officers at county and subcounty levels were identified as maintainers, with their responsibility as offering relevant approvals, technical/ expert support and guidance during the implementation process, in line with the government policies and regulations, as well as financial allocations for continued implementation of adolescent nutrition and physical activity programmes in schools. In the same vein, local politicians were proposed as potential maintainers responsible for supporting, allocating and advocating for finances for implementation of the adolescent nutrition and physical activity programs/activities beyond the project period.

"In the church structure we have hierarchies, if the church leaderships will accept the intervention, then for sustainability purposes, it will be important that it is made a doctrine so that it becomes part of what we do, it will be part of their constitution, because if that is not done then after the exit of the program, the whole story will die" (FGD with FBO staff, Buruburu. FGD-FBO-BU-EW-014)

Similarly, in Ghana the involvement of senior leadership at school, FBO and government level was recommended to support and facilitate the implementation of the Generation-H

intervention. At government level, key stakeholders in the Ghana education services (GES) included the chief executive and director general who hold the highest offices in the department of education, with their main roles being providing the government approvals and also issuing directives regarding the implementation of the Generation-H intervention activities in the schools within their jurisdiction. Others identified were district and municipal level leaders such as directors who provide district/municipal level approvals, human resource department who provide guidance on teachers' engagement, training and capacity building, the school health and education (SHEP) coordinators who act as focal points for the implementation activities and linkage between the government and the schools respectively. Other government departments that were highlighted as important for the implementation and sustainability of the Generation-H project were the Ghana health services (nutrition and adolescent health services) as well as the ministry of Agriculture for policy integration of the learnings obtained from the Generation-H project. The SHEP coordinators and the community health nurses were identified as the potential links between the project intervention activities and the departments of education and health respectively, responsible for integration of the project activities in their work schedule after the project ends for sustainability .

At school level, school level leadership such as the parents and teachers associations (PTA) and, the school management committees were recommended as important stakeholders for the endorsement of the project and high level approval of the implementation activities as well as providing platforms for engagement activities regarding the Generation-H project e.g., parents' engagement. At FBO level, the church leaders (Seniors pastors, Bishops, reverends) and mosque leaders (Imams and mosque leaders) were identified as the ultimate decision makers of the implementation activities in their institutions. Both the government, school and FBO senior leadership were highlighted as important for monitoring and supportive supervision of the activities as well as integration of the activities in their schedules and programs for continuity and sustainability beyond the project period

"One, it will be the education director, the health director, and then the SCHEP coordinator, and then the nurses who are in charge of the adolescent groups. Who work with adolescent groups. And then as I sit here, I have to be involved because I have to open the gates for the community. And then also we can partner with some of the chiefs. Yes. To be part of these decisions". (*KII with a community leader, Ga-East CL.06102025._ABOKOBI)*

"Okay so, within GES, then I see school health. Even PE goes beyond the physical activity, but there have been some interventions that we have done with them before. So, maybe because of the physical activity, it's the PE and then the school health. Then outside GES, Ministry of Agriculture, the MOFA especially, and then Ghana Health Service, especially the Nutrition Department, and then the Adolescent Health

Department too. Because it also involves water. There used to be Ministry of Water and Resources, but I think their name has now changed to, they have Chieftaincy, Works and Housing or something. They are also key here…okay. For the ministries, most of the time it's because of the policies, integrating this into their policies" (KII with National Health Official, Ayawaso West. GES..290925).

Implementation/adoption outcomes and performance objectives

Task 3.1 objective 2: Identify adoption and implementation outcomes and performance objectives, determinants and create a matrices of change objectives

Implementation and adoption outcomes entail the performance goals or results of the day-to-day implementors and the key leaders/decision makers (adopters) respectively. Performance objectives are the specific roles and tasks by each actor that contribute to the achievement of their performance goals (outcomes) needed to implement the Generation-H Intervention.

The implementation/adoption outcomes and performance objectives were derived from the general stakeholder roles and responsibilities that were identified from the needs assessment and stakeholder workshops as detailed above.

Generally, the assessment revealed substantial similarities in the types and roles of implementation stakeholders in both Ghana and Kenya, alongside some context-specific distinctions. In both countries, a multi-level implementation structure was evident, with school leadership (e.g., headteachers), faith-based organisation leaders (e.g., pastors, imams), and community leaders acting as key adopters responsible for approvals, oversight, and resource allocation. Day-to-day implementation would be driven by teachers, peer educators, youth leaders, community health workers, and food vendors, while senior institutional leaders and government actors played critical roles in supervision, policy alignment, and sustainability. Although the core stakeholder structure and roles was similar across countries, slight differences were observed, for example, involvement and engagement of political offices/leaders in the implementation activities was discussed more prominently in Ghana (Assembly members) than in Kenya. Table 2 highlights the key implementation actors in Kenya and Ghana, including their implementation outcomes and performance objectives. The differences in implementation stakeholder groups and titles identified in the discussions from the two countries are highlighted for clarity and a colour-code provided as a foot note in the table 2.

***Table 2**: Generation-H intervention stakeholder/actors, implementation (adoption and maintenance outcomes and performance objectives) in Kenya and Ghana*

GENERATION-H INTERVENTION COMPONENT: EDUCATION ON HEALTHY DIETS AND PHYSICAL ACTIVITY FOR THE ADOLESCENTS

1. **Education through peer clubs, written and audio-visual materials in schools and FBOs and digital media platforms**

Role in school ***(Individuals)***	**Role in FBO** *(Individuals)*	**Adoption, implementation and maintenance outcomes** *(performance goal)*	**Performance objectives** *(specific tasks)*
Adopters			
Headteachers / School directors	Religious leader/ lead pastor/Bishop/Reverend / Imam	Approve the implementation of the education intervention activities in the schools /FBOs	Attend the project sensitization and review meeting to understand the goal, objectives, roles, and implementation requirements of the intervention. Officially designate a staff member to serve as peer club patron to oversee the respective components of the intervention Allocate the necessary school resources e.g space, basic equipment, and time within the school schedule to support the intervention activities (peer club sessions, physical activities sessions, drinking water stations, and food vendor operations)
Implementors			

Club patron / games teacher/teacher covering food and nutrition related subjects; Guidance/counselling, home economics teacher, cultural coordinator	Youth pastor/patron/ Sunday school teacher/ Ustadh. Church elders and deacons, younger Imam assistants	Coordinate and co-facilitate peer-club sessions in the schools /FBOs	Attend the full facilitator training and co-development of school/FBO specific peer club implementation plan (weekly activities, session topics, and proposed facilitators)
			Co-facilitate club sessions alongside peer leaders and guest facilitators using Generation-H intervention materials
			Co-facilitate community events alongside peer leaders and community health volunteers
		Provide oversight for written (posters) and audiovisual content in the school/FBOs	Identify/recommend suitable locations for posters and talking walls
			Review and approve all student-developed content including video scripts and final peer generated videos
Peer leaders	Youth leaders /peer leaders/mentors/ champions/ youth organisers, youth presidents	Lead peer-club sessions	Attend and complete a Generation-H peer leader training on the peer club facilitation
			Actively mobilize fellow adolescents to participate in club sessions and activities

		Coordinate club logistics e.g booking venues, managing schedules, and preparing necessary materials — for each session, in collaboration with the club patron
		Co-facilitate peer club sessions with the club patron and guest speakers, using the Generation-H intervention materials
		Co-facilitate community events alongside club patrons and community health volunteers
	Coordinate and monitor written and audio-visual content development and sharing in the school/FBO	Organize and supervise the placement and replacements of posters/talking wall materials by the club members in the identified locations within the school/FBO
		Support the development of creative content (scripting, filming), uploading of the approved videos to the Generation-H TikTok and WhatsApp platforms and monitoring the discussions generated, address any questions and report any misconduct/ misuse of the digital platforms to the club patron

2. **Education through community events/fora**

Target/role	**Adoption, implementation and maintenance outcomes**	**Performance objectives**
Adopters		
Community leaders - chief/ area chairman/village elder, court leaders, NGAO, Nyumba kumi); Assembly man/woman,	Approve and support community events in the study areas	Attend the Generation-H project sensitization meeting to understand the intervention objectives, roles, and support expectations

Chief, resident associations leaders, market leaders		Allocate time for disseminating intervention related messages during the chief's baraza (meetings) Attend or delegate a representative to participate in the community-based intervention forums guided by the project implementation guides.
Implementors		
Community Health Promoters ; community health nurses	Co-facilitate Generation-H community events in partnership with school and FBO peer-club leaders and the project team	Attend and complete the Generation-H facilitators training Organize and manage logistics for all community-based intervention activities — including mobilization of community members, securing venues, and coordinating poster placements at strategic locations in the community Co-facilitate sessions with school and FBO peer-club leaders and project team during the community event, using Generation-H materials.

GENERATION-H INTERVENTION COMPONENT: PROVIDING PHYSICAL ACTIVITY EQUIPMENT

Adopters

Role in school *(Individuals)*	**Role in FBO** *(Individuals)*	**Adoption, implementation and maintenance outcomes** *(performance goal)*	**Performance objectives** *(specific tasks)*
Head teacher	Religious leader/ lead pastor/Bishop/Reverend / Imam	Approve implementation of physical activity sessions with adolescents in the school/FBO	Allocate resources (space, time) for implementation of physical activities within the school /FBO
			Allocate staff to lead/coordinate Generation-H physical activity sessions
			Allocate resources for the repair, maintenance and replacement of worn-out/lost physical activity equipment.
Implementors			
Peer club patron/ games teacher ; Games teacher, PE coordinator	Youth pastor/patron/ Sunday school teacher/ Ustadh. Church elders and deacons, younger Imam assistants	Oversee physical activities in the schools	Attend Generation-H facilitator training and co-development of a schedule for physical activity sessions and activities for various adolescent groups
			Organize/coordinate physical activity sessions for the scheduled groups, in collaboration with peer leaders/ youth leaders
			Manage the storage and distribution of physical activity equipment and maintaining an inventory of the equipment

Games/ entertainment prefects/captain/ peer club leader	Youth leaders /peer leaders/mentors/ champions/ youth organisers, youth presidents	Coordinate physical activity sessions in the school	Coordinate the pick-up and return of physical activity equipment for each scheduled session

GENERATION-H INTERVENTION COMPONENT: ESTABLISH AND SUPPORT FOOD VENDORS TO PROVIDE AND PROMOTE FRUITS AND VEGETABLES AND LIMIT THE PROVISION OF SUGARY FOODS AND DRINKS, AND PROMOTE CONSUMPTION OF SAFE DRINKING WATER

Adopter

Target/role *(Individuals)*	**Adoption, implementation and maintenance outcomes** *(performance goal)*	**Performance objectives** *(specific tasks)*
Head teacher / Lead pastor/Bishop/Reverend/FBO leader/IMAM	Approve the implementation of provision and promotion of fruits/vegetables and provision of clean water and the intervention activities in the schools /FBOs	Allow and encourage the addition of fruits and vegetables as commodities for sale in the school/ FBO vendors and discourage the sale of unhealthy foods Allow the provision of clean and safe drinking water in the schools/FBO Allocate resources e.g space for healthy food vendors and clean water points

