The ScoRe Guide

The Use of Scoping Reviews to Mobilize Global Knowledge and Experience (GKE) to Strengthen Program Implementation

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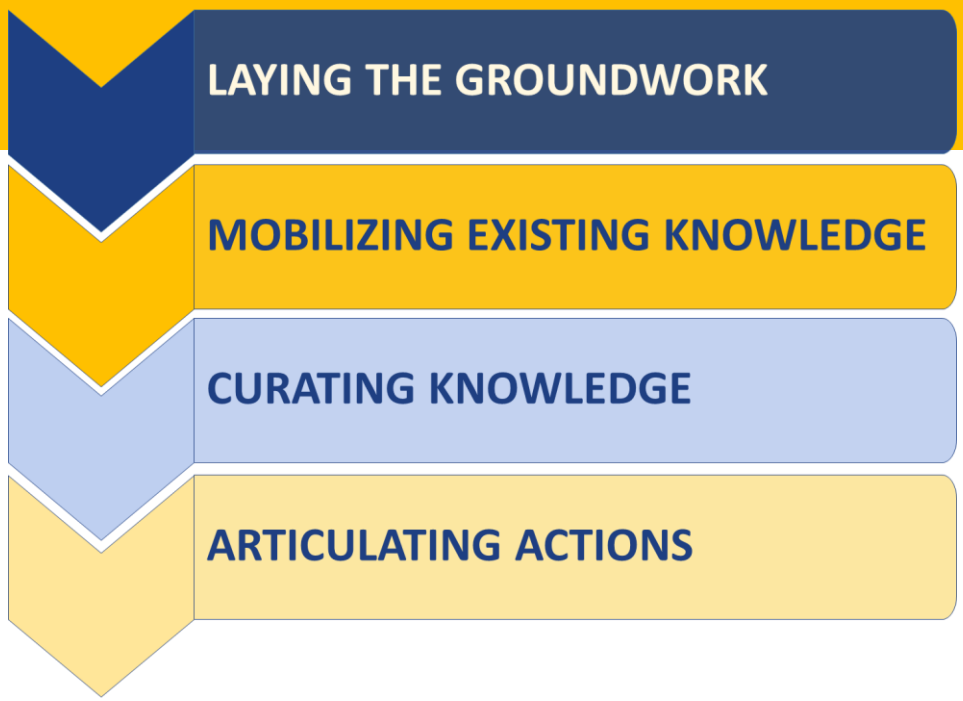

THE SOCIETY
FOR IMPLEMENTATION
SCIENCE IN NUTRITION

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LIST OF ACRONYMS AND ABREVIATIONS

3ie	International Initiative for Impact Evaluation
ANC	Antenatal Care
BMGF	Bill & Melinda Gates Foundation
BSI	Bottleneck and Solution Inventory
CIR	Contextual Implementation Research
CKE	Contextual Knowledge and Experience
FES	Focused Ethnographic Study
GKE	Global Knowledge and Experience
IFA	Iron and Folic Acid
IFAS	Iron and Folic Acid Supplementation
IR	Implementation Research
IRB	International Review Board
IS	Implementation Science
ISS	Implementation Science System
ISN	Implementation Science in Nutrition
KB	Knowledge Brokering
KEMRI	Kenya Medical Research Institute
MNP	Micronutrient Powder
NGO	Non-Governmental Organization
PAG	Program Assessment Guide
PIP	Program Impact Pathway
SISN	Society for Implementation Science in Nutrition
TBA	Traditional Birth Attendants

ABOUT THE GUIDE

There is a profound gap between the knowledge of what works, in terms of nutrition policies, programs and interventions, and the ability to implement them with the high quality and coverage required to achieve impact at-scale. Doing so requires methods, resources and capacities to identify and address implementation challenges under local conditions. Implementation research (IR) and contextual knowledge are two invaluable forms of knowledge for this purpose. Harvesting global knowledge and experience concerning implementation challenges and strategies is an essential complementary strategy, but implementers often do not have sufficient time, incentives or resources to systematically access, curate and utilize such knowledge.

The **ScoRe Guide** presented here has been developed to provide implementers and their partners with a practical and adaptable methodology to gather global implementation knowledge and experience from the scientific and grey literature. Specifically, the guide describes a staged approach to:

i) engage a group of key stakeholders in the search process

ii) conduct a systematic and structured process to review and curate the literature and make sense of global knowledge and experience

iii) articulate actions, based on the review. The actions may include adaptation to the policy, program or intervention, strengthening specific implementation capacities or processes and/or the design of an IR study to better understand the bottlenecks in the local context or test solutions for them.

The ScoRe Guide describes eight stages and presents examples based on the experience from teams in Kenya and Uganda that were part of the Implementation Science Initiative.

INTRODUCTION

Background and focus

Despite an unprecedented commitment to nutrition and the existence of efficacious interventions, significant gaps persist between global targets and actual achievements, emphasizing the profound gap between the knowledge of what works and the implementation of proven interventions to achieve coverage, quality and impact at-scale. It is not enough to know that a nutrition intervention is effective; it is also necessary to identify barriers and address **implementation challenges** under local conditions in order to accelerate scaling and sustainability in coverage. Implementation challenges in nutrition are many and diverse, with some commonalities and differences within and between high-income countries as well as low- and middle-income countries. The need for identifying and addressing the critical implementation challenges in a given programmatic context has led to increasing attention to the field of implementation science in nutrition (ISN).

