

THE AGENCY, RESOURCES, AND INSTITUTIONAL STRUCTURES FOR SANITATION-RELATED EMPOWERMENT (ARISE) SCALES

User Guide

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Evidence and Data
on Gender and
the Environment

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List of Acronyms

ARISE	Agency, Resources, and Institutional Structures for Sanitation-Related Empowerment
BMGF	Bill & Melinda Gates Foundation
MUSE	Measuring Urban Sanitation and Empowerment
WASH	Water, Sanitation, and Hygiene

Contents

1 Introduction 4

- 1.1 Background: Why measuring women's sanitation-related empowerment matters 4
- 1.2 How can the scales be used and who can use them? 7

2 Development and Validation of the ARISE Scales 8

3 How to Use the Scales 10

- 3.1 Accessing the scales 10
- 3.2 Target respondents 11
- 3.3 Considerations when using the scales in a new context 11
- 3.4 Deploying scales to create valid scores 12
 - 3.4.1 Use scales independently 12
 - 3.4.2 Use all items in a scale to generate a score 12
- 3.5 Frequently Asked Questions 14

4 ARISE Scales 17

4.1 Agency 18

- 4.1.1 Decision-Making 20
- 4.1.2 Leadership 22
- 4.1.3 Collective Action 23
- 4.1.4 Freedom of Movement 25

4.2 Resources 27

- 4.2.1 Bodily Integrity 31
- 4.2.2 Health 33
- 4.2.3 Safety and Security 35
- 4.2.4 Privacy 37
- 4.2.5 Critical Consciousness: Self-efficacy 39
- 4.2.6 Critical Consciousness: Awareness of Inequalities 40
- 4.2.7 Financial and Productive Assets 41
- 4.2.8 Time 43
- 4.2.9 Social Capital 45
- 4.2.10 Knowledge and Skills 47

4.3 Institutional Structures 49

- 4.3.1 Norms 51
- 4.3.2 Relations 54

5 Link to Full Tool 56

6 Appendices 57

- Appendix A: Glossary of key terms 57
- Appendix B: Menstruation-related empowerment definitions, scales, and items 58
- Appendix C: Tool development and validation process 63
- Appendix D: Demographic, WASH, and menstruation questions 65
- Appendix E: Subdomain score sheets 71
- Appendix F: References 83

1 Introduction

1.1 Background: Why measuring women's sanitation-related empowerment matters

Access to water and sanitation is a basic human right¹ and crucial for development and health.² Further, there is growing recognition that water, sanitation, and hygiene (WASH) can enable (or deter) gender equality, particularly in regard to women.³ Historically, WASH programs and research largely engaged women as instruments⁴—whether to achieve program objectives or as critical sources of WASH-related data—with limited regard to their own well-being.⁵ Increasingly, both WASH programs and research have sought to include women in order to understand their experiences and to engage them as participants to improve their life outcomes.^{5,6} Beyond just reaching and benefiting women, an emerging body of WASH research and programming has sought to understand if and how WASH conditions and circumstances contribute to women's empowerment and, inversely, how women's empowerment may influence WASH. One recent systematic review, which synthesized a substantial body of literature on water, sanitation, and women and girls' empowerment and related domains, identified the need for rigorously tested quantitative tools for assessing women's empowerment related to WASH.⁶ While qualitative approaches have an important role in understanding WASH-related empowerment, valid quantitative tools can be used to carry out large-scale assessments for understanding circumstances and identifying priorities, demonstrate change over time, and evaluate impact of targeted programs and policies.⁶⁻¹⁰

Responding to the need for valid measures, the Agency, Resources, and Institutional Structures for Sanitation-Related Empowerment (ARISE) Scales were developed to assess 16 subdomains of sanitation-related empowerment. The scales are based on an adapted conceptual framework and definitions of empowerment that were originally developed by the KIT Royal Tropical Institute and used by the Bill & Melinda Gates Foundation (Figure 1).¹¹

Women and girls' empowerment is defined as “the expansion of choice and strengthening of voice through the transformation of power relations, so women and girls have more control over their lives and futures.”¹¹

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

According to the framework, empowerment comprises three inter-related domains—**agency**, **resources**, and **institutional structures**—each of which has several subdomains. Based on our systematic review of the literature, we added two subdomains relevant to sanitation: Freedom of Movement and Privacy.⁶ Additionally, based on our analyses, we split the Critical Consciousness subdomain into two—Self-Efficacy and Awareness of Inequalities. See Figure 1 for the adapted conceptual model, which represents the subdomains assessed by the ARISE Scales and Table 1 for definitions for each subdomain. Each scale can be used independently or in combination with others to measure different aspects of empowerment related to sanitation in urban environments.

WOMEN'S AND GIRLS' SANITATION-RELATED EMPOWERMENT

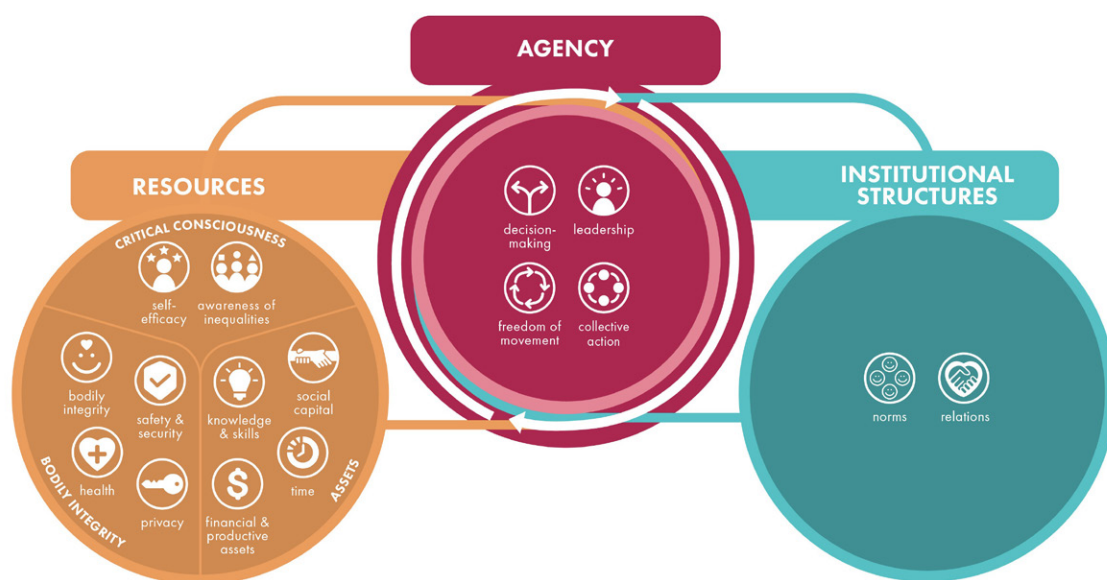


FIGURE 1. Conceptual Model of Women's and Girls' Sanitation-related Empowerment

The purpose of this document is to present and explain the constructs measured by the ARISE scales and to provide practical guidance for using the scales.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

Domain	Sub-Domain	Operationalized Definition	# of Factors	# of Items
Agency	Decision-Making	Women influence and make decisions about sanitation inside and outside the home.	5	13
	Leadership	Women assume leadership positions, effectively participate, and support women's leadership in informal and formal sanitation initiatives and organizations.	2	6
	Collective Action	Women gain solidarity and take action collectively on sanitation-related issues.	3	8
	Freedom of Movement	Women have the autonomy to move freely to access sanitation facilities, collect water for sanitation-related needs, and/or attend forums on sanitation issues, and women have freedom of movement despite sanitation circumstances.	2	5
Resources	Bodily Integrity	Women's control over their bodies and ability to access and use their preferred sanitation location.	2	8
	Health	Women's complete physical, mental, and social well-being as affected by sanitation options and conditions; not merely the absence of disease or infirmity.	5	16
	Safety and Security	Women's freedom from acts or threats of violence (physical or sexual), coercion, harassment, or force when accessing and using sanitation locations or engaging in sanitation-related decision-making processes in the public sphere.	5	18
	Privacy	Women's ability to maintain desired levels of privacy when accessing and utilizing sanitation locations.	1	5
	Critical Consciousness	Self-efficacy: Women's ability to assert and affirm their self-efficacy, or their belief in their capability and effectiveness to enact a behavior, inside and outside of the household as it relates to sanitation.	2	6
		Awareness of inequalities: Women's ability to identify and question how inequalities in power operate in their lives in relation to sanitation access and decision-making processes.	2	6
	Financial/Productive Assets	Women's control over economic resources and long-term stocks of value such as land, for the purposes of meeting individual and household sanitation needs.	3	8
	Time	Women's control over their time and labor spent on sanitation-related tasks and activities.	2	6
	Social Capital	Women's relations and social networks that provide tangible and intangible value and support, including those that enable them to complete sanitation-related tasks and activities.	2	8
Institutional Structures	Knowledge and Skills	Women's knowledge and skills related to sanitation (e.g. operation and maintenance of sanitation facilities) and their abilities to apply those knowledge and skills.	4	10
	Norms	Collectively held expectations and beliefs of how women and men should behave and interact inside and outside the household regarding sanitation-related labor and women's voice and participation in sanitation-related meetings and activities.	6	21
	Relations	The interactions and relations – including conflicts, support, hostility, and communication – with key actors that shape women's sanitation-related experiences.	3	11

TABLE 1. Adapted definitions of subdomains of van Eerdewijk et al.'s conceptual model of empowerment to be specific to sanitation and number of factors and items to measure subdomain in ARISE scales¹¹

This table does not include menstruation-specific scales. For menstruation scales, see **Appendix B**.

1.2 How can the scales be used and who can use them?

These tools can be used to:



- Assess baseline levels of sanitation-related empowerment by subdomains



- Identify priorities for programs, policies, or interventions



- Identify and address barriers to intervention success



- Measure change in empowerment subdomains over time



- Evaluate the impact of project or program activities

These tools can be used by practitioners in non-profit organizations, government stakeholders, researchers or any other stakeholders who want to measure women's empowerment in the context of urban sanitation.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

2 Development and Validation of the ARISE Scales

Empowerment is an abstract, intangible concept that cannot be directly observed. How do we measure something that does not have physical properties? This is where a rigorous scale development and validation process comes in. **Validity** is defined as “the degree to which an instrument measures what it is supposed to measure.”¹³ A thorough assessment of validity is important to give us confidence that we are measuring the constructs of empowerment that we intend to measure.