Implementors

Food vendors (existing vendor/schools/FBO staff/ church	Supply fruits and vegetables in the canteen or on school/FBO premises and reduce sale of unhealthy foods	Source and stock fruit and vegetables for sale to adolescents in the schools/FBOs and limit unhealth foods

women/youth group leaders or community member)		
		Provide favourable prices for fruit and vegetables Allocate favourable space for fruit and vegetables in the canteen or on school premises Use appealing /attractive packaging and display methods for healthy food space
School or FBO Club patron / Youth pastor/patron/ Sunday school teacher, Ustadh/ Church elders and deacons, younger Imam assistants	Supervision of clean water supply in the school/FBO	Coordinate the water tanks refills and regular water tank cleaning

MAINTAINERS (ALL INTERVENTION COMPONENTS)

Target/role in school ***(Individuals)***	**Target/role in FBO** *(Individuals)*	**Maintenance outcomes** *(performance goal)*	**Performance objectives** *(specific tasks)*
Board of management and school leadership / Parent and Teachers Associations (PTA), school management committees	FBO leadership and committees (Lead pastor/Bishop/Reverend/FBO leader/IMAM, elders, deacons etc.)	Continue to approve the implementation of the project activities in the school /FBOs and advocate for continued activities	Review and approve head teachers/ FBO leaders' decisions and allocation of resources (e.g staff time, space, equipment, and budget) required for the implementation and sustainability of intervention activities Attend project's review meetings to track progress and support implementation/maintenance related decisions

County and Sub- County / District and municipal government officers (Health and Education) e.g SCHEP coordinators, Assembly members	Provide the necessary government approvals and technical guidance and supportive supervision of the implementation of the intervention activities in schools and FBOs	Review and provide formal approvals for implementation of Generation-H intervention components in selected schools in Kibra and Buruburu in alignment with education and health sector policies and regulations
		Attend the Generation-H project sensitization and review meetings to understand the intervention's objectives, delivery model, provide technical input and track progress
		Regular visit to the schools and FBOs for supportive supervision and monitoring of the project activities
		Integrate the intervention activities (supportive supervision and monitoring) in their work schedules for sustainability
	Co-facilitate sessions	Co-facilitate peer-club sessions as invited guests and subject matter experts.

** **Colour code :** green font = Stakeholders discussed in Ghana only. **Black font=stakeholders discussed in both Ghana and Kenya** *** blue font =stakeholders discussed in Kenya only

Implementation Barriers and Facilitators

Guided by the CIFR framework, environmental and individual level factors (barriers and facilitators) that potentially influence the implementation (e.g. the performance objectives of implementors) of the Generation-H intervention were organised into outer-setting, inner setting and innovation-related factors while individual level factors were organised into capability, motivation, need, and opportunity.
In general, discussions on potential barriers were more pronounced compared to those of implementation facilitators. Individual level factors were more prominent, compared to those in outer and inner settings.

Barriers: Individual level

In both Kenya and Ghana, the common barriers at individual level included: *i)* inadequate knowledge and skills and negative attitude towards healthy foods (fruits and vegetables), adolescent nutrition and physical activity by both the recipients (adolescents, parents) and potential implementors (teachers, vendors), *ii)* poor interest and motivation to participate in the intervention by both the recipients and implementors due to competing priorities (work, chores, homework, business profits, leisure activities e.g mobile phones) social media TV and PS); *iii)* lack of time to participate in, or implement the intervention due to existing programs/timetable or work (school syllabus, church program, other clubs); *iv)* poor participation by adolescents due to restrictions by parents, *v)* lack of confidence to undertake the implementation activities by the implementors as it is outside of their normal/regular duties (e.g FBO staff), *vi)* expectations of compensation (monetary) by both implementors and recipients *vii)* body shape perceptions and biological characteristics (e.g menstruation) that hindered participation in physical activity by girls and concerns for adolescents' safety within the digital spaces.

"As Mwalimu (teacher) said, we are already overburdened and overworked… most schools we are understaffed, and we are overwhelmed with workloads. In addition to that the knowledge and skills – in private schools, most of the schools do not have professionals. It's just like someone who might be having an interest or has ability but the professional part of it is a bit limited"(FGD with teachers, Kibra)

"When we are talking about food vendors, you know someone will go for something that makes more profit for him. So, that might be a challenge for them to change from sugary foods to fruits. So, they might relent a bit and maybe changing their mind might be a challenge" (FGD with teachers, Buruburu.TR-BU-LA-015)

"The only thing would be if you don't structure the school timetable well. It would be conflicting with the instructional time. In the school, the whole day in the school, we call it instructional time. The time when we teach, when the teacher makes contact with the child, we call it contact time. So if we don't structure it well. It might affect both. Then for parents, in fact, calling parents to school is difficult. They are always chasing money. They have other things to doing. They don't want to come. So if we don't also maybe entice them

for the first two, three times, entice them with something that they want to see, they might not come. (KII with teacher, Ga-East. ADMIN TEACH.26.09.25)

Some differences in the individual level factors emerged across the two countries and SES levels. Inadequate time to participate in the intervention due to household chores or work was mainly discussed in reference to adolescents from low SES areas in both countries (Kibra, Kenya and Ga-East, Ghana). In addition, expectation of compensation/incentivization for the recipients (adolescents) was commonly discussed in the low SES neighbourhood in Kenya. At country level, discussions on the expectation of monetary compensation were more pronounced in Kenya compared to Ghana. Potential disrespect for peers due to familiarity emerged as a potential challenge in the implementation of peer clubs in Kenya (not Ghana). In Ghana (not Kenya), potential victimisation of school leaders who restricted the sale of the unhealthy foods in the intervention schools was discussed as a potential challenge. In addition, some participants in Ghana opined that the intervention activities to promote the sale of fruits and vegetables in the schools may amplify socio-economic disparities amongst the adolescents as those from poorer households may not be able to buy the fruits/vegetables.

"if my school here, I'm being strict that nothing (unhealthy) should be added. Then you go to Abokobi and they are not strict there, When we meet, they will just point me out that I'm being so strict for them"(KII school head, Ga-East.[SCH HEAD][14.10.25].

"still the economic situations, parents give out their children to other people to stay with. And most at times they are used for commercial purposes. So, let's say the child is going to sell for me, they will restrict them So, it's all about the commercial, commercial and the economic situations". (KII with physical activity expert, Ayawaso West, KII.PAE.160925)

Barriers: Inner setting

Within the inner setting, potential barriers that were common in both countries included; difficulties fitting the intervention into existing fixed programs / schedules (e.g., school timetable), inadequate and unsafe resources for implementation of the intervention (PA equipment, play fields, digital facilities e.g., phones, internet; clean water, human resources) poor safety and security for intervention related materials (posters and PA equipment) and potential difficulties in school and community entry due to scepticism and slow/poor buy-in of the intervention by school/FBO /community leaders and parents. The latter was common in the higher income neighbourhoods (Ayawaso and Buruburu).

Country level differences also emerged. In Ghana the lack of fences in primary schools was seen as a potential hinderance the restriction of unhealthy food vending within the school compound, while also limiting the space for poster placement. Further discussions

revealed that promotion and provision of any food and placement of non-religious content (e.g., posters) is not allowed in Muslim FBOs, which may hinder the implementation of some of the intervention activities in such settings.

"So, there are not enough playground spaces and schools don't also have spaces – the informal schools don't have spaces for physical activity. So, that will cause some difficulty" (FGD with community health promoters. FGD-CHP-KI-EW-02)

"Most of the times we see these posters within the classroom, but on the school compound itself, it's not there. The basic schools, I don't know how this is going to work because most of the times the basic schools are not fenced and it's also open to the public". (KII with National Health Official, Ayawaso West. GES..290925.)

"Those ones in low-income areas are quick to adapt and embrace new ideas. But with Buruburu, they do take their time. So, you might be having a very good idea, but they have to sit down and ask first of all why did you come to Buruburu, the next question you will hear is where else it has been implemented. So, you have to compare it with another place that equals Buruburu standards. So, they will ask you where else you implemented the program or why are you coming to try us" (KII with village elder, Buruburu. KII-VE-BU-LA-06)

Barriers: Outer setting

Potential barriers within the outer setting, in both countries included negative local attitudes, beliefs and misperceptions (cultural, religious, social, gender) that would potentially hinder the healthy diets and physical activity among adolescents; government permits and approvals requiring lengthy and complex protocols; poor prioritization of adolescent nutrition and physical activity in government policies and programs; drug abuse/alcoholism that may hinder adolescent participation in the intervention activities; poor availability, access, affordability and perishability of fruits/ vegetable; high availability, advertisement and promotion of unhealthy foods; and concerns for poor hygiene and sanitation by fruit and vegetable vendors.

At SES level, discussions on drug use and alcoholism by adolescents as a potential barrier to adolescents' participation in the intervention activities were more prevalent in the low SES neighbourhoods (Kibra & Abokobi-Ga-east) as compared to the high SES neighbourhoods. At country level, discussions on the prioritization of starchy staples over fruits and vegetables in Ghanian dishes was discussed commonly as a potential barrier to fruits and vegetables intake by adolescents. Observations that the high availability, advertisement and promotion of unhealthy foods would derail the interventions' efforts to promote healthy foods (e.g fruits and vegetables) were also more prominent in Ghana than Kenya.

"I think that fruits can go bad if they are stored under direct sunlight. So, like I am hawking the crisps in the bucket – you cannot stuff the fruits in a bucket because they can go bad or they will be rotten due to the direct sunlight"(KII with food vendor, Buruburu.KII-FV-BU-EW-07

"I am a Muslim, there is no way I will allow my daughter or my son to dance when everyone is looking at them. So, there is that need of respecting the socio-cultural backgrounds of where we are coming from. And we are Africans so as Africans we also have very clear distinction of roles some which are good, some which are not good" (KII with sub-county health officer in charge. Kibra. KII-Sc.MOH-KI-FO-18)

"Their attention is on the heavy meals. But fruits and vegetables, no. It's not part of the Ghanian diet. We are not paying much attention to that" (KII with National Health Official, Ayawaso West. GES..290925.)

"We are also going to educate the children on healthy diets. But on radio and TV, you have all this junk foods being advertised…when you look at the advert, they also mention a lot of benefits that the children will get. They are mentioning the vitamins, other nutrients, maybe it's not true. When you even ask children these days what is their favourite food, it's very hard to hear fufu and… What you hear is indomie… So, because those are the things they see on TV that people advertise. How many people advertise bananas, oranges and all those things? We don't advertise. So, it's going to be a challenge. So that's how I see it". (FGD with teachers Ayawaso-West. FGD_TCH_251017)

Facilitators

Potential facilitators that were common for both countries included *i)* the recognition and acknowledgement of the need for nutrition and physical activity interventions/ programs to address the prevalent poor dietary practices and sedentary behaviour by adolescents and young people, coupled with increasing rates of overweight/obesity and non-communicable diseases in the study communities and *ii)* alignment of the proposed intervention with most institutions' values / mission and some of the ongoing programs/activities to promoting health and wellbeing of the students (schools) and communities that they serve (FBOs), *iii)* presence of government policies and programs that align with the proposed intervention components such as the NCD prevention policies, school meal programs, physical education (PE) in the school curriculum, and *iv)* the need for physical activity equipment and resources to facilitate the PE lessons, that was lacking in most schools especially the government schools.

In Ghana existing school nutrition initiatives such as the SMART schools program and the fruits/vegetables/egg school days etc and traditional community events were discussed as potential platforms that could be leveraged for implementing or visibilising the Generation-H intervention components. Such existing school and community activities were less common in Kenya, besides the existing school meal programs in Nairobi.