The **Society for Implementation Science in Nutrition** (SISN) was established in 2016 to advance the science and practice of nutrition implementation. SISN seeks "to close the gap between what is known about efficacious interventions and what is actually achieved in practice." SISN developed an integrated framework for ISN that shows three broad and complementary categories of knowledge to draw from to strengthen program implementation:

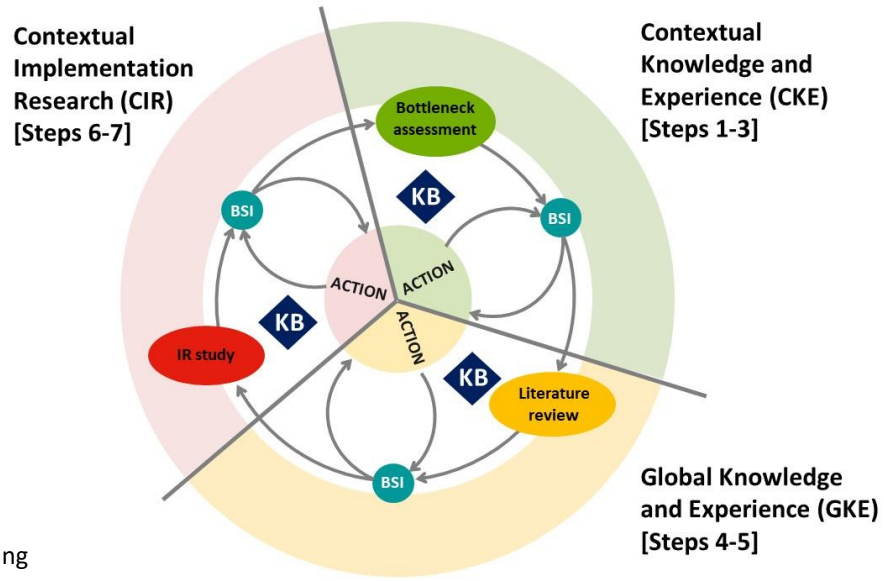
1. ***Contextual Knowledge and Experience (CKE)*** refers to the often-tacit knowledge and experience of planners, implementers, and others who possess intimate knowledge of contextual features that can have profound implications on the performance and prospects for a policy, program, intervention, or innovation. This can be done through the undertaking of a bottleneck assessment related to a specific program.
2. ***Global Knowledge and Experience (GKE)*** refers to knowledge that is often packaged into frameworks, tools, and guidelines but is typically underutilized because it is widely dispersed, and planners and implementers typically do not have the time, means, or incentive to locate, adapt, and apply it. GKE also includes the often-tacit knowledge and experience of practitioners who have confronted similar implementation challenges in other settings and often have found practical solutions.
3. ***Contextual Implementation Research (CIR)*** refers to various forms of practical, timely, empirical inquiries and assessments in a specific country or programmatic context to identify or clarify the weaknesses, strengths, and bottlenecks in various domains and phases, and to adapt interventions to local contexts during the planning phase.

The ScoRe Guide was developed based on the experience gained during the Implementation Science Initiative (ISI) in Kenya and Uganda to operationalize SISN's framework for ISN. ISI led to the emergence of an operational model for an Implementation Science System (ISS) to address implementation bottlenecks (see Box 1).

Box 1: Operational model for an implementation science system (ISS)

An **Implementation Science Initiative (ISI)** was carried out in Uganda and Kenya as part of a collaboration between SISN and the International Initiative for Impact Evaluation (3ie), thanks to a grant from the Bill & Melinda Gates Foundation. The goal of ISI was to gain experience operationalizing the ISN framework from SISN, using iron and folic acid supplementation (IFAS) as a focal intervention. As a result of this initiative an operational model for an ISS emerged as outlined in the 7 steps below.

1. Conduct a bottleneck assessment (BNA), prioritize the bottlenecks
2. Populate a Bottleneck and Solution Inventory (BSI)
3. Undertake **Action** (based on Contextual Knowledge and Experience, CKE) and populate the BSI
4. Conduct a literature review and populate the BSI
5. Undertake **Action** (based on Global Knowledge and Experience, GKE) and populate the BSI
6. Develop and carry out IR study and populate the BSI
7. Undertake **Action** (based on Contextual IR, CIR) and populate the BSI



KB Knowledge brokering

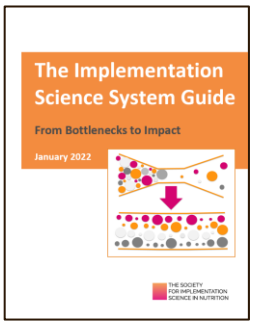
In the ISI in Kenya and Uganda, a bottleneck assessment workshop was conducted in 2018 engaging key stakeholders in the IFAS service delivery system. A multitude of factors can enable or inhibit program implementation and undertaking a **bottleneck assessment** identifies these by drawing from and structuring contextual knowledge and experience (CKE), followed by a prioritization of bottlenecks for further analysis.