The ARISE scales’ development and validation were completed over three phases (Figure 2) and across two continents (Figure 3). These scales have been validated among women in urban environments in Kampala, Uganda and Tiruchirappalli, India (Phases 1 and 2), as well as in: Meherpur and Saidpur, Bangladesh; Narsapur, Tiruchirappalli, and Warangal, India; Dakar, Senegal; Kampala, Uganda; and Lusaka, Zambia (Phase 3). See **Appendix C** for a more detailed summary of the phases. For further information on the study protocol and validation, see Sinharoy et al., 2022¹⁴ and Sinharoy et al., 2023.¹²

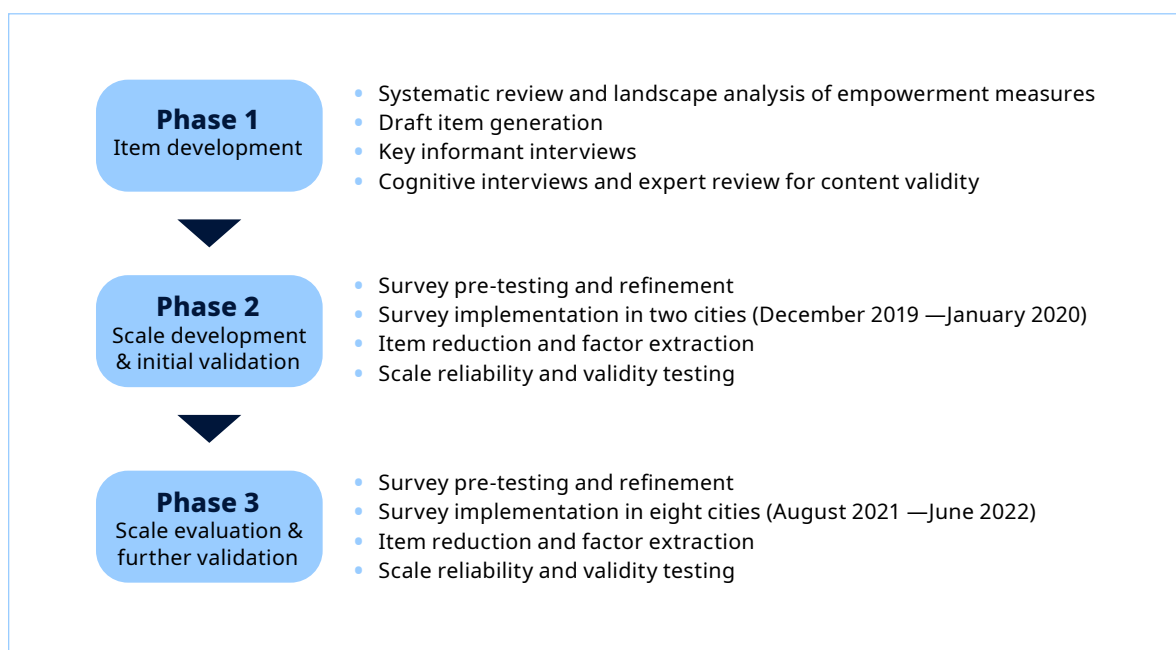


FIGURE 2. Overview of the ARISE scales’ development and validation over three phases.

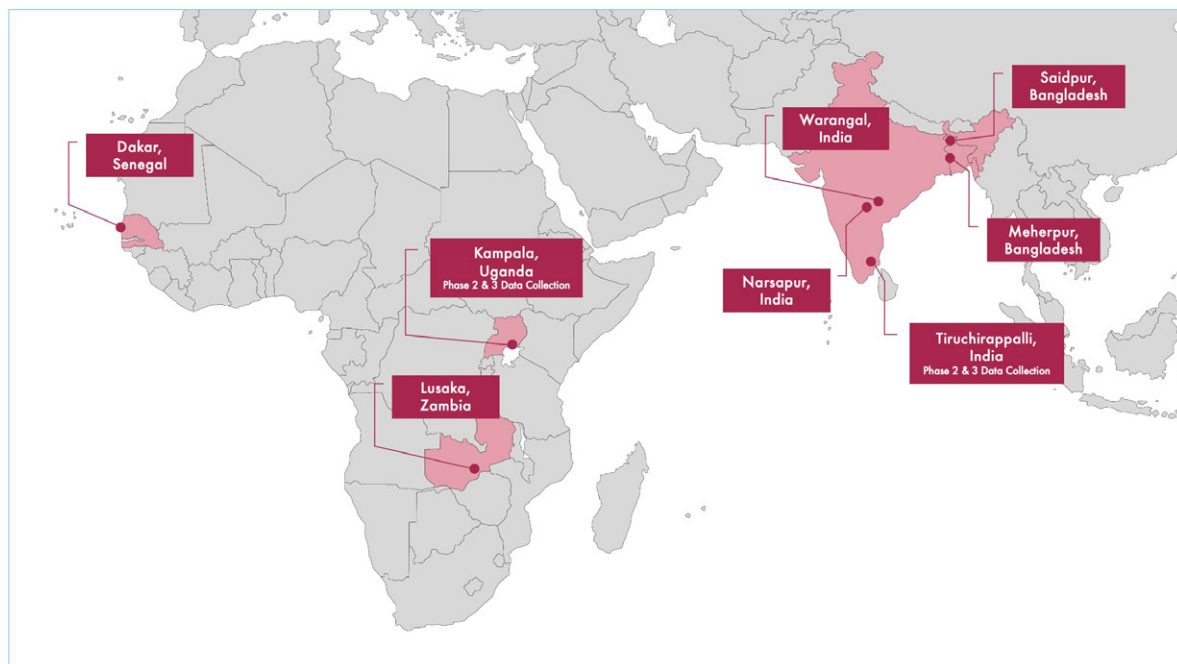


FIGURE 3. Map of the eight cities where surveys were implemented. Surveys were deployed in Tiruchirappalli, India and Kampala, Uganda for initial testing in Phases 1 and 2. Surveys were deployed in all cities marked for Phase 3.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

3 How to Use the Scales

3.1 Accessing the scales

The scales are available in **Section 4** where there is a detailed summary of each individual scale and all information needed to use the scales, including items and response options, scoring information, and example interpretations.

The scales are comprised of survey questions (also known as **items**). The survey questions are presented and organized into **factors**, which represent underlying concepts within a scale (Figure 4). Additional information may be found in the appendices. This section contains information needed to use the scale, including the target respondents, considerations when using the scales in a new context, and how to deploy the scales and analyze results.

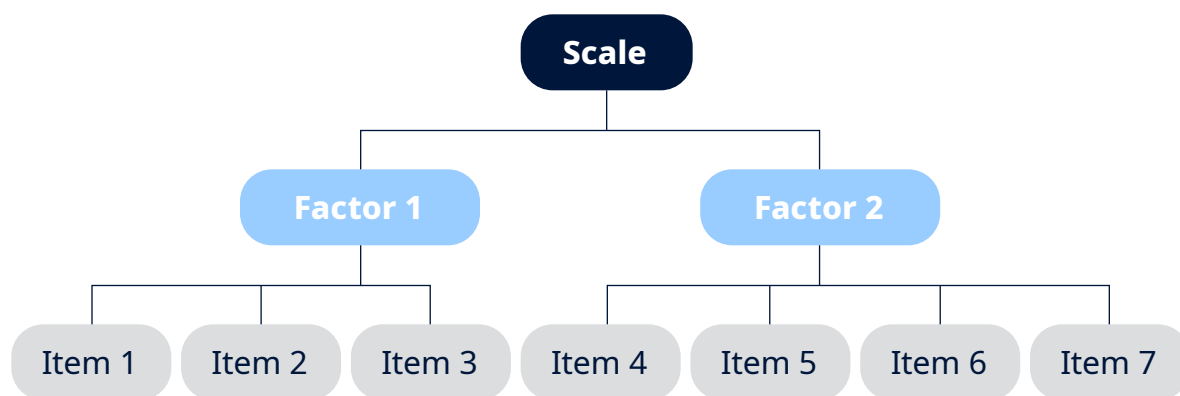


FIGURE 4. Relationship among an example scale and its factors and items

Readers may find it helpful to administer these scales alongside questions on demographic characteristics (e.g., gender identity, age, education, religion) or WASH access and behaviors. We provide a list of selected questions specific to WASH access and behaviors used alongside the scales during the validation process in **Appendix D** as a reference.

While you do not need permission to use the scales, we ask that you cite the relevant publication using the instructions on page 2.

3.2 Target respondents

The ARISE Scales are designed to be administered to adult women living in urban areas. The menstruation-specific items should be administered only to women who have had a menstrual period in the past year. How you select women will depend on the purpose of your data collection.

In our recruitment, households were asked if there was an adult woman available. We did not specifically define “woman” in our recruitment process, nor did we ask questions about sex or gender identity. Nonbinary and transgender populations were not deliberately recruited due to the sensitive nature of these identities in contexts where the survey was deployed. However, we recognize that it is possible that cisgender and transgender women may have different experiences related to sanitation, and if it is appropriate and safe in your context, this type of demographic question might be used in combination with the ARISE scales.

The ARISE scales have not been tested or validated among rural populations, men, children, or non-binary populations.

3.3 Considerations when using the scales in a new context

If you are translating the scales or using them in a new context, pre-testing in your target population should be considered to ensure that your translation is accurate and appropriate to the population. Possible options include but are not limited to:¹⁵

- Requesting review of translation from local experts familiar with your project
- Conducting independent back-translations
- Ensuring words chosen for translation are appropriate for local colloquialisms. Some scales mention defecation and urination, and it is important to make sure that the words are appropriate to the literacy level and education of the population, but are not profane or offensive.
- Thoroughly reviewing every item of the tool with a locally hired data collection team
- Conducting **cognitive interviews** with the target population.

Tools are currently available in Bengali, English, French, Luganda, Nyanja, Tamil, Telugu, and Wolof. To request a translated tool, please email emorymuse@gmail.com. We also welcome submissions from anyone who would like to share their translated versions of the scale(s) for others to use. If you would like us to make your translation available for sharing, email emorymuse@gmail.com with the translated scale and a description of steps taken to test the translations.

3.4 Deploying scales to create valid scores

3.4.1 Use scales independently

Each of the 16 scales has been designed to be used independently from the others, so you may choose the scales to use alone or in combination with others, based on your programmatic or research goals.

3.4.2 Use all items in a scale to generate a score

To calculate a scale score, all items in the individual scale need to be used. For scales that have more than one factor, it is also acceptable to measure individual factors by administering all items in a factor and then calculating a factor score. If you do not use all items in a scale or factor, you cannot calculate a scale score or a factor score, though you can still report on the stand-alone item(s).

A scale score is calculated as a simple, unweighted average across all items in a scale. Scores can be generated for each of the scales, as long as every item in the scale has been included. All but one scale include 4 response options, with a possible average ranging from 1 to 4; one scale (Freedom of Movement) includes 5 response options, with a possible average ranging from 1 to 5. A factor score is calculated as a simple average of the items in that factor. These general scoring instructions are applicable to all the ARISE scales; scale-specific instructions are also provided below each scale in **Section 4: ARISE Scales**, and score sheets to guide scoring are provided in **Appendix E: Subdomain score sheets**.