"I'll support what P2 has said; you see this is something already in place. It's only that we ignore it. So, if given a little bit of weight it can work., we have agriculture, nutrition about food, it's taught there. We have physical education taught there" (FGD with teachers, Buruburu.FGD-TR-BU-LA-015)

"I am a youth leader from church…we can create time in our churches so that after we have preached about heaven, we can also tell them about nutritious foods and what they are supposed to eat so that they have a quality life" (FGD with FBO staff, Kibra. FGD-FBO-KI-FO-09)

Yes, you see, the Islamic teaching and practice…the prophet always advised his followers to be healthy. And it's only when you are healthy that you can live long and worship your God well... So, if this thing, this intervention is going to help the adolescent girl in terms of their health, then it means it is in line with what the prophet is teaching or has taught us" (KII with Muslim religious leader, Ga East KII.FBO.01102025)

"There should be a time where the community comes together, For instance, the Homowo *was an avenue that if this office is in place, they can ensure that, as the people have gathered for the festival, it's also an opportunity to, one, educate, two, to also mount stands and that will ensure continuity" (KII with a Christian religious leader, Ga-East. KII.FBO.11102025 -Abokobi)*

Implementation determinants

Task 3.1 objective 2: Identify adoption and implementation outcomes and performance objectives, determinants and create a matrices of change objectives

Further synthesis of the narratives on implementation barriers was conducted focusing on how they would influence implementation behaviour, guided by SCT of determinants of behaviour. Determinants represent the changeable factors that may influence implementation behaviour, mainly at individual level and modifiable contextual factors. The main themes were categorised as 1) individuals (implementors, adopters, and recipients) perceived knowledge, attitudes and beliefs regarding the intervention focus areas (adolescent nutrition and physical activity) and/ or the intervention components (clubs, physical activity, food provision in schools), 2) Implementors' perceived skills, capacity and confidence to conduct the proposed implementation tasks, 3) motivation and expected results of involvement in the intervention activities, and 4) environmental conditions (social and physical) that would impede the implementation process. Therefore, based on the SCT, the determinants of implementation of the Generation-H intervention were defined as i) knowledge, ii) attitudes, iii) self-efficacy iv) skills/capability, v) outcome expectations and vi) socio/physical environment. Table 3 highlights the barriers and facilitators identified in Ghana and Kenya organised by the CIFR domains (inner setting, outer setting, individuals and innovation) and the corresponding socio-cognitive determinants (knowledge, attitudes, self-efficacy, skills/capability, outcome expectations and socio/physical environment). Differences observed between the two countries are difference colours and colour code included as a footnote.

***Table 3**: Implementation barriers, facilitators and determinants in Kenya and Ghana*

IMPLEMENTATION BARRIERS AND FACILITATORS IN KENYA

CIFR DOMAIN & CONSTRUCT	INTERVENTION COMPONENT	BARRIER/FACILITATOR	DESCRIPTION	DETERMINANT (SCT domains)
INNER SETTING				
COMPATIBILITY	*Education: Peer clubs*	Fixed school / FBO systems, programs (e.g fixed timetable, calendar)	*Inflexible school timetable, schedule (opening/closing time), little/no time for club activities*	Social/Environment
			Defined church doctrines/ programs that are different from the proposed intervention activities	Social/Environment
		Competing activities	*Competing activities in schools e.g other clubs*	Social/Environment
RESOURCES AND INFRASTRUCTURE	*Education: Peer clubs*	Inadequate resources	*Inadequate space for peer club meetings and activities in some schools e.g private schools*	Social/Environment
IMPLEMENTATION SUPPORT	*Education: Peer clubs*	Scepticism/ lack of support by school, FBO and community leadership/parents	*Lack of buy-in by the school leadership and parents especially in higher income areas* *Restrictions to participate in the activities by parents - greater focus on academics*	Social/Environment

RESOURCES AND INFRASTRUCTURE	*Education: Digital platforms*	Inadequate resources	*Lack / poor access to smart phones, digital platforms, internet by some of the adolescents*	Social/Environment
			Lack of electricity, ICT resources, internet in some schools, FBOs, homes	Social/Environment
COMPATIBILITY	Physical activity sessions	Fixed school / FBO systems and regulations (fixed timetable, calendar)	*Inflexible school timetable, schedule (opening/closing time), hence challenges in integrating PA sessions*	Social/Environment
			Poor adherence to existing physical activity lessons in schools	
MISSION ALIGNMENT		Existing programs/activities/goals – Education, Health and well being	*Intervention activities align with church/mosque teachings on wellbeing/quality of life*	
			Intervention activities build on existing subjects/lessons e.g physical education, agriculture etc.	
RESOURCES AND INFRASTRUCTURE		Inadequate resources	*Unavailability of PE teachers and training materials e.g in informal and private schools*	Social/Environment
			Lack of space/ playgrounds especially in informal and private schools	
			Lack/inadequate equipment for physical activity, especially in high volume schools	

RESOURCES AND INFRASTRUCTURE	Provision and promotion of clean drinking	Inadequate resources (clean water)	*Water rationing in most parts of Nairobi including Buruburu* *Intermittent supply of water purifiers by government e.g Aquatab, mainly at household level and less in schools*	Social/Environment
OUTER SETTING				
POLICIES AND LAWS	Education: Peer clubs	Government regulations & policies	*Government licences are needed for poster placements in public areas; poor compliance may lead to hefty fines*	Social/Environment
LOCAL ATTITUDES	Education: Peer clubs and physical activity sessions	Local attitudes, conditions, beliefs, norms	*Religion - Mixing of boys and girls is not allowed in Muslim religion* *Culture - Food preferences and restrictions based on cultural norms and beliefs* *Gender norms- Boys not allowed in the kitchen in some cultures* *Gender norms -Junk food perceived as food for girls* *Class-Adopting a 'healthy diet' may be frowned upon, may be scorned by peers as pretending to be in a different class* *Body image perceptions - consumption of unhealthy foods to avoid weight gain;*	Social/Environment

			bullying based on weight status, mostly by girls	
LOCAL CONDITION	Education: Community events	Community entry	*Difficulties in community entry in Buruburu as people are very private*	social/environment
	Peer clubs and Physical activity sessions	Drugs, alcohol, teenage pregnancies	*Prevalent alcohol and drugs among adolescents, may affect participation in peer clubs/ PA sessions* *Prevalent teenage pregnancies which affect adolescent nutrition*	social/environment
	Education: Peer clubs and Physical activity sessions	Safety and security	*Political unrest/ protests by youth will hinder participation in the clubs and other intervention activities* *Safety and insecurity concerns by parents, especially for girls, higher in Kibra compared to Buruburu*	social/environment
	Education: Posters		*Posters maybe vandalised in the community*	
	Education: digital platforms		*Concerns for adolescents' safety on social media - bullying, exposure to illicit behaviours/content /language on social media*	

FINANCING	Peer clubs and Physical activity sessions	Lack of government funding for adolescent nutrition and physical activity	*Some budget for school nutrition and wellness at cub-county (nutrition, equipment) - not specific for adolescents* *Little support from government for physical activity equipment in schools*	social/environment
LOCAL CONDITION	Physical activity sessions	Safety and security	*Vandalization of physical activity equipment*	social/environment
LOCAL ATTITUDES		Local attitudes, conditions, beliefs, norms	*Gender norms* *- Specific games are perceived to be for boy e.g football while others are for girls e.g skipping, hula-hoops* *Bullying for girls who play football* *Male coaches may discourage participation of girls* *Boys perceived to be more physically active and spend more time outdoors, girls perceived to be less active and spend more time at home, indoors* *Religion: perception of some dancing styles as immoral* *Religious doctrines on dressing styles and physical activity (e.g no shorts and ball games for girls)*	social/environment

			Body image concerns for girls, fear that physical activity will make them more masculine	
			Body image and awareness, body shaming which often discourages adolescents from participating in physical activity	
		Unconducive environment for physical activity	*Limited spaces for play - free spaces have been cleared for building in most urban areas*	social/environment
			Weather - in rainy seasons, the playgrounds are muddy - may discourage the participation in PA	social/environment
POLICIES AND REGULATIONS	Provision and promotion of healthy foods (fruits and vegetables)	Government regulations & policies	*Policies, regulations and licencing requirements for new products/businesses may discourage food vendors from stocking fruits /vegetables*	social/environment
LOCAL CONDITIONS		Availability and access to fruits/vegetables (sourcing)	*Challenges in sourcing fruits and vegetables - junk foods are more readily available*	social/environment
			Low and high SES communities have access to different type of unhealthy foods – should all be addressed in the intervention	
			Fruits are highly seasonal, expensive when out of season	

		Weather	*Fruits do not sell during cold weather which may compromise profits/sales*	social/environment
			Fruits and vegetables are highly perishable especially during the hot weather	
		Hygiene and sanitation	*Concerns for poor hygiene and food safety (parents, adolescents) which may discourage purchase/consumption of healthy foods*	social/environment
INDIVIDUALS				
RECIPIENTS- OPPORTUNITY	*Education: Peer clubs and Physical activity sessions*	Lack of time to participate due to competing activities	*Competing activities e.g household chores, homework, PS, TV*	Interest/ motivation / attitude
			Other existing clubs and school activities	
			Work/ looking for work for older adolescents	
	Education: Community events		*Parents are busy at work and may not have time to participate*	Interest/ motivation / attitude
IMPLEMENTORS-OPPORTUNITY	*Education: Peer clubs and Physical activity sessions*	Lack of time for implementation activities (overburdened with current work)	*Teachers are already burdened with the current syllabus*	Interest/ motivation / attitude
IMPLEMENTORS - CAPABILITY	*Education: Community events*	Lack of knowledge and skills (on nutrition and physical activity)	*Lack / inadequate knowledge and skills on adolescent nutrition and physical activity*	Knowledge, skills/ self efficacy

			by community health promoters and teachers	
	Education: Peer clubs		*Lack / inadequate knowledge and skills on adolescent nutrition and physical activity (teachers)*	
IMPLEMENTORS, CAPABILITY		Inadequate information, knowledge and skills (about the project)	*FBO staff may not be confident in implementing the intervention because it is not part of their usual church work*	
RECIPIENTS CAPABILITY	Education: Peer clubs / Provision and promotion of healthy foods (fruits and vegetables)	Inadequate knowledge, skills and concern for healthy eating by adolescents	*Poor knowledge, skills, concern for healthy diets and physical activities by adolescents*	Knowledge, skills/ self-efficacy
			Negative attitude towards fruits and vegetables and greater preference for junk foods	
			Perception that healthy foods are more expensive compared to unhealthy foods	
RECIPIENTS CAPABILITY	Education: Peer clubs	Disrespect for peers/Poor credibility and familiarity with peers	*Adolescents may not respect their fellow adolescents as peer educators due to lack of credibility and familiarity*	Self-efficacy
IMPLEMENTORS - MOTIVATION	All intervention components	Compensation expectations by all stakeholders (implementors, recipients)	*Expectation for stipend / airtime / transport reimbursement by the CHPs*	Outcome expectation