In addition to a bottleneck assessment, there is a need for an approach that can help countries and implementation teams search, curate and use relevant implementation knowledge from the grey and scientific literature. This guide describes a process for the literature review and presents insights from conducting that process with the teams in Kenya and Uganda.

Note that the ISS Operational Model also requires the use of a bottleneck and solution inventory (BSI), which documents the implementation bottlenecks being identified, as well as proposed solutions and the progress or complications experienced in trying to implement the solutions.

This guide provides guidance on how to tap into global knowledge and experience (GKE) during the literature review part of the ISS Operational Model. The focus is on the search, curation and utilization of existing knowledge in order to strengthen program implementation. This document is called the ScoRe Guide because it is based on an adaptation of the scoping review methodology.

The ScoRe Guide has two companion guides:



i) The Implementation Science System (ISS) Guide is the overarching guide that presents the ISS Operational Model.

ii) The Program Assessment Guide (PAG) can be used during the bottleneck assessment of the ISS Operational Model to tap into the other form of existing knowledge: contextual knowledge and experience (CKE).

Approaches for literature review

One phase of the ISS Operational Model is a literature review to search for and curate existing global knowledge and experience (GKE). The methods for conducting literature reviews have expanded greatly in recent years, such that, a number of distinct types are now recognized. **Table 1** (next page) illustrates this diversity. Each of these methods may be useful within the broad field of implementation science, depending on the context and the need. For instance, meta-analysis can be used to estimate the effects of complex interventions and implementation strategies[1] and a realist review can help understand the mechanisms of action or explanations for the success or failure of implementation efforts[2]. The choice of methods is driven by the purpose of the review as well as the time and resources available, and it is often necessary to adapt a chosen method to further fit the method to the particular context, purpose and resource constraints.

This guide aims to assist users in adapting and applying a scoping review and illustrates how it was applied in Kenya and Uganda as part of the Implementation Science Initiative (ISI). This method was chosen because ISI is an example of **embedded implementation science[3]**, in which knowledge is being mobilized as part of a real-time effort to strengthen implementation of a nutrition

intervention. As such, the key considerations were relevance to the implementation challenges being faced and the need for practical and timely review methods.

Table 1: Common types of review

Type of review	Description
Systematic review and meta-analysis	The 'gold standard' of scientific reviews because the review is based on explicit, pre-specified and reproducible methods and guidelines to systematically search all sources of evidence and critically appraise, summarize and synthesize findings. It is often used for a highly focused clinical question and often in the form of a quantitative meta-analysis[4], a required method for publication in many scientific journals.
Integrative review	Combines data from theoretical and many forms of empirical literature to gain a comprehensive understanding of a phenomenon. This methodology is sophisticated and requires insight and adherence to detail[5].
Qualitative systematic review	Systematic review of qualitative studies to identify themes or constructs and broaden the understanding of a topic or phenomenon[4,6].
Mixed methods review	A synthesis of knowledge on a topic, built upon findings from many types of studies (qualitative and quantitative), to gain a holistic understanding of the topic and take advantage of the complementary questions and methodological advantages of each study type[4,7].
Introductory review	Used to identify a gap in the existing literature, thus justifying a research project, often presented in a research proposal or introduction to a paper. It can identify concepts and important findings from previous studies but does not seek to be comprehensive[8].
Mapping review (or descriptive review)	Categorises existing literature as a step towards a systematic review and/or to identify gaps in research literature, using systematic and transparent procedures (but not necessarily comprehensive) and presenting studies representative of most works published in a particular area[9,10].
Narrative review	Also known as unsystematic narrative reviews, this type describes and appraises published articles to gain a broad perspective on a topic, but are not reproducible because the methods for selection of articles may not be described[5].
Rapid review	A method that uses systematic, but not comprehensive, procedures to identify studies that permit a summary and synthesis of findings, subject to the constraints of the time and resources available[4,5,7].
Realist review	A theory-driven, qualitative and mixed-method review of heterogeneous evidence about complex interventions to uncover the mechanism(s) of how and why complex interventions thrive or fail in any given setting[6,7]. Stakeholder involvement is required, as this type of review is designed based on a negotiation between stakeholders and reviewer[5].
Scoping review	Characterizes the size and nature of the evidence base for a particular topic and/or is used as an exploratory method to map key concepts, types of evidence, and gaps in research[5,7]. Uses a range of databases, hand- searching and attempts to identify unpublished literature, with the breadth and depth determined by the time and resources available[9].

Objectives and products

The purpose of this guide is to:

1. Help users understand the value of conducting a scoping review in their context
2. Encourage the use of existing knowledge when considering how to address challenges in a specific program
3. Outline a staged approach that breaks down one large (and possibly overwhelming) task into smaller, more manageable sub-tasks

More specifically, The ScoRe Guide will help:

- Engage a group of key stakeholders in a search of knowledge relevant to a specific bottleneck
- Provide a systematic and structured process to review literature (grey and scientific) and make sense of global knowledge and experience (GRE)
- Articulate actions, based on the review of existing knowledge
- Possibly design an IR study related to the bottleneck or test solutions.