The scales have been designed to be applicable to all respondents. However, if response options such as “Choose not to answer” or “Not applicable” are included alongside the recommended response options, they should be coded as missing so that they are not included in the scale score. Importantly, if respondents refuse to answer (or have missing data) for one or more items within a scale, then those respondents would be excluded from the analysis of that scale, and their scale score would not be calculated.

Some scales include items that should be reverse-coded **before** calculating scale scores. Reverse-coding means that the item coding runs in the opposite numerical direction. These items are indicated in **Section 4: ARISE Scales**, on each scale-specific page.

For instance, the response options 1 (Never), 2 (Sometimes), 3 (Often), and 4 (Always) numerically reverse code to 4 (Never), 3 (Sometimes), 2 (Often), and 1 (Always), as below:

	1	2	3	4
Standard code	Never	Sometimes	Often	Always
Reverse code	4 <i>Never</i>	3 <i>Sometimes</i>	2 <i>Often</i>	1 <i>Always</i>

Additionally, the response options 1 (Strongly Disagree), 2 (Disagree), 3 (Agree), and 4 (Strongly Agree) numerically reverse code to 4 (Strongly Disagree), 3 (Disagree), 2 (Agree), and 1 (Strongly Agree), as below:

Standard code	1	2	3	4
	Strongly Disagree	Disagree	Agree	Strongly Agree
Reverse code	4	3	2	1
	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>

For example, see a Bodily Integrity scoresheet for one respondent below:

Bodily Integrity Subscale				
Item ID	Response Options			
	Never	Sometimes	Often	Always
F1: Satisfaction with sanitation location				
BI01	1	2	3	④
BI02	1	2	③	4
BI03	1	2	③	4
F2: Withholding and suppression				
BI04*	4	3	②	1
BI05*	④	3	2	1
BI06*	④	3	2	1
BI07*	4	③	2	1
BI08*	4	③	2	1

*Reverse-code indicated items

The respondent's score for F1 is:

$$(4+3+3)/3 = \mathbf{3.33}$$

F2 is reverse-coded, meaning the numbers of the response options are reversed and the score is:

$$(2+4+4+3+3)/5 = \mathbf{3.20}$$

Because items and factors are not weighted, the total bodily integrity score for this respondent is:

$$(4+3+3+2+4+4+3+3)/8 = \mathbf{3.25}$$

For scoresheets of all subdomains, refer to **Appendix E**.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

3.5 Frequently Asked Questions

Q Do I need permission to use the ARISE scales?

A No, you do not need permission to use the ARISE scales. We do ask that you cite the scales appropriately if publishing on their use in academic or grey literature using the relevant citation instructions on page 2.

If you use the ARISE scales and publish any of the results of their use, let us know at emorymuse@gmail.com and we may feature your work on our website, edge.sph.emory.edu.

Q Do I need to use all items in a scale?

A In order to calculate a scale score, yes, all items in the scale should be used. For scales that have more than one factor, it is also acceptable to measure individual factors by administering all items in a factor and then calculating a factor score.

Q Do I need to use all of these scales to measure empowerment? Or can I pick and choose the scales most relevant to my purpose?

A You can and should pick and choose scales most relevant to your purpose. For example, if you are using these scales for an impact evaluation of an intervention to decrease time spent meeting sanitation needs and increase women's sense of safety through building private household latrines, you would probably decide to use scales on time and safety and security. If you expect that you will also see a difference in privacy as a result, or you want to have baseline knowledge to identify if norms related to household labor may mean that women will now have new responsibilities related to taking care of the new latrine, you may also decide to use the privacy and norms scales. However, leadership, collective action, and other scales may not be useful for your purposes because you are not intervening on these subdomains and do not expect them to change as a result of your intervention.

Q Can I combine multiple scale scores into an overall empowerment score?

A No. We tested this empirically, and we found that the scales should be kept separate. Each of the 16 scales measures a different construct, and they cannot (validly) be combined into one overarching "empowerment score".

Q Can I add or revise a question or the response options?

A The ARISE scales are valid metrics that measure women’s sanitation-related empowerment. Their validity means that the scales measure what they intend to measure.¹⁶ When a scale is modified or revised, any previously established evidence of validity may not apply to the new version. In other words, the modified or revised scale may no longer be valid, and the scale scores may not represent the same construct or be comparable to previous measurements. In these cases, new **evidence of validity** through statistical analysis should be provided for the modified or revised version of the scale.¹⁷ Similarly, changing the recall period or response options would be considered a modification or revision of the items, which would require new evidence of validity.

Q Can I change the item wording to adapt to other contexts?

A We expect that as items are translated into additional languages, that translation may require selecting the words that best convey the meaning of the item in the local language, which may not result in a literal one-to-one translation of each word. However, adapting the item in a way that changes the meaning will require testing to ensure the new questions are valid. In addition, when using scales in new contexts, evaluation of validity is always recommended to show that the scales are valid in the new context.¹⁷

If you translate the tools into a new language (see **Section 3.2** for possible methods) and would like us to make them available to others, e-mail the translations and the steps you used to test them to us at emorymuse@gmail.com.

Q What should I do if respondents miss some items, or respond, “not applicable” or “choose not to answer”?

A To calculate a scale score, complete responses are needed for all items in the scale. The scales have intentionally been developed to be applicable to all adult women, so there should not be a “not applicable” response option for any of the scale items. (This is why the menstruation items are optional, with scores for menstruation scales being calculated separately, rather than as part of the sanitation scale.) However, if respondents refuse to answer one or more items within a scale, or are missing one or more items within a scale, then those respondents would be dropped from the analysis of that scale, and their scale score would not be calculated.

Q What is a good score for the ARISE scales?

A Higher scores are better than lower scores for each subdomain. However, because empowerment is highly contextual, we cannot make a broad recommendation for what is a “good” or “bad” score. Scores may be compared across neighborhoods, populations, or moments in time, and comparatively higher scores are better. However, scores should not be compared across different subdomains.

Q Have the scales been validated in my context/language?

A As of the date of this publication, these scales have been validated among adult women (over the age of 18) in urban areas in Dakar, Senegal (French and Wolof); Lusaka, Zambia (English and Nyanja); Kampala, Uganda (English and Luganda); Narsapur (Telugu), Warangal (Telugu), and Tiruchirappalli, India (Tamil); and Saidpur and Meherpur, Bangladesh (Bengali).

Q Why should I choose the ARISE scales for my project?

A WASH programs have historically neglected gender issues. It is important to consider, identify, *and measure* the effects of WASH projects and programs that may differ by gender. In a systematic review of the literature on empowerment related to water and sanitation, our team found that many studies talked about “empowerment” of women and girls, but they typically did so only in vague terms. The ARISE scales provide a way for WASH practitioners, researchers, and others to integrate gender into their work by quantitatively measuring specific subdomains of women’s empowerment related to urban sanitation. The ARISE scales are also the most rigorously validated metrics of their kind, meaning they provide the highest level of confidence that they are producing meaningful data on which to base program decisions.⁶ Calculating ARISE scale and factor scores can generate data for better targeting, design, implementation, and evaluation of interventions to improve women’s empowerment relating to urban sanitation.

Q If I have more questions, can I contact the developers of the ARISE scales?

A Yes—developers of the ARISE scales can be reached at emorymuse@gmail.com.

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES



4

ARISE Scales

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

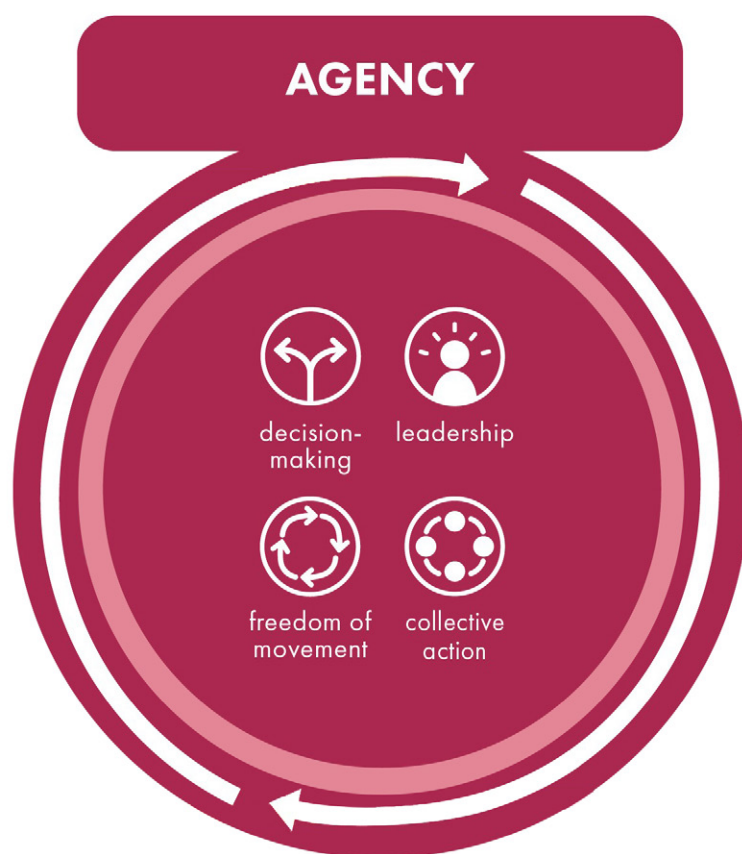
5 FULL TOOL

6 APPENDICES

4.1 Agency Scales

Agency is defined as, “Women and girls pursuing goals, expressing voice, and influencing and making decisions free from violence and retribution.”¹¹ We have created scales to measure each of the four subdomains of Agency relevant to sanitation: Decision-making, Leadership, Collective Action, and Freedom of Movement.

Information about each scale is summarized below, including the definitions for the subdomains, and the name and number of factors per scale. Some scales have optional menstruation-specific scales (termed M scale). These can be used in addition to or separately from the overall scale. If used alongside overall scales, they should be scored separately. Additional information for each scale, including survey items and scoring information, is on the pages that follow.



- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES

Decision-Making

Definition:

Women influence and make decisions about sanitation inside and outside the home.

Factor 1	Ability to speak up in community-level sanitation decision-making	3 items
Factor 2	Ability to influence community-level sanitation decision-making	3 items
Factor 3	Ability to participate in household sanitation decision-making	3 items
Factor 4	Ability to make large household-level sanitation decisions	2 items
Factor 5	Ability to make small household-level sanitation decisions	2 items
M Scale	Ability to participate in menstruation-related sanitation decisions	3 Items

Leadership

Definition:

Women assume leadership positions, effectively participate, and support women's leadership in informal and formal sanitation initiatives and organizations.

Factor 1	Support for women's sanitation-related leadership	2 items
Factor 2	Trust in women's sanitation-related leadership abilities	4 items

Collective Action

Definition:

Women gain solidarity and take action collectively on sanitation-related issues.