			Expectation for compensation/tokens by most intervention stakeholders (recipients and implements)	
RECIPIENTS - MOTIVATION	Education: Peer clubs	Poor interest and motivation to participate in the project activities	*Poor interest by adolescents to participate in the intervention / unwillingness/ unavailability to participate*	Attitude
			Poor commitment - adolescents do not perceive immediate benefits, have difficulties changing current behaviour and sustaining healthy diets	
	Education: Posters		*Lack of keen interest in posters by adolescents / preference for digital platforms*	
	Education: Digital platforms		*Short concentration span for the adolescents*	
IMPLEMENTORS - MOTIVATION	Provision and promotion of healthy foods (fruits and vegetables)	Poor prioritization of project activities / misalignment with food vendor priorities	*Reluctance to sell the fruit/vegetables due to poor profits and availability (sourcing) compared to less healthy foods sweets/candy*	Attitude /outcome expectation
			Inadequate knowledge and skills on healthy eating / negative attitude on fruits and vegetables by adolescents may compromise sale of healthy foods by vendors	

IMPLEMENTOR - MOTIVATION		Lack of time for implementation activities due to competing interests	*Lack of time for the food vendors to attend sensitization as they are busy in their businesses*	Attitude/ motivation
NEED *		Increasing sedentary behaviour and junk food consumption, increasing overweight/ obesity and non-communicable diseases	*Acknowledgement and concerns for increasing sedentary behaviour and junk food consumption by adolescents and young people (current generation) by most participants* *Alignment of the intervention activities with some of the existing activities, values/missions of schools and FBOs*	
INNOVATION				
COMPLEXITY			*Too many interventions at once, some not clear e.g water provision, might be difficult to implement and track progress*	Attitude/ motivation
ADAPTABILITY/SUSTAINABILITY	Physical activity sessions	Concerns for sustainability	*Perceived poor sustainability after the project (physical activity, clean water points)*	Social/environment
COST		Cost of buying equipment	*Expenses related to equipment e.g purchase, maintenance*	Social/environment
	Provision and promotion of healthy			

	foods (fruits and vegetables)			
COST		Cost of fruits and vegetables	*Perceived high cost of fruits and vegetables by both implementors and ss*	Attitude, social/environment

** **COLOUR CODE :. BLACK FONT=BARRIERS/FACILITATORS DISCUSSED IN BOTH GHANA AND KENYA *** BLUE FONT =BARRIERS/FACILITATORS DISCUSSED IN KENYA ONLY**

BARRIERS AND FACILITATORS IN GHANA

CIFR DOMAIN & CONSTRUCT	**INTERVENTION COMPONENT**	**BARRIER/FACILITATOR**	***DESCRIPTION***	**SCT DOMAIN**
INNOVATION				
RELATIVE ADVANTAGE	Education: peer clubs	New important components	*Added advantage of the project is that it has components that involve FBOs which is not common as most interventions focus on schools, for in school adolescents and not out of school, also combines healthy eating and physical activity as most other interventions focus on healthy eating only.*	social/environment
DESIGN		Monitoring / supervision	*Poor monitoring may lead to implementation challenges*	social/environment

		Sustainability	*Poor sustainability of the clubs if they are stand alone and not leveraged on existing clubs* *Important to think about continuity and sustainability after the project ends e.g through regular visits, evaluation etc*	social/environment
DESIGN		Fit for adolescents *	*Using adolescents peers for the peer clubs is a good idea as adolescents listen more to their peers than adults*	Attitude
COST/ CAPABILITY		Cost may hinder participation	*Any costs associated with participation in the clubs / project activities may hinder participation of the adolescents*	
RELATIVE ADVANTAGE	Education: digital platforms	New/exiting components for adolescents	*Children are likely to enjoy the digital platforms as they like them* *New additions will be the provision of equipment and audiovisual component - can project the videos through projectors in schools or PTA meetings*	Attitude
RELATIVE ADVANTAGE	Physical activity sessions	Equipment provision	*Providing physical activity equipment is an added advantage of the Generation-H*	

			program over existing PE lessons in schools that have few or no equipment	
COST	Provision and promotion of healthy foods (fruits and vegetables)	Perception that eating healthy is expensive	*Perception that eating healthy needs money*	Attitude
		Cost of fruits/veg may hinder participation	*Expenses involved e.g buying the fruits and vegetables maybe a hinderance for some parent's/ students*	Social/environment
			Fruits and vegetables are expensive and may not be affordable	
COMPLEXITY	Restriction of unhealthy foods	Difficult to implement	*Difficult to close down businesses that sell unhealthy food types*	Social/environment
			Very challenging to implement the food sale restrictions by food vendors in some schools	
INNER SETTING				
COMPATIBILITY	Education: peer clubs	Fixed school timetable	*Potential conflicts of the project activities with the school timetables (instructional/contact time)*	Social/environment
			Fixed school timetable and focus on academic performance	

Existing structures to leverage*	*Clubs exist in some schools, although they may not focusing on nutrition or PA* *Fruit day exist in some schools, students bring fruits to schools and have a session on how to eat healthy* *Health education is present in the curriculum e.g home economics subject* *School meal program exists although it lacks fruit and vegetables* *In some communities (GA east), they have existing adolescent clubs (zonta), adolescent corners, and local health and fitness groups* *4 start diet intervention in some schools where parents are taught on nutrition* *SMART schools intervention in some schools which involves adolescent health and nutrition activities on weekends* *Celebration of important days e.g world food day, world hygiene day, hypertension day etc*	Social/environment
Interventions are new to FBOs	*A new intervention and complex for FBOs to implement / adapts as it is something new and different from their usual activities*	Self-efficacy /capability

TENSION FOR CHANGE/NEED*		high rate of NCDs/sedentary behaviour*	*Increasing NCDs e.g hypertension, heart attack etc that were common among rich people now also among the poorer people, hence the need for interventions on nutrition and physical activity*	Social environment
			Most of the existing interventions have a heavy focus on girls, boys are left out	Social environment
IMPLEMENTATION SUPPORT		Challenges school/community entry in implementation	*Some schools are difficult to engage e.g some public schools and private schools*	Social environment
			Potential poor buy in from health and education directorate	
			Might create disparities between poor and rich who cannot afford to buy fruits and vegetables or PE kits , they may feel left out	Social environment
COMPATIBILITY	Education: community events	Easier implementation using existing community structures*	*Community component is easier to implement if embraced by schools and community*	Social environment

			incorporate health talks in popular community activities e.g., homowo festivals *Existing platforms for engagement - seamstress associations, market women* *Important to have continuous community engagement* *include some messages/activities in the Homowor festival and durbars*	
	Education: poster	Existing structures to leverage *	*Similar activities in some schools e.g one on talking compound where adolescents design their own messages and put them around the compound*	social/Environment
RESOURCES AND INFRASTRUCTURE		Space challenges – no fences in most school	*For talking walls most schools are open no fencing / walls which maybe a challenge, the posters maybe placed inside the classrooms*	
COMPATIBILITY		Space challenges : posters not allowed in mosques	*In the mosque only posters with religious messages are allowed, hence a challenge in displaying project posters*	

RESOURCES AND INFRASTRUCTURE	Education: digital platforms	Inadequate /lack of digital resources	*Poor access to phones for adolescents from poorer households*	
			Challenges in accessing digital/IT equipment mainly in public schools	Social environment
COMPATIBILITY	Physical activity sessions	Fixed school timetable / FBO calendar	*Main challenge will be how to fit in the PE program into the existing PE timetable, and where to place some of the games/equipment e.g volleyball*	Motivation /capability
		Existing PE structures* (though not adhered to, no resources)	*PA easy to implement as they already have PE in the timetable*	Social environment
			Schools are already implementing physical activity as part of the curriculum but it is not frequent and some schools lack equipment	
			Existing community structures - public health officers in community, in zone, district level , schep coordinators for in schools, assembly women for out of schools	

TENSION FOR CHANGE		High levels of sedentary behaviour - more among higher SES	*Adolescents from richer families are more sedentary*	
INFRASTRUCTURE: STRUCTURAL CHARACTERISTIC		Safety of play areas/ equipment	*Limited and sometimes unsafe facilities for PA, where children get hurt* *Poor / unsafe physical activity facilities e.g playing field* *Inadequate secure places for safe keeping of the PA equipment - maybe vandalised*	
RESOURCES		Inadequate PE facilities (space & equipment)	*Most schools only have footballs and not a variety of other PA equipment* *Inadequate space for physical activity in some schools Sometimes they have to rent space outside* *Some schools have large number of students and very small spaces, hence not conducive for PA*	
RELATIVE PRIORITY		Prioritization of other academic subjects over PA in schools	*PA activity not taken seriously, compared to other subjects*	
STRUCTURAL CHARACTERISTICS	Restriction of unhealthy foods	Lack of school boundaries/fencing in some schools	*most schools do not have boundaries, some vendors sell without permission along the routes into the school*	Social environment

			Lack of fencing in the schools, so difficult to control the sale of unhealthy foods within the school premises	
			Difficult to control the foods vendors outside the school.	Motivation , outcome expectation
			Hard to control what children buy/ is sold around the schools	
COMPATIBILITY		Involvement/ownership by school/FBO leadership	*Some of the shops/kiosks are owned or involved with influential people/ leaders/ politicians and therefore difficult to restrict*	Motivation , outcome expectation
			For mission schools canteens -with unhealthy foods-are run by the women's fellowship and is difficult for the church leaders to control them	
			some canteens/food vendors in churches are implemented by the church groups e.g women fellowship hence difficult to control	
RESOURCES	Provision of clean drinking water	Inadequate access /availability of clean drinking water in schools	*Unavailability of clean water in the schools, due to poor supply by the government, and unpaid water bills*	Social /Environment

			Most children have to buy clean drinking water and hence if there is not money, then they have no water to drink *Access to clean water is a challenge in many parts of Ghana and may be a challenge in the intervention implementation*	
STRUCTURAL CHARACTERISTICS	Provision and promotion of healthy foods (fruits and vegetables)	Poor fruit/veg presentation by vendors (unappealing)	*Food vendors selling fruits are available in the school vicinity but the problem maybe the way the fruits are arranged in the tables* *Poor presentation of fruits and vegetables by the vendors hinders purchase*	Capability/ skills
COMPATIBILITY & TENSION FOR CHANGE		Several existing structures/ programs to build on*	*Hot meals only provided in basic schools not junior and senior high school* *healthy living programs exist in some schools (cadets)* *Existing programs include nutrition friendly school initiative and talking compounds in most schools* *School meal program exists but lacks fruit and vegetables* *Generation-H intervention are building on existing activities e.g PE, healthy food*	Social/Environment

provision schools etc, and will enhance/ revamp their implementation

Existing programs in some schools - healthy eating challenge (games on healthy eating with prizes) ; fruit week - everyone brings some fruits during the fruit week - it is supervised by the community health nurses

Existing interventions - an egg a day in some schools

Nutrition friendly school initiative involves health clubs with nutrition and other components, takes in about 24 adolescents per cycle

There will be conflicts if new food vendors are introduced, best to work with existing food vendors in schools/FBOs

Provision of the vegetables could be attached to the existing school feeding program for sustainability

Fruit / protein day, an existing program where students bring fruits/ vegetables and are taught / have dialogue about them