Potential products of this process include:

- The definition or elaboration of certain concepts (e.g. male involvement), which often is a fundamental first step
- A list of factors that influence the bottleneck, positively or negatively
- A framework and/or depiction of how the various influencing factors relate to each other
- A list of potential solutions or strategies to address the bottleneck, some of which may be implemented and/or tested
- The identification of knowledge gaps related to the bottleneck and delineation of a research question to be investigated by an IR study (e.g., what do men think about the purpose and importance of women attending ANC and what kinds of messages might enhance their willingness to support women).

Table 2 (next page) summarizes the eight stages of an adapted scoping review for ISN.

Table 2: Adapted scoping review for implementation science in nutrition

Stages	Description	Rationale
LAYING THE GROUNDWORK		
1.Create a team	Engage a group of key actors who can shape the objectives and desired products from a scoping review, make sense of the data and help identify appropriate programmatic changes based on the findings. Typically, this involves researchers, academics and implementers.	Undertake a joint structured process brings a common understanding of some influencing factors, gives a sense of ownership in the findings and allow to build agreement on the way forward.
2.Articulate the research question	Delineate the research question as clearly and precisely as possible by focusing the topic on the bottlenecks identified and prioritized in a bottleneck assessment.	
MOBILIZING EXISTING KNOWLEDGE		
3.Develop a search strategy	Define the appropriate database for searching and the initial inclusion and exclusion criteria, given the time and resources available.	Allows the actors to search the knowledge with an appropriate breadth and depth given that implementers often have limited time to review literature and familiarity with such process.
4.Search and select the studies	Apply the search strings in the selected database(s) and refine the search strategy in an iterative manner.	
CURATING KNOWLEDGE		
5.Analyze extracted data	Code the selected studies and discuss this iterative process with the team.	Allows the actors to transform existing knowledge in a usable form, that can be put into action in a timely manner.
6.Collate, summarize, and report the results	Find an appropriate way to present the retrieved knowledge, given the nature of the data, and interpret the findings in ways relevant to the program.	
ARTICULATING ACTIONS		
7.Consult with key actors	Discuss with key actors during the last steps of the literature review to strengthen the data and its reporting and/or begin discussion for the next steps.	Allows the actors to actually put the existing knowledge into action or to plan for filling a gap in knowledge.
8.Follow up with actions	Fill in the bottleneck and solution inventory (BSI) with findings from the review, plan the next steps and plan the follow-up actions.	

ADAPTED SCOPING REVIEW FOR IMPLEMENTATION SCIENCE IN NUTRITION (ISN)

Undertaking a scoping review in the context of program implementation requires adaptations to the approach to ensure it is relevant, practical and timely in relation to implementers needs. This requires the engagement of key actors in the process and this, in turn, will determine the breadth, comprehensiveness and detail in the review. A product generated to meet implementers' needs may or may not meet the standards required for publication in the scientific literature, because these often are unnecessarily strict and burdensome in the context of real-time implementation, so it is important to be clear that this is not the intention. The right standards for an embedded IS scoping review are the ones that can generate relevant, practical and timely products, with sufficient comprehensiveness and detail for the nature of the decisions at-hand.

The following section presents first a description of each stage; then, the application of those stages with the Kenya and Uganda teams follows to illustrate.

LAYING THE GROUNDWORK

Stage 1: Create a team

Engage a group of key actors who can shape the objectives and desired products from a scoping review, make sense of the data and help identify appropriate programmatic changes based on the findings. Typically, this involves researchers, academics and implementers.

- The team needs to be diverse and have both content and methodological expertise to ensure a successful completion of the review process. Whenever possible, try to include experts on the topic as they are likely to have access to unpublished documents and will be able to contribute some of their experience in the process.
- The team also needs to include actors who are close to program implementation, possess relevant contextual knowledge and are committed to strengthening the program.
- Select actors who may have done some work on the topic so they have a good understanding of the grey literature.

Stage 2: Articulate the research question

Establish the research question as clearly and precisely as possible by focusing the topic on the bottlenecks identified and prioritized in a bottleneck assessment, or known to exist based on contextual knowledge.

- There is a need to consider which aspects to examine (ex: population to focus on, geographical location, system etc.). It is helpful to think about the PCC mnemonic - population, concept, context – when articulating the research question.
- During the bottleneck assessment, some bottlenecks will have been prioritized. These preliminary steps should orient the focus of the research question. However, at this stage, a conceptual framework or theoretical approach that maps the selected program in relation to the various systems can also help to orient the focus of the research question.
- The initial research question can evolve during the review process depending on the state of knowledge and the end goal of using the process to improve the implementation of a specific program in a timely manner.
- It is necessary to find balance between being too narrow or too broad. Typically, scoping reviews seek to be as broad as possible to cover most of the literature available on a specific topic. But this is not the case for an embedded IS-oriented scoping review. Instead, the researchers may go deeper into a smaller set of studies to extract knowledge about specific bottlenecks or potential solutions. These decisions are shaped by the resources available (time and efforts that team members can invest).