Factor 1	Shared sanitation-related goals and interests	2 items
Factor 2	Sense of trust and community related to sanitation	3 items
Factor 3	Sense of mutual support related to sanitation	3 items

Freedom of Movement

Definition:

Women have the autonomy to move freely to access sanitation facilities, collect water for sanitation-related needs, and/or attend forums on sanitation issues, and women have freedom of movement despite sanitation circumstances.

Factor 1	Freedom of movement for meeting personal sanitation needs	3 items
Factor 2	Freedom of movement for attending sanitation-focused events	2 items
M Scale	Freedom of movement for meeting menstruation-related needs	3 items

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES



4.1.1 Decision-Making

The Decision-Making scale measures the extent to which women influence and make decisions about sanitation inside and outside the home.

Our review found that women's sanitation-related decision-making varied based on the type and scope of the decision.⁶ Women were more likely to exert influence equal to or greater than their husbands in small, household-level decisions, but less likely to have influence in community or large household decisions.¹⁸⁻²² Therefore, this scale covers a range of different types of sanitation decisions, at both the household to the community levels. The scale also extends beyond assessing *presence* in discussions or committees to include *influence* on decision-making, ensuring that meaningful participation is captured. The scale does *not* capture the *degree* of influence over decisions, because the exact level of influence that is preferable and feasible is likely to vary by individual woman and across contexts. For this reason, the scale intentionally allows for respondents to subjectively assess whether they could influence (to any degree) different sanitation decisions, if they so chose.

Decision-Making

Definition: Women influence and make decisions about sanitation inside and outside the home.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
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F1: Ability to speak up in community-level sanitation decision-making

DM01	I would feel comfortable expressing my opinion about sanitation issues at a community meeting when men are present.
DM02	If I spoke up in a community meeting about sanitation issues, it is likely that some others would listen.
DM03	If I shared my opinion about sanitation issues with local leaders, NGOs, or government officials, it is likely that they would listen.

F2: Ability to influence community-level sanitation decision-making

DM04	If my community had a major decision to make about sanitation, such as constructing public toilets, I could influence that decision.
DM05	If my community had decisions to make about latrine/toilet repairs or enhancements, like new floor tiles, doors, locks, or lights, I could influence these decisions.
DM06	If my community had decisions to make about maintenance or cleaning of latrines/toilets, I could influence those decisions.

F3: Ability to participate in household-level sanitation decision-making

DM07	If my household was making a decision about sanitation-related issues, I could be present for the discussion.
DM08	If my household was making a decision about sanitation-related issues, I would be welcome to participate in the discussion.
DM09	I would feel comfortable expressing my opinion about sanitation issues in household discussions.

Decision-Making

F4: Ability to make large household-level sanitation decisions

DM10	If my household had a major decision to make about sanitation, such as construction or large repairs, I could independently make that decision.
DM11	If my household had decisions to make about latrine/toilet repairs or enhancements, like new floor tiles, doors, locks, or lights, I could independently make that decision.

F5: Ability to make small household-level sanitation decisions

DM12	If my household had decisions to make about small sanitation-related purchases, like soap, toilet paper, etc., I could independently make those decisions.
DM13	I can independently make decisions about how my household will clean and maintain the sanitation environment/facility.

Menstruation-Specific Decision-Making Scale+

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

MF: Ability to participate in menstruation-related decisions

M-DM01	I would feel comfortable expressing my opinion about menstruation-related sanitation issues in household discussions.
M-DM02	If my household had decisions to make about making the toilet more female-friendly, such as buying a rubbish bin for menstrual materials, I could influence that decision.
M-DM03	If my household had decisions to make about making the toilet more female-friendly, such as buying a rubbish bin for menstrual materials, I could have the final say on that decision.

+These items were validated separately from the full decision-making scale and may be deployed alongside the sanitation decision-making scale or separately if the subject of interest is menstrual health.

Scoring information

All items are scored on a scale of 1 (Strongly Disagree) through 4 (Strongly Agree). The scale score is then calculated as a simple average of all scale items. A higher scale score indicates greater sanitation-related decision-making. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See [Section 3.4](#) for additional scoring guidance.

The items in the menstruation-specific decision-making scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretation

“Women in all cities scored highly in factors related to household decision-making, indicating high levels of participation in decision-making at the household level, including for major and minor purchases and decisions. Women in Lusaka and Kampala had higher scores in F1 and F2 than women in other cities, indicating higher levels of contributions and influence in community-level decision-making.”



4.1.2 Leadership

The Leadership scale captures the extent to which individuals feel that community members should support women's leadership, and the extent to which they trust and believe in women's leadership capabilities.⁶ Given that women in many contexts have not typically held leadership positions related to sanitation, these constructs may be especially important to measure *before* designing and implementing programs and policies that aim to promote women's sanitation-related leadership. If the data indicate low levels of support or trust in women's leadership, then some additional work may be needed to increase acceptance of women leaders and prevent backlash. Administering the Leadership scale again after implementing some or all activities would then allow for an assessment of whether those activities have been successful in improving support for women's leadership in sanitation.

Leadership

Definition: Women assume leadership positions, effectively participate, and support women's leadership in informal and formal sanitation initiatives and organizations.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Support for women's sanitation-related leadership

L01	Men in my community should support women's leadership in sanitation organizations.
L02	Women in my community should support women's leadership in sanitation organizations.

F2: Trust in women's sanitation-related leadership abilities

L03	I trust sanitation groups/organizations with women as the head more than those with men as the head.
L04	I trust sanitation groups/organizations with women as the treasurers/money-keepers more than those with men as the treasurers/money-keepers.
L05	Women are as capable as men to take on official leadership roles in sanitation initiatives.
L06	Women are as capable as men to take on informal leadership roles for sanitation-related issues in this community, such as sanitation education, latrine promotion, or solving disputes.

Scoring information

All items are scored on a scale of 1 (Strongly Disagree) through 4 (Strongly Agree). The scale score is then calculated as a simple average of all items. A higher scale score indicates greater support for and trust in women's sanitation-related leadership. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See [Section 3.4](#) for additional scoring guidance.

Example interpretation

"Mean scores in all cities were high, indicating that participants and their communities are supportive of women's leadership in sanitation-related organizations."



4.1.3 Collective Action

The Collective Action scale captures women's perceptions of shared goals, trust, and mutual support related to sanitation, all of which together contribute to collective action in their communities. Our review found that women participated in various forms of collective action related to sanitation access and conditions, such as by forming local committees to encourage sanitation at the community level or petitioning governments for sanitation resources.⁶ Projects and programs that encourage women to work together for improved sanitation can consider measuring their impact on collective action as an important subdomain of women's agency.

Collective Action

Definition: Women gain solidarity and take action collectively on sanitation-related issues.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
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F1: Shared sanitation-related goals and interests

CA01	Community members and I share common goals for improving sanitation in this community.
CA02	The sanitation-related goals I share with my community motivate me to work with others, even when that is challenging.

F2: Sense of trust and community related to sanitation

CA03	I am confident that members of my community will work with one another to achieve sanitation related goals.
CA04	People in this community would be willing to contribute time/labor, money, or other resources toward common sanitation goals.
CA05	If I need help with a sanitation-related project, there are people in this community who I could trust to help me.

F3: Sense of mutual support related to sanitation

CA06	If there was a sanitation problem in this community, it is likely that people would cooperate to try to solve the problem.
CA07	If there is a problem that affects the entire community, people in this community would help each other to address the issue.
CA08	Most people in this community would be willing to help each other with sanitation-related projects.

Scoring information

All items are scored on a scale of 1 (Strongly Disagree) through 4 (Strongly Agree). The scale score is then calculated as a simple average of all scale items. A higher scale score indicates shared sanitation-related goals and interests and a sense of trust, community, and mutual support related to sanitation. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

Example interpretation

“Collective action scores were higher in cities where participants had shared sanitation as opposed to private sanitation, indicating that there may be an association between use of public or shared sanitation infrastructure and support for sanitation-related collective action.”

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES



4.1.4 Freedom of Movement

The Freedom of Movement scale captures the extent to which women can independently visit sanitation locations or attend sanitation-related events. Our review found that women often reported limitations to their freedom of movement, usually from their husbands or in-laws, which could prevent them meeting their own sanitation needs or from attending sanitation-focused events such as committee meetings or trainings.⁶ The Freedom of Movement scale can be used by practitioners and researchers to assess whether similar barriers exist in their local context, which might need to be addressed through targeted programming.

Freedom of Movement*

Definition: Women have the autonomy to move freely to access sanitation facilities, collect water for sanitation-related needs, and/or attend forums on sanitation issues, and women have freedom of movement despite sanitation circumstances.

Response Options: 01: Alone without telling anyone; 02: Alone if I tell someone; 03: Alone with permission; 04: Only with accompaniment; 05: Not at all

Item ID	Item
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F1: Freedom of movement for meeting personal sanitation needs

M01*	If I need to use a sanitation location when at home during the day, I can go:
M02*	If I need to use a sanitation location when away from home during the day, I can go:
M03*	If I need to use a sanitation location at night, I can go to my household's daytime sanitation location:

F2: Freedom of movement for attending sanitation-focused events

M04*	If I wanted to go a sanitation-focused public gathering, community meeting, or training outside of my neighborhood, I could go:
M05*	If I wanted to go a sanitation-focused public gathering, community meeting, or training near my home, I could go:

*Reverse-code all items in scale.

Menstruation-Specific Freedom of Movement Scale*+

Response Options: 01: Alone without telling anyone; 02: Alone if I tell someone; 03: Alone with permission; 04: Only with accompaniment; 05: Not at all

MF: Freedom of movement for meeting menstruation-related needs

M-M01*	If I need to change my menstrual materials when at home during the day, I can go:
M-M02*	If I need to change my menstrual materials when away from home during the day, I can go:
M-M03*	If I need to change my menstrual materials at night, I can go to my household's daytime sanitation location:

*Reverse-code all items in scale.

+These items were validated separately from the full freedom of movement scale and may be deployed alongside the sanitation freedom of movement scale or separately if the subject of interest is menstrual health.