MISSION ALIGNMENT		Muslim faith: no food vending in mosque	*Fruit and vegetable sale inside the mosque is not permitted - maybe done outside* *Food vendors not allowed in the mosque, but can sell outside and subsidise so adolescents can afford* *Selling food in the mosque might be challenging as they mostly go to the mosque in the mosque during prayers, so may not be a good business market*	Social/environment
MISSION ALIGNMENT		Muslim faith: incorporate messages on healthy eating in religious education	*Some mosques provide education for religion, sometimes expanded to other things e.g language - leverage that to include messages for healthy eating?*	
MISSION ALIGNMENT			*The intervention aligns with the Muslim faith - Hadith- when healthy you can live long to worship God*	
OUTER SETTING				
LOCAL CONDITION	Education: peer clubs	High availability, promotion/advertising of unhealthy foods	*High availability of unhealthy foods e. g SSB & junk some companies are owned by influential people e.g politicians , may derail the promotion of the healthy foods e.g fruits and vegetables*	Social/environment
		Drugs use	*Drug use by the adolescents might hinder their participation in the activities*	

			Drug use in young people common in abokobi	
POLICIES/ LAWS	Education: Posters	Permits needed for posters	*Need for permits for the posters in the community - from the assembly*	Social/environment
LOCAL CONDITION	Education: Digital spaces	Safety - digital spaces for adolescents	*Concerns for exposure to harmful content due to lack of restrictions on social media nowadays*	Social/Environment
FINANCING	Physical activity ; Provision and promotion of healthy foods in schools (fruits and vegetables)	Government funding for PE available but little, for school sport competitions	*Little funding available for adolescent nutrition - most of those available is for young children e.g breastfeeding/immunization*	Social/Environment
			Funding available for sports and athletics but mainly for the interschool competitions	
LOCAL ATTITUDES		Culture & gender: PA/sports not fit for women	*Ladies who are physically active are seen as masculine and labelled as manly women- which may discourage women from being physically active*	
			Some traditional beliefs that women engaging in vigorous PA will lose virginity	
			Cultural beliefs that girls should stay at home while boys go out and play, that girls playing with boys are tomboys etc	

		Some exercises are seen as for men, so if women following them are labelled as obaa wei de3 op3 mmerima mu oo
		Some games e.g football are seen as games for boys
		Perceptions that some games are considered for boys and not girls and vice versa e.g AMPE for girls
LOCAL ATTITUDES	Social norm/ belief: some PA associated with poverty	*Physical activity e.g walking maybe associated with poverty and low social standing*
	PA perceived as gym hence expensive	*Common perception that physical activity needs gym which is expensive*
		Misconception between gym/ exercise and physical activity
LOCAL ATTITUDES	Religious beliefs/ doctrines	*Dressing requirements for Muslim girls might hinder them from participating in vigorous physical activity . Also if they are well covered, then it won't be a problem e.g the Muslim women participating in international sports*
		Some dancing styles may not be acceptable in some of the FBOs e.g koraa

LOCAL CONDITIONS		Poverty		
POLICIES/ LAWS		Existing government structures to leverage	*Existing programs include PE circuit/ district sports,*	
POLICIES AND LAWS			*Proposed activities align with the school feeding policy and the PE curriculum and the interschool sports*	
LOCAL CONDITION	Provision and promotion of healthy food (fruits and vegetables)	Seasonality of fruits and vegetables	*Fruits are seasonal, will be plenty when in season and scarce when out of season*	Social/Environment
			Seasonality of fruits and vegetables which affects their prices	
		Perception that eating healthy/ fruits and vegetables are expensive	*Perception that eating healthy is expensive*	Attitude
			Difficult household situation e.g poverty/ lack of food/ pocket money may negatively influence the implementation among adolescents	
LOCAL CONDITION			*Fruits are expensive*	

		Poor people will focus on being satisfied rather than healthy nutrition - healthy eating e.g fruits is seen as for the rich	
	high competition with unhealthy foods- available, affordable and highly promoted	*High availability of unhealthy foods e. g SSB & junk some companies are owned by influential people e.g politicians*	
		Cheap unhealthy SSB, nutritional claims/advertising	
		High availability of unhealthy foods in the community/around the schools	
		Difficult to promote healthy eating with the rampant advertisement of unhealthy foods	
		Modern foods e.g income like by adolescents, traditional foods despised esp. younger people	Attitude
BELIEFS AND ATTITUDES	Body shape perceptions	*Fear of gaining weight when some foods are consumed*	Attitude
		Boys eat much to become masculine , girls less to maintain their bodies	

	Priority for starchy food in most Ghana meals	*Most focus at household level in Ghana is heavy meals and less on fruits and vegetables* *Fruit and vegetables consumption is not very common/embraced/ a priority in the Muslim community in Ghana* *A norm for people to consume carbohydrate and starchy foods and less of fruits of vegetables*	Attitude
POLICIES & LAWS	Poor government funding/ programs for adolescent nutrition	*Adolescent resources book - lacks modules on adolescent nutrition* *Gaps in adolescent nutrition in most government and NGO programs*	Social/environment
	Existing policies on general nutrition / NCD*	*Existing policies on promoting nutrition and wellbeing of the population* *Existing policies - NCD policies healthy diet and physical activity are key aspects* *The proposed activities align with the school feeding policy and the PE curriculum and the interschool sports*	
LOCAL CONDITION	Poor attention to adolescent nutrition vs children in the communities	*People pay less attention to the nutrition of adolescent seriously compared to young babies, as they perceive that adolescents are already grown*	

		Concern for food vendor hygiene and sanitation in the community	*Food vendor's hygiene is a common concern for healthy food provision* *contamination and chemical in fruits and vegetables may hinder their consumption* *Concerns for the safety of the fruits - some of them have chemicals for growing / ripening etc*	
INDIVIDUALS				
IMPLEMENTOR AND RECIPIENTS CAPABILITY	Education: Peer clubs	knowledge /skills deficits	*Common misinformation about healthy eating common in the communities* *Lack of knowledge on healthy diets by young people*	Knowledge/skills
RECIPIENT'S MOTIVATION		Low interest and participation by adolescents	*Poor and challenges in ensuring sustained interest by adolescents*	Attitude
RECIPIENTS' OPPORTUNITY	Education: peer clubs	Unavailability: adolescents due to work, school	*Challenges in joining the clubs due to poverty as some adolescents have adult roles e.g selling at the market after school* *Out of school adolescents who are working may not be available for participation* *Poorer children are more likely to have household chores or selling in the market*	Attitude , outcome expectation

			hence minimal time for participation in the intervention activities	
			Limited time because students are busy, the timetable is packed, and homework/assignment thereafter	
			Girls are more likely to be restricted from participating compared to boys	Capability
			Fear of adolescent girls safety after school hours	
IMPLEMENTORS OPPORTUNITY		Unavailability : Existing workload for teachers	*Teachers are busy , with other work, may see the intervention as an added responsibility*	Attitude/ outcome expectation
IMPLEMENTORS' MOTIVATION	All intervention components	Compensation expectation	*Support (financial) for the implementor is needed for sustainability, difficult if teachers and government staff have to use their own money for implementation*	Outcome expectation
			Monetary expectations from the implementing team as an incentive for participation	
IMPLEMENTORS' INTEREST AND MOTIVATION	All intervention components	poor buy-in and participation : government	*Similar interventions started in one of the schools, but they faces challenges such as disinterest by the SHEP and slow buy-in by the department of education*	Attitude/ outcome expectation

RECIPIENTS OPPORTUNITY	Education: community events	Lack of time of time to participate in the activities by parents	*Unavailability of time for the participants /parents during PTA might be a challenge*	Attitude/ outcome expectation
			An attitude that attending the activities/ community events is a waste of time - may challenge participation	
			Parents are busy fending for their families	
RECIPIENTS MOTIVATION	Physical activity sessions	Prioritization of other academic subjects over PA in schools by parents	*Negative perceptions by the parents about physical activity (PA not as important other educational activities)*	Attitude / outcome expectation
RECIPIENTS OPPORTUNITY		Poor parental support and restrictions	*Some parents restrict children from physical activity due to household chores*	Attitude / outcome expectation
			Girls may not stay out long after school due to restrictions by parents	Attitude / outcome expectation
		Unavailability of the adolescents who live far from schools/FBOs	*poor availability as some students live far from the school - time and safety after school activities*	Attitude / outcome expectation
		Unavailability of the adolescents due to work	*Lack of availability by the adolescents as they are busy with schoolwork*	Attitude / outcome expectation
			Older adolescents may not have availability due to work/looking for work	Attitude
			Adolescents from poorer families may not have PE kits and which may create disparities with the richer	Self-efficacy

	Biological characteristic hindering PA	*Menstrual cycles may affect girls' participation in physical activity*	Self-efficacy
RECIPIENT MOTIVATION	Low interest and participation	*Poor interest in the intervention activities by adolescents*	Attitude
		Challenge in ensuring sustained interest and attention of the adolescents in the intervention activities	
	High motivation/interest by adolescents due to health benefits*	*Some adolescents will be motivated as healthy diets and PA improve confidence*	Attitude
		Adolescents will have interest and motivation to participate - activities are interesting , a platform for learning and engaging with others and building healthy lifestyle which boosts their confidence	
	Body shape perceptions hindering physical activity	*Girls avoid exercise in order to maintain their body shape and avoid being masculine*	Attitude
		Girls fear developing muscles as a result of physical activity	
		boys want to build muscles and hence prefer heavy (calory dense)foods and not vegetables/fruits	

RECIPIENTS CAPABILITY		Poor confidence of adolescents to participate in some activities	*Some adolescents my not participate due to lack of self confidence in some of the activities e.g in dancing*	Self-efficacy
			Some adolescents too shy to speak out especially those from the village and feel inferior	self-efficacy
		Poor knowledge on physical activity by adolescents	*Lack of knowledge on PA may hinder participation/interest among adolescents*	Knowledge
IMPLEMENTORS' CAPABILITY		Poor knowledge on PA by teachers	*Teachers have some level of knowledge on PA but not adequate for successful implementation of the intervention activities*	Knowledge
IMPLEMENTORS MOTIVATION	Restriction of unhealthy foods	Potential victimisation of headteachers applying the restrictions	*if some head teachers enforce the restrictions while others do not, they may be victimised by community members*	Social/Environment ; outcome expectations
IMPLEMENTORS' CAPABILITY	Provision and promotion of healthy foods (fruits and vegetables	Knowledge deficit: food vendor	*Some food vendors lack knowledge on healthy eating*	Knowledge
			Inadequate knowledge on healthy diets among food vendors	
RECIPIENTS' MOTIVATION		Poor interest and participation by adolescents	*Adolescents are picky, and don't like fruits*	Attitude
			Attitude by young people that eating healthy is for the old	

		Concerns on whether school children will patronise the fruit/vegetable stand *Children have varied needs, likes dislikes allergies etc, hard to meet their needs*	
IMPLEMENTORS' MOTIVATION	Food vendors' focus on profits	*Food vendors may be reluctant to sell fruits and vegetables due to poor/low profits compared to unhealthy foods* *Some food vendors prioritise profits over healthiness due to lack of knowledge*	Outcome expectation
IMPLEMENTORS' CAPABILITY	High cost of setting up stands	*Lack of resources to set-up fruit and vegetables stands*	Self-efficacy , Knowledge

***IMPLEMENTATION FACILITATORS**

**** COLOUR CODE : GREEN FONT = BARRIERS AND FACILITATORS DISCUSSED IN GHANA ONLY. BLACK FONT=BARRIERS AND FACILITATORS DISCUSSED IN BOTH GHANA AND KENYA**

Change Objectives

Task 3.1 objective 2: Identify adoption and implementation outcomes and performance objectives, determinants and create a matrices of change objectives

The change objectives represent the changes or modification needed on the identified determinants, for successful completion of the performance objectives by the implementation actors. We identified change objectives related to each performance objective, considering the relevant determinants including i) knowledge, ii) attitudes, iii) skills and self-efficacy, iv) outcome expectations and v) organisational support. The latter represents potential adjustments needed in the environmental (social/physical) factors to facilitate the implementation process.