Protocol development:
When designing a publication-oriented scoping review a detailed protocol is written during the first stages that includes information for each of the subsequent stages. In the context of embedded IS, a highly detailed protocol that would theoretically permit replication by other researchers would not be needed. Instead, the protocol may be seen as a roadmap to help make sure all actors engaged in this process have a clear and similar understanding. It is important to ensure some flexibility considering that several things will evolve throughout this process.

ISI: Kenya and Uganda

To carry out the process for the literature review for the work in Kenya and Uganda, the main actors were the project coordinators for ISI, program implementers and researchers. The work for undertaking a scoping review included three sub-groups who worked respectively on three topics, namely: ANC attendance and IFAS adherence; male involvement; and pregnancy disclosure.

Those three topics were selected based on some of the bottlenecks that had been prioritized through the bottleneck assessment workshops in both countries. However, the user system (i.e., mothers and other household or community members) could not be fully investigated since the tool being used (the Program Assessment Guide, PAG) only examines bottlenecks in the delivery system. To bring the user system into focus, a **Program Impact Pathway (PIP**) was created to illustrate the women's utilization of ANC services and use of IFA, and the main behaviors along the specific pathway from ANC initiation to IFA tablet consumption were listed. This helped the team to better tailor the research question related to the user system.

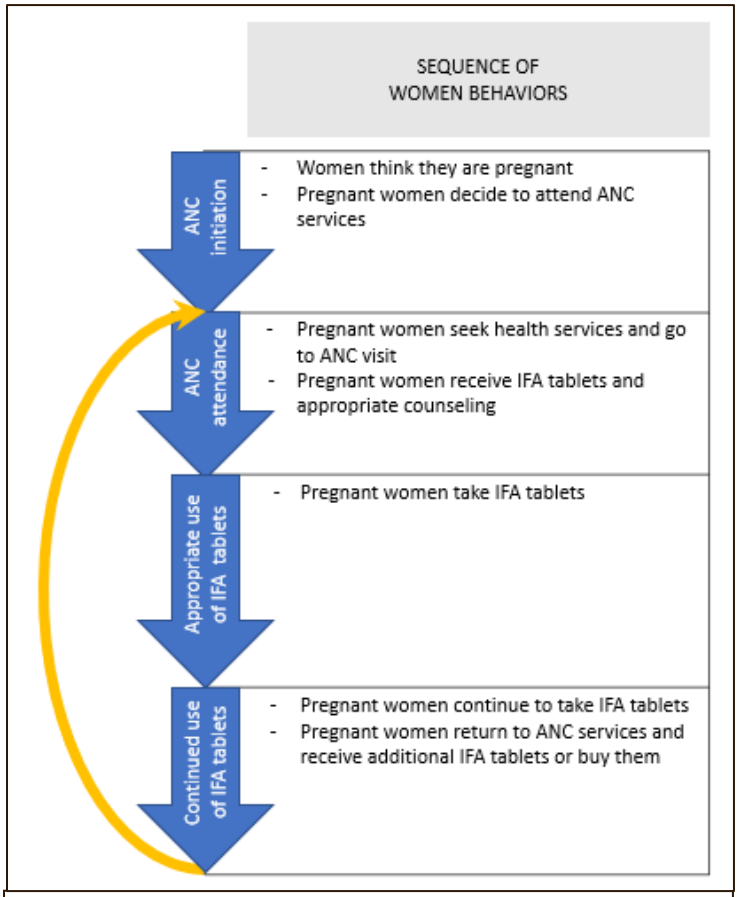


Figure 1: Program Impact Pathway depicting the utilization of ANC services and subsequent IFA tablets consumption

The three research questions were refined during the literature review, considering the resources available and the applicability of the findings to strengthen the program. For example, a restriction of the geographical location was added for the first research

question because the cultural context was important for the results and findings from countries other than Kenya and Uganda may have been less applicable. However, the scope for the third question was extended to include all African countries because the available studies and documents on the topic were sparse. The final version of the research questions is found in the table below.

Research question	Participant	Concept	Context
What are the factors (barriers and enablers) of ANC attendance and IFAS adherence among pregnant women in East African countries?	Pregnant women	ANC attendance and IFAS adherence	East-African countries
What are the conditions of male involvement in supporting ANC attendance of their pregnant partners in Uganda, Kenya and Tanzania?	Male with pregnant partners	Male involvement in supporting ANC attendance of their pregnant partners	Uganda, Kenya and Tanzania
What are the barriers to pregnancy disclosure among pregnant women in African countries? Does it influence the timing of ANC attendance?	Pregnant women	Pregnancy disclosure	African countries

Stage 3: Develop a search strategy

Define the appropriate database for searching and the initial inclusion and exclusion criteria, given the time and resources available.

- Decide on the types of literature to include in the literature review (e.g., journal articles, conference abstracts, book chapters, NGO or donor reports, etc.). Although a scoping review can include evidence coming from any type of literature, it may be appropriate to impose limits, which need to be discussed among team members.
- The inclusion/exclusion criteria must be directly aligned with the research question of the scoping review, but must also take into consideration the volume of literature available and the resources available (time and staff available).
- The following resources provide guidance on finding searchable databases for journal and grey literature:
  - https://guides.lib.unc.edu/publichealth/greylit
  - https://guides.lib.uw.edu/hsl/nutritional-sciences/journalsandgreylit

Stage 4: Search and select the studies

Apply the search strings in the selected database(s), review the results and consider refining the search strategy building on your new results each time. This stage involves searching and reviewing articles for inclusion, while also refining the search strategy as the volume and relevance of the literature becomes better known.