Scoring information

The response options for this scale are different from all other scales. All items in this scale must be reverse-coded to a scale from 1 (Not at all) through 5 (Alone without telling anyone). The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates greater freedom of movement to meet personal sanitation needs and to attend sanitation-focused events. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.5** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretation

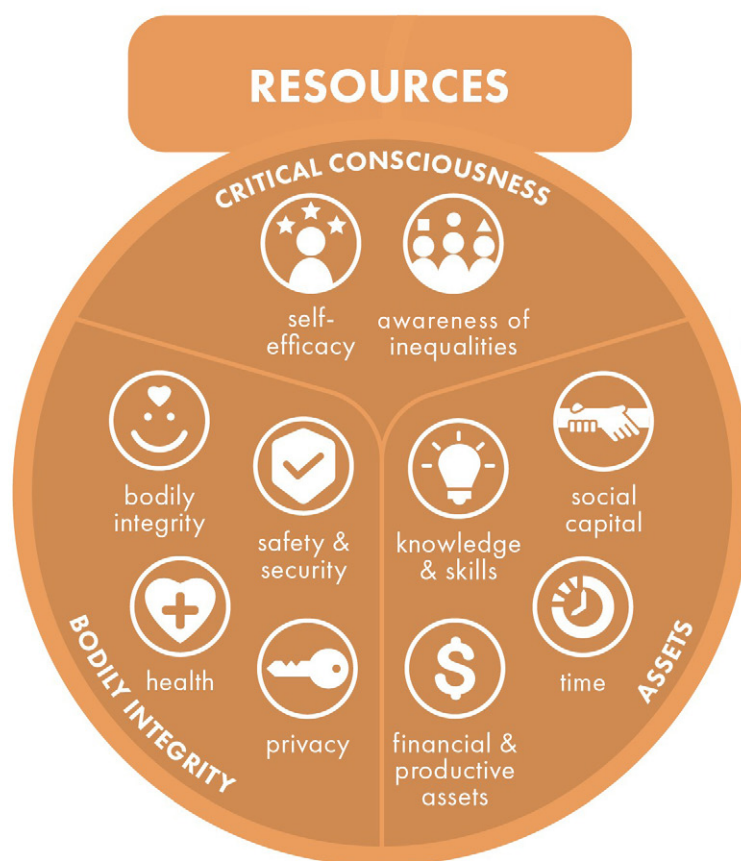
“In all cities, the mean factor score for freedom of movement to meet sanitation needs (F1) was greater than 4.0 (out of a maximum of 5.0), indicating participants largely do not have restrictions on their movement preventing them from visiting sanitation locations as needed.”

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES

4.2 Resources Scales

Resources are defined as “The tangible and intangible capital and sources of power that women and girls have, own or use individually or collectively in the exercise of agency”.¹¹ We have created ten scales to measure each of the subdomains of Resources relevant to sanitation: Bodily Integrity, Health, Safety and Security, Privacy, Critical Consciousness 1 (self-efficacy), Critical Consciousness 2 (awareness of inequalities), Financial and Productive Assets, Time, Social Capital, and Knowledge and Skills.

Information about each scale is summarized below, including definitions for the subdomains, and the name and number of factors per scale. Some scales have optional menstruation-specific scales (termed M scale). These can be used in addition to or separately from the overall scale. If used alongside the overall scales, they should be scored separately. Additional information for each scale, including survey items and scoring information, is on the pages that follow.



- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources**
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES

Bodily Integrity

Definition:

Women's control over their own bodies and ability to access and use their preferred sanitation location.

Factor 1	Satisfaction with sanitation location	3 items
Factor 2	Withholding and suppression of urination / defecation	5 items
M Scale	Satisfaction with menstrual hygiene management related to sanitation location	6 Items

Health

Definition:

Women's complete physical, mental, and social well-being as affected by sanitation options and conditions; not merely the absence of disease or infirmity.

Factor 1	Perceived sanitation-related illness	3 items
Factor 2	Perceived illness due to suppression and withholding of urination / defecation	3 items
Factor 3	Fear of injury from physical conditions of sanitation location	2 Items
Factor 4	Sanitation-related anxiety, embarrassment, and shame	3 items
Factor 5	Sanitation-related stress and fear	5 items
M Scale	Menstruation-related fear and stress	3 items

Safety and Security

Definition:

Women's freedom from acts or threats of violence (physical or sexual), coercion, harassment, or force when accessing and using sanitation locations or engaging in sanitation-related decision-making processes in the public sphere.

Factor 1	Perceptions of women's risk of harm when going for sanitation	3 items
Factor 2	Perceptions of women's risk of harm when going to sanitation-related meetings	3 items
Factor 3	Perceptions of women's risk of domestic violence related to sanitation	4 items
Factor 4	Perceptions of own risk of harm when going for sanitation	5 items
Factor 5	Perceptions of general personal safety related to sanitation	3 items
M Scale	Perceptions of own safety related to menstruation	3 items

Privacy

Definition:

Women's ability to maintain desired levels of privacy when accessing and utilizing sanitation locations.

Factor 1	Privacy for sanitation	5 items
M Scale	Privacy for menstrual hygiene management	6 items

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

Critical Consciousness: Self-efficacy

Definition:

Women's ability to assert and affirm their self-efficacy, or their belief in their capability and effectiveness to enact a behavior, inside and outside of the household as it relates to sanitation.

Self-efficacy

Factor 1	Ability to create sanitation-related change in the community	2 items
Factor 2	Ability to create sanitation-related change at home	4 items

Critical Consciousness: Awareness of Inequalities

Definition:

Women's ability to identify and question how inequalities in power operate in their lives in relation to sanitation access and decision-making processes.

Awareness of inequalities

Factor 1	Inequalities in ability to meet sanitation needs	3 items
Factor 2	Inequalities in sanitation-related decision-making	3 items

Financial and Productive Assets

Definition:

Women's control over economic resources and long-term stocks of value such as land, for the purposes of meeting individual and household sanitation needs.

Factor 1	Control over money for sanitation	3 items
Factor 2	Ability to acquire money for sanitation	3 items
Factor 3	Inadequate finances to meet basic sanitation needs	2 items
M Item	Control over money to meet menstruation needs	1 item

Time

Definition:

Women's control over their time and labor spent on sanitation-related tasks and activities.

Factor 1	Time on sanitation-related responsibilities	3 items
Factor 2	Time meeting personal sanitation needs	3 items
M Scale	Time for meeting menstruation-related needs	3 items

Social Capital

Definition:

Women's relations and social networks that provide tangible and intangible value and support, including those that enable them to complete sanitation-related tasks and activities.

Factor 1	Personal support and help related to sanitation	4 items
Factor 2	Community support and information related to sanitation	4 items
M Scale	Social capital for meeting menstruation-related needs	2 items

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

Knowledge and Skills

Definition:

Women's knowledge and skills related to sanitation (e.g. operation and maintenance of sanitation facilities) and their abilities to apply those knowledge and skills.

Factor 1	Knowledge and skills related to community sanitation	3 items
Factor 2	Knowledge related to personal sanitation repairs and maintenance	2 items
Factor 3	Knowledge to influence community-level sanitation decisions	3 items
Factor 4	Knowledge and skills to influence household-level sanitation decisions	2 items

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES



4.2.1 Bodily Integrity

The Bodily Integrity scale assesses women's perceived ability to access and use their preferred sanitation locations, as well as the extent to which women have to suppress their need to urinate or defecate when such a location/facility is unavailable or unviable. Our review found that women who had access to sanitation facilities were frequently not satisfied with those facilities, and often delayed using facilities or restricted food and water to avoid going to facilities, often at particular times, such as night or when they could not interrupt other household tasks.⁶ The Bodily Integrity scale allows for the measurement of these important aspects of women's sanitation-related experiences.

Resources: Bodily Integrity

Definition: Women's control over their bodies and ability to access and use their preferred sanitation location.

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

Item ID	Item
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F1: Satisfaction with sanitation location

BI01	In the past 30 days, I felt satisfied with the sanitation location I used most often.
BI02	In the past 30 days, I felt comfortable with the sanitation location I used most often.
BI03	In the past 30 days, the sanitation location I used most often was clean enough.

F2: Withholding and suppression of urination / defecation

BI04*	In the past 30 days, I withheld food to avoid the urge to defecate either during the day or at night.
BI05*	In the past 30 days, I withheld water to avoid the urge to urinate either during the day or at night.
BI06*	In the past 30 days, I had to suppress the urge to urinate or defecate during the daytime when at home.
BI07*	In the past 30 days, I had to suppress the urge to urinate or defecate when I was away from home.
BI08*	In the past 30 days, I had to suppress the urge to urinate or defecate at night when at home.

*Reverse-code indicated items.

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES

Menstruation-Specific Bodily Integrity Scale+

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

MF: Satisfaction with menstrual hygiene management related to sanitation location

M-BI01	During my last menstrual period, I felt satisfied with the location I used most often to change my menstrual materials/manage my menstruation.
M-BI02	During my last menstrual period, I was able to access a satisfactory location when going to change my menstrual materials/manage my menstruation.
M-BI03	During my last menstrual period, I was typically able to access the resources I needed, like water or soap, to clean myself when using a sanitation location during menstruation.
M-BI04*	During my last menstrual period, I had to delay changing my menstrual materials during the daytime when at home because I did not have access to a satisfactory sanitation location.
M-BI05*	During my last menstrual period, I had to delay changing my menstrual materials when I was away from home because I did not have access to a satisfactory sanitation location.
M-BI06*	During my last menstrual period, I had to delay changing my menstrual materials at night when at home because I did not have access to a satisfactory sanitation location.

*Reverse-code indicated items.

+These items were validated separately from the full bodily integrity scale and may be deployed alongside the sanitation bodily integrity scale or separately if the subject of interest is menstrual health.

Scoring information

Items are scored on a scale from 1 (Never) through 4 (Always). Reverse-coded items are indicated with an asterisk in the tables. The scale score is then calculated as a simple average of all scale items. After reverse coding, a higher scale score indicates more frequent satisfaction with sanitation location and less frequent withholding and suppression. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretation

“Bodily integrity scale scores were high for F1, related to satisfaction with sanitation locations, and low for bodily integrity F2, related to withholding and suppression, meaning that participants are largely satisfied with their sanitation location and do not withhold food or water to avoid needing to use locations or suppress the urge to urinate or defecate.”

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES



4.2.2 Health

The Health scale captures women's self-report of their physical and mental health specifically related to their sanitation experiences—however, it does not seek to measure incidence of diarrhea, respiratory infections, or other WASH-related illnesses. This scale also includes items on respondents' fear of injury due to animals, insects, the structural conditions of the sanitation location, or other people. More detailed questions on fear of harm from other people are covered in the Safety and Security scale. Our literature review found that meeting sanitation needs under poor conditions was often a source of stress or fear, which are aspects of mental health.⁶ Women also reported becoming physically ill as a result of using or cleaning dirty sanitation facilities or attempting to circumvent needing to visit sanitation facilities through withholding or suppression, and women without access to adequate sanitation had lower odds of reporting good health.^{20,23-27} Women also had worse mental health if safety concerns related to their sanitation locations made them fearful or stressed.²⁸

Resources: Health*

Definition: Women's complete physical, mental, and social well-being as affected by sanitation options and conditions; not merely the absence of disease or infirmity.

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

Item ID	Item
---------	------

F1: Perceived sanitation-related illness

H01*	In the past 30 days, I used a sanitation location that I believed might make me ill.
H02*	In the past 30 days, I have gotten sick as a result of using my sanitation location.
H03*	In the past 30 days, I have gotten sick as a result of cleaning my sanitation location.

F2: Perceived illness due to suppression and withholding of urination / defecation

H04*	In the past 30 days, I became ill because I had to suppress the urge to urinate or defecate.
H05*	In the past 30 days, withholding water to avoid urination made me feel unwell.
H06*	In the past 30 days, withholding food to avoid defecation made me feel unwell.