For instance, to address the knowledge/skills deficits among peer leaders, it is critical that they feel empowered and equipped with relevant information and materials on the adolescent nutrition and physical activity, and practical skills to perform the implementation tasks (co-facilitate peer club sessions). To overcome the attitudes related to time constraints for teachers, it is important that they are positive about incorporating the implementation tasks into their daily schedules/timetables. To address cultural beliefs and attitudes, it is critical that all implementors feel empowered with evidence-based information and strategies to address common misconceptions about adolescent nutrition and physical activity. To address the compensation (monetary) expectation by implementors, it is important that their outcome expectations extend beyond financial benefits to include improvements in health and wellbeing, aligning with the project's overall goals/objectives. Similarly, to address the potential lack/slow buy-in by adopters, e.g. headteachers, it is important for them to perceive that their decisions are supported (approved) by the government authorities, such as health and education departments. In addition, to address the potential structural (physical environment) barriers identified in each country, implementation support such as support in defining school boundaries in Ghana would be needed. Table 4 summarises the change objectives corresponding to the implementation actors' performance objectives and relevant determinants, for each of the intervention components.

Table 4: *Change objectives for implementation of the generation-H intervention in Kenya and Ghana*

1. **EDUCATION ON DIET AND PHYSICAL ACTIVITY**							
PEER-LED ADOLESCENT CLUBS , VIDEOS AND POSTERS							
Role in school ***(Individuals)***	**Implementation Outcomes** *(performance goal)*	**Performance objectives** *(specific tasks)*	**Knowledge**	**Attitude**	**Skills and self-efficacy**	**Outcome expectation**	**Organisation support (social & physical environnement)**
Adopters							
Headteachers / School directors; Religious leader/ lead pastor/Bishop /Reverend/ Imam	School/ FBO leadership approves and commits to support the implementation of the education intervention activities in the schools /FBOs	Attend the project sensitization and review meetings to understand the goal, objectives, needs and progress.	- School and FBO leaders have a clear understanding of the Generation-H intervention goals, activities, and their roles in making it successful. - School/FBO leaders understand the benefits of optimal nutrition and physical activity for adolescent's	- School and FBO leaders perceive the intervention as aligned with school/FBO values, programs and priorities e.g promoting health and wellbeing of children/ adolescents, school health promotion etc.	School/FBO leaders are confident and acknowledge that it is feasible to fit the intervention activities within their existing activities/ schedules/programmes	School and FBO leaders expect the program will positively impact adolescents' health, well-being in their institutions/community	School/FBO leaders have necessary approvals/directives from the government senior leadership/church /mosque councils/board of governors etc.

	health and wellbeing			
Officially designate a staff member to serve as peer club patron responsible for overseeing the respective components of the intervention	- School/FBO leaders know the responsibilities and qualifications of a club patron and the importance of their role for successful implementation of the Generation-H intervention	Leaders see that assigning this role does not conflict with the normal school/FBO roles and can be harmonized with existing activities.	School/FBO leaders expresses confidence in identifying and allocating staff the role of peer club leader based on their experience/expertise and availability	School/FBO leaders expect that having a dedicated staff member as the club patron will help in successful implementation and sustainability of the Generation-H intervention in their school/FBO and the greater goal of improving the health and wellbeing of children/adolescents in their institutions
Allocate the necessary school resources e.g space, basic equipment, and time within the school schedule to support the	- School/FBO leaders know which resources are needed (space, equipment, and time) and understand their purpose in supporting the implementation of	- School/FBO leaders are flexible and open to exploring the opportunities for integrating / embedding the intervention activities into the available resources	- School/ FBO leaders express confidence in adjusting in the available resources e.g timetable, spaces, equipment, budgets, schedule to accommodate Generation-H intervention activities with minimum disruptions	- School/FBO leaders expect that dedicating time, space, and resources for the intervention will contribute to healthier diets and physical activity for adolescents, and their health, wellbeing and

		implementation activities (peer club, physical activities, drinking water stations, and food vendor operations)	the Generation-H intervention	e.g. time, spaces, equipment	in the existing school/FBO activities/programs	academic outcomes in the long term - School / FBO leaders expect that dedicating time, space, and resources for the intervention aligns with the school health promotion policy and other government guidelines for promoting children's health and well being	
Implementors							
Role in school/FBO ***(Individuals)***	**Implementation Outcomes** *(performance goal)*	**Performance objectives** *(specific tasks)*	**Knowledge**	**Attitude**	**Skills and self-efficacy**	**Outcome expectation**	**Organisation support (social & physical environnement)**
Club patron / games teacher/teacher covering food and nutrition related	Coordinate peer-club sessions	Attend the full facilitator training and co-development of school/FBO specific peer	Club patrons describe the intervention goals, peer club structure, and key topics and content to be	Club patrons see value in participating in the facilitator training and planning sessions and believe it equips	Club patrons demonstrate skills in planning the club sessions tailored to their school/FBO's calendar/ timetable and identify potential facilitators and resources needed	Club patrons believe that being trained and having an implementation plan will prepare them to run successful peer club sessions and promote	Club patrons receive approval/flexibility to attend training and planning meeting,

subjects, Guidance/counselling, home economics teacher, cultural coordinator(School); Youth pastor/patron / Sunday school teacher/ Ustadh (FBO)/ Church elders and deacons, younger Imam assistants	club implementation plan (weekly activities, session topics, and proposed facilitators)	covered in the peer club sessions. School/FBO leaders understand the benefits of optimal nutrition and physical activity for adolescents' health and wellbeing.	them with knowledge and skills to promote healthy diets for adolescents in their institutions		adolescent health and wellbeing effectively.	from the school leadership Facilitators training and planning sessions are scheduled conveniently to facilitate attendance , from the school leadership
	Co-facilitate club sessions (e.g., one per week) alongside peer leaders and guest facilitators using Generation-H intervention materials	The club patron can describe the goals, objectives and topics for each session and understand how to use the Generation-H intervention manuals to facilitate the peer cub sessions.	Club patrons see peer club facilitation as an important role that can feasibly fit in their schedule.	Club patrons demonstrate skills in facilitating/ guiding adolescent led discussions on nutrition and physical activity topics using the Generation-H intervention manual, and addressing any questions raised by the adolescents. - Club patrons feel confident discussing and	Club patrons believe that the peer club sessions will equip the adolescents with knowledge and skills to adopt healthy behaviours on diet and physical activity and their long-term health and wellbeing	The school/FBO timetable and schedules are flexible/ adjustable to fit the peer club sessions. Resources for running the peer club sessions and activities are

			- Club patron can explain the various strategies of engaging diverse groups of adolescents (age, sex, SES, language)		addressing the social, cultural and religious beliefs and norms that challenge healthy diets and physical activity for adolescents in their schools/communities		provided e.g spaces, equipment etc. by the school leadership and project team
	Provide oversight for written and audiovisual content in the school	Identify/recommend suitable locations for posters and talking walls	Patrons understand the purpose/role of visual messages, posters and talking walls for the Generation-H intervention	Feel positive about the use of posters/ talking walls in promoting healthy diets and physical activity in their institutions	Club patrons can identify specific locations within the school/FBO that are safe, easily accessible and visible by the adolescents and other key community members for placement of the posters	Club patrons believe that using posters/ talking walls will help in reinforcing the key messages and learning for the adolescents on healthy diets and physical activity	Posters that are socially/culturally / religiously appropriate and acceptable are provided by the project team
		Review and approve all student-developed content including video scripts and final videos	Club patrons understand the appropriate content, quality and standards etc. for the adolescent led videos for the Generation-H intervention	Club patrons appreciate the importance of reviewing content to ensure positive, respectful messaging that aligns with Generation-H intervention goals and objectives as	Club patrons demonstrate skills to provide constructive feedback, support students to improve their content and approve the final content with considerations for the prevailing cultural, religious, social norms and expectations	Patrons believe their support will help adolescents express themselves, engage with each other while reinforcing Generation-H key messages on healthy diets and physical activity	Expected assessment criteria / recommendations for audio visual materials is provided to the club patrons

				well the school/FBO values /mission			
Peer leaders / Youth leaders /peer leaders/mentors/ youth organisers, youth presidents	Lead peer-club sessions using the Generation-H intervention schedule and materials	Attend and complete Generation-H peer leader training on the peer club facilitation	Peer leaders understand the goals, objectives and the training schedule	Peer leaders are motivated to learn, complete the training and lead the peer club activities.	Peer leaders feel confident they can complete the training and apply the skills learned to lead the peer club sessions effectively	Peer leaders expect that completing the training will improve their knowledge and skills, confidence and ability to lead and positively influence peers.	Training schedule fits the peer leader's commitments; they receive encouragement and resources from school/FBO to attend training and learn.
		Actively mobilize fellow adolescents to participate in club sessions and activities	Peer leaders know how to communicate benefits of the peer club sessions, guide and support other adolescents to join and participate consistently in the club activities	Peer leaders see the importance of active and consistent participation in the peer club sessions to promote healthy diets and physical activity	Peer leaders demonstrate skills to motivate, engage adolescents on healthy diets and physical activity in their schools /FBOs Peer leaders feel empowered to address the potential barriers to participation in club sessions e.g low interest / motivation, competing priorities among the adolescents	Peer leaders believe that more participation in peer club sessions will lead to successful implementation of the Generation-H intervention and healthier dietary and physical activity behaviours among the adolescents in the long term	Peer leaders receive support from school/FBO leaders to mobilize adolescents for the peer club sessions and activities