- The search for studies can follow 3 steps:
  1. carry out an initial limited search and become familiar with the terms used in the evidence base
  2. use all keywords across the selected database(s)
  3. search the reference lists of all identified documents included in the review.
- It is better if at least two authors review abstracts for inclusion.
- Keep track of the number of papers excluded for various reasons.
- Depending on the research question, it may be desirable to include qualitative data, quantitative data or both.

ISI: Kenya and Uganda

As presented before, three sub-groups searched for three different bottleneck-related topics. At the beginning of phase 3, some common criteria were defined, including the choice of database, language and dates. Then, in each sub-group, specific search criteria and search terms were established, and later refined during the process.

The evolution of the search strategy for the third topic – barriers to pregnancy disclosure – is a good illustration of the need for repeating the process. Two challenges rapidly arose during the search process:

1. there were a limited number of studies on this topic
2. in many papers, pregnancy disclosure was often discussed in studies on broader topics where it was only one of many factors studied.

These challenges were discussed with members of the entire team to decide how to proceed. The widespread belief in witchcraft and its linkage to pregnancy was highlighted by all members of the team. Thus, the search strategy evolved to seek more papers in medical anthropology on witchcraft and pregnancy that may provide insights into the disclosure of pregnancy.

Stage 5: Analyze extracted data

Code the selected studies and discuss this process with the team.

- In some scoping reviews, the intent is to characterize the size and nature of the literature on a topic, without attempting to synthesize actual findings. However, when doing a scoping review as part of embedded IS, the primary purpose is to learn more about a prioritized bottleneck or a potential solution. To this end, it is necessary to go deeper into the studies.
- Coding of findings often is used as one method for summarizing findings. The coding process is iterative: it requires repetition of reading the documents to identify concepts or nodes. This is especially useful when the data is qualitative and requires discussion among the team members.
- When coding, the principle of saturation may guide the breadth and scope of the review by providing signals on when to stop. Saturation occurs when the addition of more sources does not lead to more concepts or nodes.

Chart the data:

When a scoping review seeks to characterize the size and nature of literature on a topic, the results typically would be summarized after "charting the data." The latter might be done by creating an excel spreadsheet with the following information: authors; year of publication; country of origin; aims; study population; methodology; intervention type; concept; duration of the intervention; key findings. In the case of time- and resource-limited, embedded IS, this step may not be necessary. In some cases time may be better spent summarizing the findings from the studies. On the other hand, such a database may be helpful at a later stage for focusing on studies from certain settings or other characteristics.

Stage 6: Collate, summarize, and report the results

Find an appropriate way to present the knowledge you have gathered that is suitable for the nature of the data and interpret the findings in ways relevant to the program.

- This stage requires that some members of the team have a high degree of analytic skills in order to develop an approach to collate or summarize the data.
- At this stage, team discussions will enrich the process.
- Because the literature review undertaken as part of embedded IS will be tied to actions, it is necessary to link the knowledge gathered to the context, to discuss implications of the results and to state recommendations/considerations for next steps.

ISI: Kenya and Uganda

For each of the topics, at least two members of the sub-group led the analysis process in order to ensure a deep discussion and regularly validate the findings. This was an iterative process that involved open coding, grouping the nodes and regrouping them to finally form categories or themes. Connections and linkages were sought between and among the themes throughout this process, often using the Program Impact Pathway as a guide.

The process of curating knowledge that took place for the first topic, ANC attendance and IFAS attendance, is a good illustration of how this can be achieved. Similar to the methodology developed to investigate micronutrient powders (MNP), the selected papers were coded for the factors (barriers and enablers) that influence ANC attendance and IFAS adherence; this allowed us to identify the most commonly cited barriers or enablers across all the documents[11]. The main barriers, enablers and strategies were summarized and grouped into main sub-categories. In addition, considering that behavior change is at the core of the work of the country teams, the COM-B model[12] was used as an analytical lens to further deepen the relationship between the different types of factors and at which levels they were having the primary influence.

More information on this stage can be found in **appendices 1-3,** links for which can be found at the end of this guide.

Stage 7: Consult with key actors

During the last steps of the process, discuss the findings of the literature review with key actors/stakeholders to strengthen the data and its reporting and/or begin articulating the next steps.

- A consultation can take place at the end or even during the previous stages. It should involve discussions with actors who are engaged with the selected program and/or key actors with specific expertise given the purpose of the consultation.
- In the context of an embedded IS review, a consultation process can benefit the work in several ways:
  1. validate the findings
  2. gain additional insights that were not retrieved or did not appear in the literature review: consulted actors may suggest sources, references or experiences beyond those in the literature
  3. make sense of the aggregated data: consulted actors can provide expertise or experience in categorizing the data, creating a framework, and using the findings, and might strengthen the methodological process
  4. disseminate the findings
  5. open and deepen discussions on next steps (finer prioritization of the bottlenecks to be address, action, identification or research question)
  6. engage other actors in the change process.