F3: Fear of injury from physical conditions of sanitation location

H07*	In the past 30 days, I feared being injured by animals or insects when accessing my sanitation location.
H08*	In the past 30 days, I feared being injured because of the physical conditions - such as slippery conditions, rocks or thorns, uneven pathways, obstacles, sharp doors or floors, etc. - when accessing my sanitation location.

F4: Sanitation-related anxiety, embarrassment, and shame

H09*	In the past 30 days, I felt anxiety, stress, or tension when I needed to access a sanitation location.
H10*	In the past 30 days, I experienced embarrassment or shame when accessing a sanitation location during the day.
H11*	In the past 30 days, I experienced embarrassment or shame when accessing a sanitation location at night.

*Reverse-code all items in scale.

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Resources: Health*

F5: Sanitation-related stress and fear

H12*	In the past 30 days, I feared being harassed or injured by men, boys, or other people when accessing my sanitation location.
H13*	In the past 30 days, I was too afraid to use a sanitation location because it is dark.
H14*	In the past 30 days, I felt stress or frustration related to the sanitation conditions in my community.
H15*	In the past 30 days, I felt stress or frustration related to the sanitation conditions in my household.
H16*	In the past 30 days, I feared for the safety of women or children going to sanitation locations.

*Reverse-code all items in scale.

Menstruation-Specific Health Scale*+

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

MF: Menstruation-related fear and stress

M-H01*	During my last menstrual period, I experienced stress or tension when I needed to access a location to change my menstrual materials/manage my menstruation.
M-H02*	During my last menstrual period, I felt stress or tension when changing my menstrual materials/managing my menstruation.
M-H03*	During my last menstrual period, I felt scared when changing my menstrual materials/managing my menstruation.

*Reverse-code all items in scale.

+These items were validated separately from the full health scale and may be deployed alongside the sanitation health scale or separately if the subject of interest is menstrual health.

Scoring information

All items are reverse-coded to a scale from 1 (Always) through 4 (Never). The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates fewer perceived illnesses related to sanitation, less suppression and withholding, less frequent fear of injury from the physical conditions of their sanitation location, and less frequent sanitation-related anxiety, embarrassment, shame, stress, and fear. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretation

“Women in all cities had high mean scores for the factor representing sanitation-related anxiety, embarrassment, or shame, indicating that participants rarely reported feeling anxiety, embarrassment, or shame related to sanitation.”



4.2.3 Safety and Security

The Safety and Security scale captures women's safety concerns related to sanitation at an individual level, and their perceptions of the risk of harm in the home or community environment when meeting sanitation needs and speaking up about or participating in sanitation initiatives. Questions on stress, anxiety, or tension due to a lack of safety are in the Health scale. Our review found that safety concerns related to sanitation were reported as a result of using sanitation facilities at night or in the dark, being harassed or assaulted while going to sanitation locations, or being subject to violence at home as a result of sanitation practices or participation in sanitation endeavors.⁶ In settings where women express safety concerns, it is important for programs to monitor and address these concerns to the extent possible.

Resources: Safety and Security*

Definition: Women's freedom from acts or threats of violence (physical or sexual), coercion, harassment, or force when accessing and using sanitation locations or engaging in sanitation-related decision-making processes in the public sphere.

Response Options (F1, F2, F3): 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree
(F4 & F5): 01: Never; 02: Sometimes; 03: Often; 04: Always

Item ID	Item
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F1: Perceptions of women's risk of harm when going for sanitation

S01*	Women in my community face the risk of being physically harmed by men or boys when going to sanitation locations.
S02*	Women in my community face the risk of sexual assault when going to sanitation locations.
S03*	Women in my community face the risk of someone making sexual comments or saying obscene things to them when they go to sanitation locations.

F2: Perceptions of women's risk of harm when going to sanitation-related meetings

S04*	Women in my community face the risk of someone making sexual comments or saying obscene things to them when they go to a sanitation-related meeting.
S05*	Women in my community face the risk of experiencing harassment, such as being called by rude names, yelling, or shaming, if they go to a sanitation-related meeting.
S06*	Women in my community face the risk of experiencing harassment, such as being called by rude names, yelling, or shaming, if they speak up in a sanitation-related meeting.

F3: Perceptions of women's risk of domestic violence related to sanitation

S07*	Women in my community face the risk of being hit by their husbands or other family members if they go for sanitation without telling someone or stay out too long.
S08*	Women in my community face the risk of being hit by their husbands or other family members if they fail to complete sanitation-related chores.
S09*	Women in my community face the risk of being hit by their husbands or other family members if they argue with the head of their households/another family member about sanitation issues.
S10*	Women in my community face the risk of being hit by their husbands or other family members if they argue with neighbors or other people in the community about sanitation issues.

*Reverse-code all items in scale.

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Resources: Safety and Security*

F4: Perceptions of own risk of harm when going for sanitation

S11*	In the past 30 days, I feared I would be physically harmed by someone when I went to a sanitation location when away from home.
S12*	In the past 30 days, I feared I would be sexually assaulted when I went to a sanitation location when away from home.
S13*	In the past 30 days, I feared someone would make sexual comments or say obscene things to me when I went to a sanitation location when away from home.
S14*	In the past 30 days, I feared someone would expose himself or spy/peep on me when I went to a sanitation location when away from home.
S15*	In the past 30 days, I have felt unsafe when using a sanitation location outside the home that was not for women only.

F5: Perceptions of general personal safety related to sanitation

S16*	In the past 30 days, I felt unsafe in the place where I typically went for sanitation during the day.
S17*	In the past 30 days, I felt unsafe in a place where I went for sanitation when away from home.
S18*	In the past 30 days, I felt unsafe in the place where I typically went for sanitation at night.

*Reverse-code all items in scale.

Menstruation-Specific Safety and Security Scale+

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

MF: Perceptions of own safety related to menstruation

M-S01	During my last menstrual period, I felt safe in the place where I typically went to change my menstrual materials/manage my menstruation when I was at home.
M-S02	During my last menstrual period, I felt safe in the place where I typically went to change my menstrual materials/manage my menstruation when I was away from home.
M-S03	During my last menstrual period, the location I used to change my menstrual materials/manage my menstruation during the day was safe at night.

+These items were validated separately from the full safety and security scale and may be deployed alongside the sanitation safety and security scale or separately if the subject of interest is menstrual health.

Scoring information

All items are reverse-coded to a scale from 1 (Always) through 4 (Never). The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates a lower perception of personal and other women's risk of sanitation-related harm. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretation

"Women typically disagreed that women faced risks of harm when going for sanitation, except for in Lusaka, which had the lowest mean score among all cities."

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES



4.2.4 Privacy

The Privacy scale captures women's perceptions of whether their sanitation locations at home and away from home are sufficiently private, and if lack of privacy interrupts them from meeting sanitation needs. Privacy emerged from the literature as particularly important for sanitation, justifying its inclusion as a new subdomain of sanitation-related empowerment.⁶ Women reported a number of privacy concerns at sanitation facilities related to broken or missing doors or locks or poor construction,²⁹⁻³³ as well as concerns related to being seen, heard, or using sanitation facilities located in public spaces.^{31,32} Particularly in areas where women rely on open defecation, women often reported having to stop in the middle of meeting sanitation needs when their privacy was compromised.^{29,34,35} As with safety and security, it is important for programs to monitor and address privacy concerns to the extent possible.

Note on privacy scale: We recommend the inclusion of an enumerator note with a definition for "private" if needed for clarity. For example: "If the participant needs the term for private/privacy explained, please tell her: 'When we refer to privacy, we are talking about being able to access and use a sanitation location without being seen or heard or worrying about being seen or heard. We are not referring to private ownership of a latrine.'"

Resources: Privacy*

Definition: Women's ability to maintain desired levels of privacy when accessing and utilizing sanitation locations.

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

Item ID	Item
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F1: Privacy for sanitation

P01*	In the past 30 days, I worried that someone would see me urinating or defecating.
P02*	In the past 30 days, I had to use a sanitation location that was not private enough for me when I was at home.
P03*	In the past 30 days, I have had to use a sanitation location that was not private enough for me when I was away from home.
P04*	In the past 30 days, while at home, I had to stop urinating or defecating because someone came near me and I no longer had privacy.
P05*	In the past 30 days, while away from home, I had to stop urinating or defecating because someone came near me and I no longer had privacy.

* Reverse-code all items in scale.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

Menstruation-Specific Privacy Scale*+

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

MF: Privacy for menstrual hygiene management

<i>M-P01*</i>	During my last menstrual period, I worried that someone would see me changing my menstrual materials/managing my menstruation while using a sanitation location.
<i>M-P02*</i>	During my last menstrual period, I worried that someone would see me carrying menstrual materials on my way to a sanitation location.
<i>M-P03*</i>	During my last menstrual period, I had to use locations to change my menstrual materials/manage my menstruation that were not private enough for me.
<i>M-P04*</i>	During my last menstrual period, I had difficulty finding a private place to change my menstrual materials/manage my menstruation.
<i>M-P05*</i>	During my last menstrual period, I worried that someone would see my menstrual blood in the sanitation location that I use to change my menstrual material.
<i>M-P06*</i>	During my last menstrual period, I worried that someone would see me washing my menstrual materials in a sanitation location.

* Reverse-code all items in scale.

+These items were validated separately from the full privacy scale and may be deployed alongside the sanitation privacy scale or separately if the subject of interest is menstrual health.

Scoring information

All items are reverse-coded to a scale from 1 (Always) through 4 (Never). The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates greater privacy for sanitation. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretation

“A majority of participants in all cities did not report having any issues with privacy related to sanitation while at home or away from home (mean scores range from 3.4-3.9).”

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES



4.2.5 Critical Consciousness: Self-efficacy

Critical Consciousness is assessed with two separate, but related scales: Self-efficacy and Awareness of Inequalities. The decision to split the Critical Consciousness subdomain was driven by theory and the empirical analyses of our survey data from Phase 2. The 'Critical Consciousness: Self-efficacy' scale captures women's perceptions of their own ability to influence sanitation conditions and behaviors at home and in the community, and to solve sanitation-related problems.

Resources: Critical Consciousness: Self-efficacy

Definition: Women's ability to assert and affirm their self-efficacy, or their belief in their capability and effectiveness to enact a behavior, inside and outside of the household as it relates to sanitation.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Ability to create sanitation-related change in the community

SE01	I feel I can change sanitation conditions in my community if I want to.
SE02	I feel like I can influence sanitation behaviors of others in my community, such as encouraging proper latrine use and maintenance, proper disposal of sanitary napkins, etc.

F2: Ability to create sanitation-related change at home

SE03	I feel I can change sanitation conditions in my household or compound if I want to.
SE04	I feel like I can influence sanitation behaviors of members of my household.
SE05	If I had a problem related to sanitation, I could probably think of a solution.
SE06	If I had a problem related to sanitation, I believe I could solve it.