	Coordinate club logistics e.g booking venues, managing schedules, and preparing necessary materials — for each session, in collaboration with the club patron	Peer leaders can describe ways to schedule and prepare for sessions using the resources available	Peer leaders see logistics coordination as a manageable part of their role that contributes to successful implementation of the Generation-H intervention	Peer leaders demonstrate skills to effectively organize schedules, book venues, and prepare materials for the club sessions within the time and resources available and flexibility to fit adolescents' and other facilitators availability	Peer leaders expect that well organised logistics will lead to successful and well-attended sessions.	Peer leaders receive necessary guidance, motivation, and assistance and resources from club patrons and school/FBO leadership
	Lead peer club sessions with support from club patron and guest speakers, using the Generation-H intervention materials	Peer leaders can describe the core components/ topics of the peer club sessions covered in the Generation-H intervention manual	Peer leaders feel enthusiastic and motivated to lead the club sessions on healthy eating and physical activity for adolescents	Peer leaders demonstrate skills to lead discussions on healthy diets using various strategies of adolescent engagement, in the language that is well understood by the adolescents and using the Generation-H manuals and materials Peer leaders feel empowered and confident	Peer leaders expect that the lessons learnt from the club sessions will help other adolescents make healthier choices on diet and physical activity	Peer leaders have access to necessary Generation-H training manuals and materials to lead the sessions effectively Peer leaders receive ongoing support and feedback from

					in addressing any questions arising from the adolescents and potential challenges e.g teasing by the adolescents, disinterest etc.		patrons and school/FBO leaders and the project team
	Coordinate and monitor written and audio-visual content development and sharing in the school/FBO	Organize and supervise the placement of posters and talking wall materials by the club members in the identified locations within the school/FBO	Peer leaders know where to place posters and talking walls, so they are safe, accessible and visible Peer leaders understand how to use social media safely and respectfully, including content development and sharing on social media platforms.	Peer leaders expect that displays of posters/talking walls will raise awareness and encourage healthy diets and physical activity	Peer leaders feel confident managing the setup and display of posters in the allocated schools/FBO spaces	Peer leaders believe that well-placed posters/talking walls will create awareness and encourage healthy diets and physical activity among other adolescents	Peer leaders receive guidance on the safe, accessible and appropriate spaces for the placement of the materials by the club patron and the project team
		Support the development of creative content (scripting, filming),	Peer leaders understand the appropriate content, quality and standards etc. for the adolescent led	Peer leaders feel positive about creating and sharing adolescent led content on healthy diets and	Peer leaders demonstrate skills in video and content creation, uploading, and monitoring the	Peer leaders expect that online content will engage peers and promote healthy diets and physical activity	Peer leaders have access to the technology, resources and support needed

		uploading of the approved videos to the Generation-H TikTok and WhatsApp platforms and monitoring the discussions generated	videos for the Generation-H intervention	physical activity on online platforms	engagement processes on social media channels Peer leaders are empowered to identify, report and address common challenges in social media use by adolescents e.g potential bullying and exposure to explicit, unhealthy content.		for online activities. Support from the club-patron on addressing inappropriate content

COMMUNITY EVENTS

Adopters

Role in school ***(Individuals)***	**Implementation Outcomes** *(performance goal)*	**Performance objectives** *(specific tasks)*	**Knowledge**	**Attitude**	**Skills and self-efficacy**	**Outcome expectation**	**Organisation support (social & physical environnement)**
Community leaders (chief/	Approve and support	Attend the Generation-H project sensitization and review	Community leaders understand the goals, components, and expected benefits of the	Leaders believe that the Generation-H intervention aligns with the goal of promoting	leaders identify the areas/ components of the Generation-H intervention that they support and contribute to.	Community leaders expect that their support and involvement will contribute to successful implementation of the	Meeting times are scheduled with their availability in mind, and support is provided (e.g.,

area chairman/village elder, court leaders, NGAO, Nyumba kumi), Assembly man/woman, Chief, resident associations leaders, market association leaders	community events in the study areas	meeting to understand the intervention objectives, roles, progress and support expectations	Generation-H project to adolescents and community.	community wellbeing and think that community wellbeing is important.		Generation-H intervention and subsequent wellbeing of adolescents in their communities	brief summaries, materials, transport or airtime support) to reduce attendance barriers.
		Allocate time for disseminating Generation-H intervention related messages during the community meetings	Leaders are familiar with the key Generation-H messages/ information to be shared in the local baraza meetings	Leaders view community meetings as powerful platforms to influence healthy behaviours on diet and physical activity, in addition to other administrative updates.	Community leaders are able to adjust the regular baraza meeting agendas to fit Generation-H intervention messages/ information when needed.	Community leaders expect that delivering health messages at barazas will increase awareness on healthy diets and physical activity for adolescents in their communities and contribute to their wellbeing in the long term	Leaders are supported with reminders and Generation-H messages and information to be disseminated by the project team
		Attend or delegate a representative to participate in the community-based intervention forums guided by the project	Leaders understand the purpose of the community forums and the expected contributions from them or their representatives.	Leaders recognize the value of attending and engaging the community members as efforts to promote healthy diets and physical activities of	Leaders have practical skills in integrating short, engaging health messages regarding the Generation-H intervention in their speeches during the community fora.	Leaders expect that their (or their representative's) presence at forums will encourage participation and foster trust and successful implementation of the Generation-H intervention	Talking points or brief scripts are provided by the Generation-H team. Coordination to help them or their delegate stay informed and

		implementation guides.		adolescents in their communities			involved in the project.
Community Health Promoters; Community health nurses	Co-facilitate review Generation-H community events in partnership with school and FBO peer-club leaders and the project team, using approved intervention materials.	Attend and complete the Generation-H facilitators training	Community health promoters/ nurses understand the goals of the Generation-H intervention, their roles and the purpose of the training	Community health promoters/ nurses believe the training is useful and relevant to their role in the Generation-H intervention and promoting the health of adolescents in their community	Community health promoters/ nurses feel confident they can complete the training and apply the lessons learnt on healthy diets and physical activity, during community events.	Community health promoters/ nurses expect that the training will make them more effective in organising successful community events and facilitating sessions on healthy diets and physical activity	Community health promoters/ nurses receive time-off approvals, learning materials, and support from the community health strategy to attend training.
		Organize and manage logistics for all community-based intervention activities — including mobilization of community members, securing venues, and coordinating poster	CHPs understand how to plan community events, identify accessible venues, and target appropriate poster locations.	Community health promoters/ nurses value their role in organizing community events to promote adolescent nutrition/physical activity and see it as a part of their normal roles/ duties of health promotion at community level	Community health promoters/ nurses have practical skills in community events planning and mobilization skills (e.g., creating schedules, inviting guests, coordinating with leaders), using available resources	Community health promoters/ nurses expect well-organised events to attract high community participation and increase awareness of healthy diet and physical activity behaviours	Community health promoters/ nurses are provided with logistical support (e.g., transport allowances, airtime, coordination checklists) by the project team and community leaders.

	placements at strategic locations in the community					
	Co-facilitate sessions with school and FBO peer-club leaders and project team during the community events	Community health promoters/ nurses understand the content of the Generation-H intervention and how to engage adolescents and caregivers on healthy diets and physical activity topics.	Community health promoters/ nurses value working with adolescents and see joint facilitation with peer leaders to empower adolescents and promote community health.	Community health promoters/ nurses demonstrate facilitation, mobilization, and community engagement skills with diverse community groups e.g culture, age, religion, specific to healthy diets and physical activity for adolescents. Community health promoters/ nurses feel confident that they can lead sessions and manage discussions with diverse groups including adolescents and young people	Community health promoters/ nurses believe their participation contributes to broader efforts to promote healthy diets and physical activities subsequent health and wellbeing of adolescents in the community.	Community health promoters/ nurses receive scheduling, supervision, and backup support from the project team to effectively co-lead events.

CHANGE OBJECTIVES: PROVISION AND PROMOTION OF FRUITS, VEGETABLES , CLEAN DRINKING WATER AND LIMITING SUGAR SWEETENED BEVERAGES

Target/role in school (Individuals)	Adoption, implementation and maintenance outcomes	Performance objectives	Knowledge	Attitude	Skills and self-efficacy	Outcome expectation	Organisation support
Adopter							
Head teacher/ School director / Lead pastor/Bishop/Reverend/FBO leader/IMAM	Approve the promotion of provision of fruits/vegetables and provision of clean water in the intervention activities in the schools /FBOs	Allow and encourage the addition of fruits and vegetables as commodities for sale by vendors within the school	School leaders understand the benefits of healthy diets including optimal consumption of fruits and vegetables, for adolescents' health, growth and learning	School leaders believe that promoting and supporting healthy behaviours e.g fruit and vegetable and clean safe water intake by students in their schools is feasible and aligns with the school	School leaders are capable and confident in guiding (authorising) vendors on integrating fruits/vegetables into the foods sold within the school and limiting the sale of sugar sweetened beverages without disrupting/ contradicting school	School leaders expect that allowing fruit/vegetable sales will facilitate healthy diets and subsequent health outcomes for adolescents in their schools. School leaders understand that they will not be victimised for authorising the limiting of unhealthy foods (sugar sweetened beverages) provision to children in their	School leaders receive approval from education authorities and support from the project team.

			health policy	operations or policies.	schools as it aligns with the government policy	
	Allow the set-up of clean and safe drinking water stations/points in the schools	School leaders have adequate knowledge on the modalities of the intervention component regarding clean water provision in schools.		School leaders feel confident they can provide the facilitation required to provide clean water to adolescents in their schools	School leaders expect access to clean water will be beneficial to the school children/adolescents e.g through reduced waterborne illness and consumption of unhealthy beverages.	School leaders receive technical support and necessary approvals from education departments on clean water provision in their schools
	Allocate resources e.g space for the provision/promotion of fruits/vegetables and clean drinking water in the schools	School leaders understand that allocating space for vendors and water points aligns with the goal of health	School leaders view the promotion and provision of clean water and healthy foods as positive investments	School leaders feel confident they can identify strategic spaces/locations for healthy food vendors within the school premises provide the resources needed without	School leaders expect that allocating the spaces and resources needed will contribute to successful and sustainable implementation of the Generation-H intervention and	Leaders are supported through coordination, resources provision, and any infrastructure adjustment needed by the project

	promotion in schools	in students' health and well being	compromising other school functions.	achieve the broader goal of promoting the health and wellbeing of school children/ adolescents	team and the relevant government officers School leaders are supported in defining the spaces/areas within the school premises where only healthy foods can be sold and unhealthy food vendors may not sell their products by the project team and government officials (health and education)
Implementors					

Food vendors (existing vendor/schools/FBO staff/ church women/youth groups or community member)	Supply fruits and vegetables in the school canteen	Attends training workshop	Food vendors understand the purpose of the training and the training schedule	Vendors see the training as an opportunity for building their skills on provision of healthy foods, potentially expanding their market and clientele	Vendors feel confident they can find time to attend the training apply what they learn in their businesses	Vendors expect that participating in the training will improve their reputation, sales of healthy foods, and support from the school and adolescents	Training is scheduled conveniently (e.g. during off-hours), and logistical support (like transport or small stipend) is provided to help vendors attend.
		Source and stock fruits and vegetables for sale to adolescents in the schools	Vendors understand the importance of selling fruits and vegetables in supporting adolescent make healthier food choices Food vendors understand the benefits of healthy diets including optimal consumption of	Vendors see healthy food as an important part of supporting students' health and wellbeing, not just a business product.	Vendors build skills and practical strategies for sourcing, storing / preserving (e.g keeping produce fresh for long), pricing and maintaining daily stock of fruits and vegetables effectively.	Vendors expect that consistently offering fruits and vegetables will improve student trust and potentially expand their customer base and profits	Vendors are linked to information on local suppliers and other resources needed to make the provision of fruits and vegetables successful by the project team Vendors are provided with knowledge and skills on healthy foods sourcing,

		fruits and vegetables, for adolescents' health, growth and learning		Vendors feel confident they can identify affordable suppliers of fruit/vegetables to manage their stock with limited resources.		sale, storage/ preservation by the project team Vendors are provided with information and support to obtain necessary government licences/approvals by the project team
	Allocate favourable space for fruits and vegetables in the canteen	Vendors know how the placement and visibility of healthy foods influences student choices.	Vendors perceive allocating favourable spaces for healthy foods e.g fruits and vegetables as a good marketing strategy, to	Vendors demonstrate the skills to rearrange or reallocate space to create an attractive and appealing healthy food section in their shops	Vendors expect that a more visible display will attract more buyers, especially adolescents and lead to improved profits while also promoting adolescents'	Vendors receive support on food display and presentation from the project team