Stage 8: Follow up with actions

Fill in the bottleneck and solution inventory (BSI) with findings from the review, plan the next steps and plan the follow-up actions.

The ISS Operational Model is intended to strengthen various aspects of a program in real time. Its primary purpose is to connect knowledge to action, and the literature review part of the ISS Operational Model is no exception. Thus, for this adaptation of the scoping review proposed for the ISS Operational Model, an additional stage related to action was added.

The examination of global knowledge and experience (GKE) through a literature review can directly lead to action (e.g., changes in 'behavior change' messaging) and/or the design and implementation of an IR study to better understand a given bottleneck in the local context or test a solution. In either case, these next steps must be entered into a tool called a bottleneck and solution inventory (BSI). This tool keeps track of all the identified bottlenecks, the solutions being proposed or implemented and the progress and/or complications being experienced in attempting to implement them. More information on the BSI is available in our companion guide 'The ISS Guide'.

ISI: Kenya and Uganda

In the work carried out in Kenya and Uganda, two of the bottleneck-related topics explored were related to the user system: male involvement and pregnancy disclosure. As this system could not be investigated during the bottleneck assessment (using the PAG), the literature review was a practical first step to better understand these two bottlenecks. In ISI, it was also used to inform the design of an IR study to understand these bottlenecks in the local context, using the focused ethnographic study (FES) methodology. An FES is a complementary and practical tool, based on interviews with key informants and respondents, to tap into contextual knowledge and experience concerning the bottleneck in question and/or the likely response to a proposed solution[13]. In ISI, the literature review conducted by the team helped to create and strengthen interview guides for the FES.

The literature review process also allowed Uganda to come up with relevant considerations for direct or indirect action regarding male involvement. A few strategies and key action points were identified and shared. This helped populate their existing BSI. A few strategies and key action points are outlined below as illustrative of potential areas that were considered for action:

- Considering their high level of influence on men, the use of cultural and religious opinion leaders to influence positive behavior was noted to be a good factor to consider when creating strategies to increase male involvement. The engagement of other leaders such as local administrative leaders, community volunteers (community health workers for example), and other formal and informal groups can create buy-in from men and the wider community.
- The factor of awareness of men's role in ANC or importance of ANC underscores the need to consider how men can become more aware of the role they can play. Using multimedia campaigns was found to be useful in reinforcing messages and were identified as a strategy that had been successfully used.

- Gender-sensitive interventions such as community sensitization and policies were suggested as a means of improving gender relations in collaboration with actors from other sectors. Several strategies for undertaking outreach to men in the community were described in the studies, such as: mobilizing men to increase involvement (through door-to-door outreach), community education and sensitization on male involvement, and health workers invited to villages to educate and sensitize men on the issues.
- Creating male-sensitive services at ANC clinics was indicated as having a significant influence on men to attend the clinics. Male-specific services that included particular messages designed for men at ANC clinics were also found to be useful. Additionally, inclusion of services such as screening for non-communicable diseases and undertaking measurements for vitals (such as blood pressure) could be included as some of the services that men can benefit from at ANC clinics.
- Creating a favorable, welcoming and pleasant ANC experience was found to be a means of sustaining continued ANC attendance, not just for the men but more so for the women.
- Designing appropriate male and couple-responsive ANC clinic services was found to be critical in attracting male partners to attend. For example, allowing men to ask questions and answering them respectfully could be attractive to men.

FINAL LESSONS AND SUGGESTIONS

The present guide is intended as a "how-to" manual and, as such, has focused on the practical steps for conducting a scoping review. However, the work in Kenya and Uganda yielded some lessons and suggestions related to scoping reviews and the ISS Operational Model in general (Box 1, page 6) that go beyond these practical steps. Specifically, efforts to mobilize global knowledge and experience in Kenya and Uganda highlighted three interrelated issues that need attention in future work:

- Choice and adaptation of review methods
- The critical roles of knowledge brokers, and
- Developing proposals for formal IR too early in the cycle.

The technical and logistical roles of knowledge brokers

The experiences in conducting the literature reviews revealed a need for considerable support to develop local capacities and facilitate the entire review process. This would be the case for all types of reviews shown in **Table 1**, but especially when the reviews are undertaken for the purpose of informing or catalyzing decisions and actions by implementers and policy makers. These tasks fall within the purview of knowledge brokers. The full range of roles and tasks for knowledge brokers are detailed in **Table 2.** As shown, some of these involve supporting the technical aspects of the review process and others involve engaging with policy and program stakeholders to ensure relevance of the review (at the beginning of the process) and facilitate dissemination, interpretation and utilization of the findings (at the end of the process).

Cautions and caveats with a sequential model

The ISS Operational Model suggests that the process of identifying and addressing bottlenecks should use existing contextual and global knowledge and experience to the greatest extent possible and undertake new IR inquiries only as necessary. Our experience reveals some important cautions and caveats to that sequential model.