Scoring information

Items are scored on a scale from 1 (Strongly Disagree) through 4 (Strongly Agree). Reverse-coded items are indicated with an asterisk in the tables. The scale score is then calculated as a simple average of all scale items. A higher scale score for Self-efficacy indicates a greater ability to create sanitation-related change at home and in the community. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See [Section 3.4](#) for additional scoring guidance.

Example interpretations

"Mean scores for Self-efficacy were high, indicating that women had confidence in their ability to bring about change at home and in the community related to sanitation."

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES



4.2.6 Critical Consciousness: Awareness of Inequalities

Critical Consciousness is assessed with two separate, but related scales: Self-efficacy and Awareness of Inequalities. The decision to split the Critical Consciousness subdomain was driven by theory and the empirical analyses of our survey data from Phase 2. The 'Critical Consciousness: Awareness of Inequalities' scale captures the extent to which women are able to identify inequalities between men and women related to sanitation needs and participation in sanitation decision-making and reflect on the fairness of such disparities.

Resources: Critical Consciousness: Awareness of Inequalities

Definition: Women's ability to identify and question how inequalities in power operate in their lives in relation to sanitation access and decision-making processes

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Inequalities in ability to meet sanitation needs

AI01	Women have problems that men do not have when accessing or using a sanitation location.
AI02	It is unfair when women have problems accessing or using a sanitation location, but men do not have those problems.
AI03	Women typically have to delay going to a sanitation location more often than men because of their responsibilities.

F2: Inequalities in sanitation-related decision-making

AI04	Women are less involved than men in making decisions about sanitation in the community.
AI05*	It is fair for men to have the final say when making sanitation-related decisions in the household.
AI05*	It is fair for men to have the final say when making sanitation-related decisions for the community.

*Reverse-code indicated items.

Scoring information

Items are scored on a scale from 1 (Strongly Disagree) through 4 (Strongly Agree). Reverse-coded items are indicated with an asterisk in the tables. The scale score is then calculated as a simple average of all scale items. After reverse-coding, a high scale score for Awareness of Inequalities indicates greater awareness of inequalities to meet sanitation needs and in sanitation-related decision-making. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

Example interpretations

"Mean scores for Awareness of Inequalities were high, indicating women have high awareness in inequalities related to sanitation access and decision-making between men and women."

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES



4.2.7 Financial and Productive Assets

The Financial and Productive Assets scale measures the extent to which women have control over, and are able to use, income and borrowing resources to meet and/or improve sanitation conditions at home or in the community. Our systematic review of the literature revealed that lack of control over financial and productive assets limited women's access to sanitation and participation in sanitation-related projects.⁶ There is also existing evidence that women tend to have limited ability to put money toward community or household sanitation projects or access money through subsidies and savings groups.^{19,20,36,37} Particularly in poorer households where there are limited funds, women reported to have limited control over expenditures on small-sanitation items because other household necessities took priority.^{20,38,39} Understanding women's circumstances related to their sanitation-related Financial and Productive Assets can provide programs with important insights into women's potential to access and use sanitation infrastructure and participate in program activities.

Resources: Financial and Productive Assets

Definition: Women's control over economic resources and long-term stocks of value such as land, for the purposes of meeting individual and household sanitation needs.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Control over money for sanitation

F01	I have control over money that I could use to contribute to a community sanitation project.
-----	---

F02	I have control over money that I could use to pay for household latrine/toilet improvements or repairs.
-----	---

F03	I have control over money that I could use to pay for household latrine/toilet construction.
-----	--

F2: Ability to acquire money for sanitation

F04	I could acquire money to build a household latrine/toilet by selling or renting something I own or by earning money through work.
-----	---

F05	I could acquire money to improve or repair a household latrine/toilet by selling or renting something I own or by earning money through work.
-----	---

F06	I could acquire money to build a household latrine/toilet by accessing credit or participating in a savings group.
-----	--

F3: Inadequate finances to meet basic sanitation needs

F07*	I would need to ask permission before spending household money on small sanitation-related expenses, such as toilet paper, soap, or pay-per-use latrines.
------	---

F08*	I depend on someone else to pay for small sanitation-related expenses, such as toilet paper, soap, or pay-per-use latrines.
------	---

* Reverse codeindicated items.

Menstruation-Specific Financial and Productive Assets Item*+

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

<i>M-F01*</i>	I depend on someone else to pay for menstruation-related expenses.
---------------	--

* Reverse-code indicated item.

+This item was validated separately from the full financial and productive assets scale and may be deployed alongside the sanitation financial and productive assets scale or separately if the subject of interest is menstrual health.

Scoring information

Items are scored on a scale from 1 (Strongly Disagree) through 4 (Strongly Agree). Reverse-coded items are indicated with an asterisk in the tables. The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates greater control and ability to acquire money for sanitation and more adequate finances to meet basic sanitation needs. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The menstruation-specific item for financial and productive assets can be asked as an optional question, however, it cannot be scored because it is not part of a larger scale. The item should not be combined with the main sanitation-related scale.

Example interpretations

“Dakar had the highest scores for financial and productive assets F1, indicating greater control over money for sanitation.”

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 **ARISE SCALES**
 - Agency
 - Resources**
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES



4.2.8 Time

The Time scale captures the extent to which women's sanitation-related needs and responsibilities impinge on the amount of time they have available to them as a resource. Questions that cover the extent to which gendered division of sanitation-related labor is based on community norms can be found in the Norms scale. Our review of the literature found that women spent substantial amounts of time doing sanitation-related labor for their households, including cleaning latrines and helping children and elderly or disabled household members to meet their sanitation related needs.⁶ Additionally, other household labor, distance to sanitation locations,^{40,41} and lines at shared sanitation facilities⁴² led to women rushing to meet sanitation needs or waking up earlier than desired and losing sleep because of lack of time.^{43,44} Sanitation programs should consider how their activities may affect women's time and should consider monitoring and evaluating these effects, whether positive (time savings) or negative (time burdens).

Resources: Time*

Definition: Women's control over their time and labor spent on sanitation-related tasks and activities.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Time on sanitation-related responsibilities

T01*	The sanitation-related needs and responsibilities of my household prevent me from completing other household work.
T02*	The sanitation-related needs and responsibilities of my household require that I often have to wake up earlier than I want.
T03*	The sanitation-related needs and responsibilities of my household often make me miss out on other activities that I would like to do.

F2: Time meeting personal sanitation needs

T04*	It often takes too much time to access and use my sanitation location.
T05*	I often have to rush when I am using my sanitation location.
T06*	I often have to wake up earlier than I want to access a sanitation location.

*Reverse-code all items in scale.

Menstruation-Specific Time Scale*+

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

MF: Time for meeting menstruation-related needs

M-T01*	I would like to have more time to meet my menstruation-related needs.
M-T02*	I often have to wake up earlier than I want to access a location to manage my menstruation.
M-T03*	I often miss out on activities I would like to do because of time spent taking care of my menstruation-related needs.

* Reverse-code all items in scale.

+These items were validated separately from the full time scale and may be deployed alongside the sanitation time scale or separately if the subject of interest is menstrual health.

Scoring information

All items are reverse-coded to a scale from 1 (Strongly Agree) through 4 (Strongly Disagree). The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates lower perceptions of sanitation needs and responsibilities as a burden on women's time. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretations

"As with time F1, mean scores for time on sanitation-related responsibilities were highest in Kampala, indicating lower time burden related to meeting personal sanitation needs."

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES



4.2.9 Social Capital

The Social Capital scale relates to the social structures that may serve as a resource to support women in meeting their sanitation-related needs and responsibilities. This differs from the Relations scale (4.3.2), which captures the extent to which relationships serve as change agents or facilitators to sanitation or participation in sanitation endeavors. Our review found that social capital could be an important facilitator of sanitation access, as women may rely on others for support in sanitation-related work or childcare while they meet their own needs.⁶ Social networks were also leveraged to help improve sanitation conditions,²⁰ or to provide information on resources or practices.⁴⁵

Resources: Social Capital

Definition: Women's relations and social networks that provide tangible and intangible value and support, including those that enable them to complete sanitation-related tasks and activities.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Personal support and help related to sanitation

SC01	I have someone who I can talk to about problems related to my sanitation location.
SC02	I have someone who would help with chores, like cooking or providing childcare, so I could tend to my sanitation needs.
SC03	I have someone who would help me with sanitation-related chores.
SC04	I have someone who could get small sanitation-related items if I asked them to, such as if I were too busy.

F2: Community support and information related to sanitation

SC05	I know leaders in the community who I can talk to about problems related to my sanitation location.
SC06	I know other members of my community who I would feel comfortable asking to help me address a sanitation-related problem in the community.
SC07	I have connections to someone with the power to improve sanitation conditions for my household or community.
SC08	I know someone who can give me information about better sanitation practices.

Menstruation-Specific Social Capital Scale+

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

MF: Social capital for meeting menstruation-related needs

M-SC01	I have someone in my household who could get menstruation-related items if I asked them to, such as if I were too busy.
M-SC02	I have a friend or neighbor who could get menstruation-related items if I asked them to, such as if I were too busy.

+These items were validated separately from the full social capital scale and may be deployed alongside the sanitation social capital scale or separately if the subject of interest is menstrual health.

Scoring information

All items are scored on a scale from 1 (Strongly Disagree) through 4 (Strongly Agree). The scale score is then calculated as a simple average of all scale items. A higher scale score indicates greater personal and community support, help, and information related to sanitation. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretations

“Kampala and Lusaka had the highest mean scores for social capital F1, indicating these are the two cities where respondents report having the strongest networks for personal support and help related to sanitation.”

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES



4.2.10 Knowledge and Skills

The Knowledge and Skills scale captures the extent to which women agree they have knowledge and skills that can be used to benefit household or community sanitation. Studies in our review showed that women acknowledged the importance of knowledge related to sanitation, particularly to acquire subsidies or participate in sanitation-related committees, but often claimed to lack sufficient knowledge to contribute to decision-making or collective action.⁶ Attending public meetings was found to be an important source of knowledge on sanitation-related issues.⁴⁶ In settings where women may have low perceived sanitation-related knowledge and skills, programs may consider implementing targeted trainings and monitoring changes in this subdomain.

Resources: Knowledge and Skills

Definition: Women's knowledge and skills related to sanitation (e.g. operation and maintenance of sanitation facilities) and their abilities to apply those knowledge and skills.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Knowledge and skills related to community sanitation

K01	I have skills – such as budgeting, organization, or mobilizing people in my community – to contribute to sanitation related projects in my community.
K02	I know how decisions about sanitation are made in my community.
K03	I know how to manage money for a sanitation project in my community.

F2: Knowledge related to personal sanitation repairs and maintenance

K04	If my toilet/latrine needed repairs, I would know how to get it fixed.
K05	I know how to make minor repairs or improvements to a latrine/toilet, like unclogging, replacing a lightbulb, or fixing a door.