			increase their prominence, sales and potentially the profits	Vendors feel confident that they can find or create enough space to prominently display healthy options including fruits and vegetables	health and wellbeing	
	Sell fruits and vegetables at favourable prices to the adolescents	Vendors understand the price sensitivity of adolescents and how food pricing/ affordability affects their food choices.	Vendors believe that affordable healthy options can build their customer base while supporting adolescents to make healthy food choices	Vendors develop skills in portioning and pricing fruits/vegetables in a way that maintains profit while staying affordable. Vendors feel confident they can test and adjust prices without losing income.	Vendors expect that fair pricing of fruits and vegetables will attract consistent buyers and enhance the profits	Capacity building of the food vendors on various ways of stocking/ selling foods in lower prices e.g cheaper varieties, smaller portions, seasonal fruits and vegetables and cheaper suppliers etc. to be organised by the project team. Vendors are supported with initial subsidies to test low-cost

							pricing models by project team
		Use appealing /attractive packaging and display methods for healthy food space	Vendors understand the various methods of attractive / appealing food packaging and display and how presentation affects /appeals to adolescents — e.g. cleanliness, colour, portioning, wrapping.	Vendors positively perceive appealing presentation to promote healthy foods to adolescents and to boost the sale of healthy foods.	Vendors have skills in simple, cost-effective packaging and appealing display, e.g. using colourful baskets, signs, clear wrapping, or colour contrast. Vendors feel confident they can use creative but low-cost techniques to improve the appeal of fruits and vegetables.	Vendors believe that better packaging and display will increase adolescent interest in healthy food options and enhance their daily purchases.	Vendors receive support with fruit and vegetable display equipment materials (e.g fruit stands) from the project team
School or FBO Club patron / Youth pastor/patron/ Sunday school teacher, USTADH/ Church elders and deacons,	Coordinate the water tanks refills and regular water tank cleaning with the project team	Assess the water levels regularly and contact the project teams for refills	Club patrons understand why consistent access to clean water is critical for	Patrons value their role in ensuring students have clean	Patrons gain the simple skills to quickly check water tank levels and report refill needs using a	Patrons believe that helping maintain clean water access leads to reduced risks of	Patrons are supported with simple tools (e.g., monitoring forms, mobile contact for

younger assistants	Imam	adolescent health and wellbeing	drinking water	straightforward system (e.g., checklist, SMS, WhatsApp group). Patrons feel confident they can integrate the water check into their weekly routine without it disrupting their academic responsibilities.	waterborne diseases and consumption of unhealthy beverages by the students	refill requests, reminders)

CHANGE OBJECTIVES: PROVISION OF PHYSICAL ACTIVITY EQUIPMENT IN STRUCTURED SESSIONS

	Adoption, implementation and maintenance outcomes	Performance objectives	Knowledge	Attitude	Self-efficacy	Outcome expectation	Organisational support
Adopters							
Religious leader/ lead pastor/Bishop/Reverend / Imam	Approve implementation of physical activity sessions with adolescents in the school/FBO	Allocate resources (space, time) for implementation of physical activities within the school /FBO	- School/FBO leader understands the importance of physical activity in promoting adolescent health and school performance	School/FBO leader values physical activity as an important subject/activity that contributes to adolescent's health and wellbeing	School/FBO leader can identify feasible time blocks and usable spaces within school/FBO timetable, schedule and calendar for PA Feels confident in making necessary adjustments in the timetable/schedule/calendar to accommodate physical activity sessions.	School/FBO leader expects student engagement leads to improved health and wellbeing from regular physical activity School/FBO leader expects that the intervention activities will increase the availability of PA equipment in the school/FBO	Approvals from government. Project description readily available.
		Allocate staff to lead/coordinate Generation-H	School/FBO leaders know the responsibilities	Leaders see that assigning this role does not conflict	School/FBO leader can identify and assign a motivated staff member (e.g., Games Master, club	School/FBO leaders expect that that having a dedicated staff member as the	

		physical activity sessions	and skill set needed for a physical activity lead, and the importance of their role for successful implementation of the Generation-H intervention	with the normal school/FBO roles and can be harmonized with existing activities.	patron) to coordinate PA intervention activities, based on skills and availability.	club patron will help in successful implementation and sustainability of the Generation-H intervention in their school/FBO and the greater goal of improving the health and wellbeing of children/adolescents in their institutions	
Implementors							
Peer club patron/ games teacher ; Games teacher, PE coordinator (School) Youth pastor/patron/ Sunday school teacher/ Ustadh/ Church elders and deacons, younger Imam assistants (FBOs)	Oversee physical activities in the schools	Attend a five-day Generation-H facilitator training and co-development of a schedule for physical activity sessions and activities for various adolescent groups	School/FBO leaders understand the benefits of optimal physical activity for adolescent's health and wellbeing	PA patron views the training and planning process as an opportunity to build their knowledge and skills on physical activity to support the adolescents effectively	PA patrons feel empowered to develop practical PA schedules that are harmonised with the school/FBO timetable /schedule and adolescents' availability	PA patron expects that a well-developed PA plan will enhance active and consistent participation by the adolescents, and successful implementation of the Generation-H intervention	Permission and time from school leadership to attend the training and support for co-developing the PA schedule.
		Organize/facilitate physical activity sessions for the scheduled groups,	PA patron understands the importance of inclusive, age-	PA patron believes that physical activity is important and beneficial for all	PA patrons demonstrate skills in designing and scheduling a variety of PA, that are safe, fun,	Expect that regular PA contributes positively to their health, wellbeing	Support e.g. protected PA time slots in the schedule,

		in collaboration with peer leaders/ youth leaders	appropriate PA and how to adapt PA to diverse cultural, religious and gender groups.	adolescents, regardless of gender, culture, or religious background.	and inclusive for diverse adolescent groups (gender, culture, religion). PA patron feels empowered to address common challenges in adolescents' participation in physical activity e.g body image perceptions, time constraints, cultural and religious beliefs	and school performance	materials and equipment to conduct regular PA sessions, safe play areas /spaces/fields
		Manage the storage and distribution of physical activity equipment and maintaining an inventory of the equipment	Know where and how to store, track, and maintain equipment properly for safety, extend usability and easy access by the adolescents		Feels confident managing equipment and finding creative ways of tracking their access and use by the adolescents and minimise losses/ damages	Believes that appropriate storage and management of the equipment ensure efficiency, safety and sustainability of the PA equipment	Support with storage space, record-keeping tools (e.g. simple logs)
Games or entertainment prefects/captain/ peer club leader (School) ; Youth leaders /peer	Coordinate physical activity sessions in the school	Coordinate the pick-up and return of physical activity equipment for	Peer leaders know where equipment is stored, how to access it responsibly	Peer leaders see managing equipment as a key responsibility that supports fun and	Peer leaders develop simple routines for requesting, transporting, and	Peer leaders expect that having equipment ready will make activities more enjoyable and boost participation, while	Clear procedures, support/ guidance from staff (e.g.,

leaders/mentors/ champions/ youth organisers, youth presidents (FBOs)	each scheduled session		organised PA sessions.	returning equipment in good condition.	minimising losses and damages to the PA equipment	Games Master).
	Mobilize adolescents to attend and participate in scheduled physical activity sessions	Peer leaders know how to communicate benefits of the PA sessions, guide and support other adolescents to join and participate consistently.	Peer leaders believe it is important to include everyone, and that participation improves health and builds peer connections.	Peer leaders demonstrate skills to motivate, and engage and lead other adolescents in physical activity sessions	Peer leaders believe that more participation in PA sessions will lead to successful implementation of the Generation-H intervention and better health for the adolescents	Peer leaders receive support from school/FBO leaders to mobilize adolescents for the PA sessions

** **Colour code :** green font = Stakeholders discussed in Ghana only, change objectives for Ghana only. **Black font=stakeholders discussed in both Ghana and Kenya** *** blue font =stakeholders discussed in Kenya only

Conclusion and Recommendations

The multi-level needs assessment conducted in task 3.1 identified the diverse stakeholders who should be involved in the implementation of the Generation-H intervention, and their responsibilities in supporting the Generation-H intervention's adoption, delivery and sustainability. The application of the Consolidated Framework for Implementation Research and Social Cognitive Theory ensured a systematic analysis of determinants across individual, institutional and external environments that may either support or hinder successful delivery of the implementation activities. It also enabled the identification of the change objectives necessary to promote the adoption, implementation and sustainability of the intervention.

In General, potential implementation barriers that were common in both countries included limited knowledge and skills related to nutrition and physical activity, competing priorities and time constraints, and potential poor motivation and slow buy-into the intervention activities among both implementers and participants. Structural challenges—such as limited resources (e.g., physical activity equipment, safe spaces, and clean water), difficulties integrating interventions into existing school/ faith based organisation schedules, unhealthy food environments, including the high availability and affordability of unhealthy foods, as well as cultural and social norms influencing dietary and physical activity behaviours were also widely reported. Potential facilitators for implementation in both countries were discussed as recognition of the need for adolescent health interventions, alignment with existing institutional activities/programs, and the presence of supportive policy structures within the government systems, which can be leveraged to support effective and sustainable implementation.

Despite the contextual similarities, a few differences emerged between high and low SES neighbourhoods. In both countries, limited time for participation due to income-generating activities and household responsibilities and higher exposure to drug use were commonly discussed as potential barriers to participation by adolescents in low income neighbourhoods. In contrast, greater scepticism and slower buy-in from stakeholders, requiring more evidence and justification before adopting the interventions were commonly discussed as potential implementation factors in high SES areas.

Cross-country differences were also evident. In Ghana, structural and socio-cultural constraints—such as lack of school fencing, potential restrictions on food sales and messaging in Muslim faith-based organisations, and strong cultural preferences for starchy foods over fruits and vegetables emerged as unique implementation challenges while existence of several supportive school health/ nutrition activities (e.g fruit day, egg day) emerged as a key facilitator. In Kenya, issues such as peer-related dynamics (e.g.,

potential lack of respect for peer educators) and expectations for monetary incentives emerged more compared to Ghana.

The insights generated through this process will guide/inform the subsequent development of tailored implementation strategies. Based on the findings, development of implementation strategies will consider; i) capacity-building for the intervention delivery team, to strengthen their knowledge and practical skills related to adolescent nutrition, physical activity and ongoing technical support to enhance their confidence and self-efficacy in performing the implementation activities/roles; ii) mobilising school and faith based organisation leaders to secure their buy-in and commitment to embed the intervention activities within existing schedules and resources; iii) addressing the resource gaps identified such as limited staff, equipment, insufficient space and competing time demands; iv) addressing socio-cultural norms, misconceptions and gender-related barriers that may limit participation and delivery of the intervention; and v) leveraging existing systems while managing expectations around incentives to ensure feasibility, acceptability, and sustainability of the Generation-H intervention. Country specific adaptation will also be essential, considering the contextual differences identified in both countries. Examples may include leveraging and embedding some of the implementation activities within the existing school health/nutrition initiatives e.g school fruit days in Ghana, strengthening the credibility and self-efficacy for the peer educators in Kenya and including religious and community leaders in the implementation oversight committee to provide guidance on the local adaptations needed to address the emerging socio-cultural and religious norms in each country.

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