In ISI, the bottleneck assessment began with a workshop that focused on bottlenecks in the delivery system. Participants in such a workshop typically do not have detailed and context-specific knowledge regarding bottlenecks at household and community levels and, as such, some type of IR at household and community levels would be needed early in the process. In ISI the entire process began with a comprehensive assessment of bottlenecks in the delivery system, through a PAG workshop, but in some cases, there is a desire to focus on specific bottlenecks that are already well-known to implementers. In such cases, the process might begin with a literature search to identify potential solutions or, if a particular solution has already been identified, it might begin with some forms of IR to assess the feasibility of such a solution in the local context.

These caveats and cautions underscore the need for a careful and systematic process to identify when and for what purpose IR is needed, as well as the most practical and appropriate methods to be used. This

process must recognize that the decision to undertake any form of IR will require IRB approval which could entail significant staff effort and delays, and compromise or diminish the time and attention available for promoting action based on other steps in the cycle. Knowledge brokers can play an important role in designing and facilitating a collaborative decision process among implementers and researchers, to ensure that the IR is relevant, pragmatic and timely in relation to the needs of implementers.

A number of factors make it difficult to apply these principles in practice. These include a common tendency to conflate IS with IR, researchers' expectations to do empirical research and the ways in which externally-funded projects are developed and administered. In the case of the ISI work, specific problems that were encountered included:

- The grant proposal and budget submitted to the funder (BMGF) pre-specified that two research projects would be conducted in each country. This was necessary in order to estimate and justify the overall project budget and, in keeping with standard practices, the project proposal also needed to include a set of deliverables, milestones and a timetable to enable progress tracking and accountability. It was understood and agreed that the specific objectives and design of the research would be decided during the project period, once the needs were better understood. In addition, the funder displayed flexibility in adjusting deliverables and deadlines on multiple occasions as the project unfolded. Yet, this was not fully understood by members of the country teams, as described below.
- The inclusion of two research projects per country in the project budget, along with research deliverables and deadlines, reinforced a set of expectations and tacit assumptions on the part of the country teams (that included implementers and researchers), that research was to be a primary activity in the initiative. This led to the misperception that the primary purpose of the bottleneck assessment workshops was to identify bottlenecks in need of research, rather than bottlenecks in need of attention and actions from decision makers.
- This misperception of the purpose of the bottleneck assessment workshops led to the premature development of research proposals, which was reinforced by researchers' pressures and incentives to do empirical research and the fact that the researchers' sub-contracts specified research deliverables and deadlines. The process of creating those proposals, submitting for IRB approvals and making revisions to obtain final IRB approval absorbed a great deal of time and attention from the country teams.
- The time and attention devoted to the research proposals and IRB approval detracted from the time and attention available for other components of the initiative. Specifically, knowledge brokering was not conducted with decision makers, to stimulate action on the bottlenecks identified in the workshops; and literature reviews were not undertaken to identify additional strategies for addressing bottlenecks. Indeed, the literature reviews were only conducted when COVID-19 interrupted the planned field research and alternative work plans were developed for the final year of the initiative.

These experiences suggest several ways in which IS projects could be conducted in the future:

1. Funders, implementers and researchers can adopt the operational model laid out in Box 1, augmented by the ISS guide[14]. These tools were not available when ISI was planned and introduced to the country teams, but were developed as a result of the experiences described here.
2. Work with funders to help them understand the importance of flexibility in the deliverables and timetables, similar to that displayed by BMGF in ISI.
3. Place greater emphasis on the value of that an "emergent learning approach"[15].
4. Highlight the importance of knowledge brokers, who play fundamental roles throughout the process.

Table 2: The roles of knowledge brokers in scoping reviews

Stages	Knowledge Brokering Activities
1. Planning	• Develop a work plan and timeline for review • Identify and organize resources, guidance and tools to be used at each stage • Develop materials to orient team members to the purpose and process • Anticipate and ensure the resources and incentives necessary for the process
2. Cross-Cutting	• Schedule and facilitate meetings • Identify and address capacity gaps • Monitor progress and provide feedback on specific tasks and the overall project • Provide updates to keep all members aware of progress and milestones • Maintain common understanding, trust, collegiality • Be alert to other strategic stakeholders to involve in the process
3. Create a team	• Identify and recruit team members based on skills and contextual roles • Conduct orientation activities to explain the programmatic context, purpose, process, roles, expectations, anticipated products and outcomes • Obtain commitments
4. Articulate the review question(s)	• Organize a meeting to re-explain the programmatic context for the review • Provide an example from previous reviews • Facilitate the meeting • Follow-up with minutes, the agreed-upon review questions, next steps and timeline • Revisit the review question(s) later if necessary
5. Develop a search strategy	• Identify relevant database(s) for the search • Arrange access for those conducting the searches
6. Search and select sources	• Conduct initial and on-going training sessions • Assist in refining search strings and strategies based on emerging search results
7. Analyze extracted data	• Help develop coding schemes based on emergent concepts, Program Impact Pathways or theory • Train on coding
8. Collate, summarize, and report the results	• Develop quality assurance mechanisms • Prepare user-friendly visualizations of findings for next stages
9. Consult with key stakeholders	• Organize meetings with stakeholders • Facilitate review of findings and interpretation of programmatic implications
10. Follow up with actions	• Identify next steps • Enter findings and next steps in Bottleneck and Solutions Inventory

LINKS TO APPENDICES

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