F3: Knowledge to influence community-level sanitation decisions

K06	I have enough knowledge to contribute to decisions on sanitation in my community.
K07	I am knowledgeable about my community's sanitation issues.
K08	If my community had the opportunity to improve our sanitation conditions, I would have ideas about what the community needs most.

F4: Knowledge and skills to influence household-level sanitation decisions

K09	I have skills – such as budgeting and organization – to contribute to sanitation related projects in my household.
K10	I know how to manage money for a sanitation project in my household.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

Scoring information

All items are scored on a scale from 1 (Strongly Disagree) through 4 (Strongly Agree). The scale score is calculated as a simple average of all scale items. A higher scale score indicates greater perceived knowledge and skills related to community and household sanitation and decision-making. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

Example interpretations

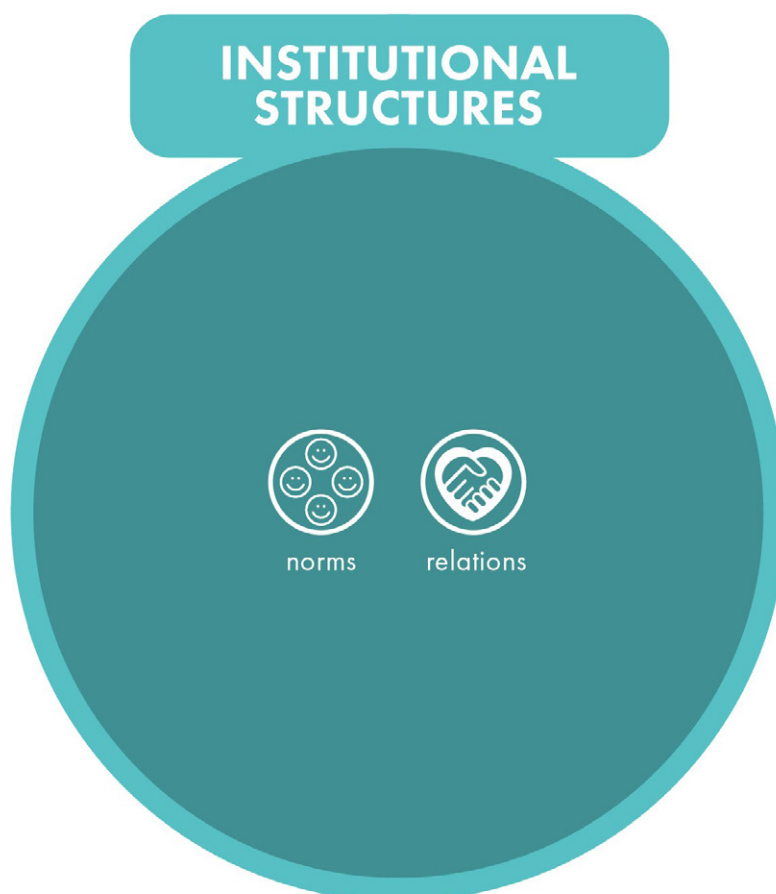
A low mean score on (i.e., disagreement or strong disagreement with) all item scenarios in the knowledge subdomain indicates that respondents perceive themselves to have low levels of knowledge or skills to address and/or manage sanitation-related issues at home or in their communities.

- 1 INTRODUCTION
- 2 DEVELOPMENT
AND VALIDATION
- 3 HOW TO USE THE
SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional
Structures
- 5 FULL TOOL
- 6 APPENDICES

4.3 Institutional Structures Scales

Institutional Structures are defined as, “The social arrangements of formal and informal rules and practices that enable and constrain the agency of women and girls and govern the distribution of resources.”¹¹ We have created scales to measure two subdomains of Institutional Structures relevant to sanitation: Norms and Relations. The Institutional Structures domain also includes the subdomain of Laws and Policies. However, the ARISE Scales do not include Laws and Policies as they are not measurable via self-report in household surveys.

Information about each scale is summarized below, including definitions for the subdomains and the name and number of factors per scale. Both scales have optional menstruation-specific scales (termed M scale). These can be used in addition to or separately from the overall scale. If used alongside the overall scales, they should be scored separately. Additional information for each scale, including survey items and scoring information, is on the pages that follow.



- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures**
- 5 FULL TOOL
- 6 APPENDICES

Norms

Definition:

Collectively held expectations and beliefs of how women and men should behave and interact inside and outside the household regarding sanitation-related labor and women's voice and participation in sanitation-related meetings and activities.

Factor 1	Gendered sanitation-related household roles and responsibilities	6 items
Factor 2	Gendered expectations surrounding sanitation value chain work	3 items
Factor 3	Restrictions on women speaking at sanitation-related meetings	3 items
Factor 4	Acceptability of women's participation in sanitation-related meetings	3 items
Factor 5	Acceptability of women's participation in community-level sanitation-related activities	4 items
Factor 6	Acceptability of women disagreeing with their husbands regarding sanitation issues	2 items
M Scale	Acceptability of women's menstruation-related discourse and behavior	4 items

Relations

Definition:

The interactions and relations – including conflicts, support, hostility, and communication – with key actors that shape women's sanitation-related experiences.

Factor 1	Scolding for speaking up about sanitation issues	4 items
Factor 2	Familial support for community-level sanitation participation	4 items
Factor 3	Relations with service providers and local leaders related to sanitation	3 items
M Scale	Ability to discuss menstruation and manage menstruation without scolding	5 items

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES



4.3.1 Norms

The Norms scale captures the perceptions of prevailing gendered social norms in the community related to sanitation, rather than practices or conventions that individuals may experience in their own homes. Our review of relevant literature found that domestic sanitation labor such as cleaning latrines or taking care of the sanitation needs of children and dependent elders was typically considered women's work, while paid sanitation labor outside the household was seen as men's work and women's participation was stigmatized.⁶ Norms around the degree to which women are permitted to participate in public life or disagree with men limited their influence on sanitation decision-making.⁶ Understanding sanitation-related gendered social norms is critical for the design of contextually appropriate programming and to reduce the risk of backlash or other unintended harms.

Institutional Structures: Norms

Definition: Collectively held expectations and beliefs of how women and men should behave and interact inside and outside the household regarding sanitation-related labor and women's voice and participation in sanitation-related meetings and activities.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Gendered sanitation-related household roles and responsibilities

N01*	In this community, it is women more often than men who are expected to assume most responsibilities related to maintaining the cleanliness of the sanitation location the family uses.
N02*	In this community, it is women more often than men who are expected to accompany or support elderly, sick, or disabled family members who cannot urinate or defecate on their own.
N03*	In this community, it is women more often than men who are expected to accompany or support children in their household when they need to urinate or defecate.
N04*	In this community, it is women more often than men who are expected to clean feces from their home or household compound from children or other family members.
N05*	In this community, it is women more often than men who are expected to who are expected to wash clothes that become dirty as a result of sanitation conditions or accidents.
N06*	In this community, it is women more often than men who are expected to clean their children after defecation if needed.

F2: Gendered expectations surrounding sanitation value chain work

N07*	Even if women were trained, it would be socially unacceptable for women to do construction, repairs, or upgrades for latrines.
N08*	Technical work, like latrine construction, repairs, or upgrades, should be done by men, not women.
N09*	Emptying latrine pits should be done by men, not women.

F3: Restrictions on women speaking at sanitation-related meetings

N10*	At a sanitation-related meeting where both men and women are present, women should only speak when they are asked to do so.
N11*	At a sanitation-related meeting where both men and women are present, women should only speak after all the men have shared their opinions.
N12*	At a sanitation-related meeting where both men and women are present, women should not speak.

*Reverse-code indicated items.

Institutional Structures: Norms

F4: Acceptability of women's participation in sanitation-related meetings

N13	It is appropriate for women to attend sanitation-related meetings where men are present.
N14	In this community, it is considered appropriate for a woman to express her opinion about sanitation issues at a community meeting when men are present.
N15	It is appropriate for women to discuss sanitation-related issues in front of men.

F5: Acceptability of women's participation in community-level sanitation-related activities

N16	In this community, it is socially acceptable for women to have leadership roles in sanitation-focused committees or organizations.
N17	In this community, it is acceptable for a woman to bring a complaint about a sanitation problem to a local leader.
N18	It would be socially acceptable for women to organize an initiative to improve sanitation conditions in the community.
N19	If there was a community initiative to improve sanitation, it would be socially acceptable for women to participate.

F6: Acceptability of women disagreeing with their husbands regarding sanitation issues

N20	In this community, it is acceptable for a woman to express a different opinion than her husband in a household discussion about sanitation issues.
N21	In this community, it is acceptable for a woman to express a different opinion than her husband about sanitation issues in front of people outside the family.

Menstruation-Specific Norms Scale+

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

MF: Acceptability of women's menstruation-related discourse and behavior

M-N01	It is appropriate for women to discuss menstruation-related sanitation issues in front of men.
M-N02	In this community, it is acceptable for a woman to express menstruation-related concerns when her family is making decisions related to the sanitation location.
M-N03	It is appropriate for women to discuss menstruation-related sanitation issues publicly.
M-N04*	In this community, women are expected to be accompanied when going to locations to change their menstrual materials/manage their menstruation.

*Reverse-code indicated item.

+These items were validated separately from the full norms scale and may be deployed alongside the sanitation norms scale or separately if the subject of interest is menstrual health.

Scoring information

Items are scored on a scale from 1 (Strongly Disagree) through 4 (Strongly Agree). Reverse-coded items are indicated with an asterisk in the table. The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates more equitable norms for women's voice and unpaid care work related to sanitation, as well as for women's involvement in sanitation value chain work and community-level activities and meetings. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretations

“Mean factor scores related to gendered household responsibilities are low, indicating that women are expected to perform most sanitation-related labor and care work at the household level across all cities.”

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES



4.3.2 Relations

The Relations scale captures the experiences of women in their interactions with other community members, local leaders, and service providers in relation to sanitation matters. Our review found that supportive relations (e.g., in the form of family approval or encouragement) facilitated communication around sanitation matters or participation in sanitation-related initiatives.⁶ Family support to women for participation in sanitation initiatives may include passive support or permission-granting⁴⁷ or active, instrumental support such as stepping in to provide care to children and elderly.⁴⁸ In other cases, family support was important for women to articulate their concerns or opinions on sanitation conditions in public without fear of verbal or non-verbal sanctions at home.⁴⁹ Use of the Relations scale can help programs to identify the presence of gatekeepers who may act as facilitators or barriers to improving women's sanitation-related experiences.

Institutional Structures: Relations

Definition: The interactions and relations – including conflicts, support, hostility, and communication – with key actors that shape women's sanitation-related experiences.

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
---------	------

F1: Scolding for speaking up about sanitation issues

R01*	If I speak up about sanitation-related concerns or problems in my household, I may be scolded or punished.
R02*	If I speak up publicly about sanitation-related concerns or problems, I may be scolded or punished by members of my household.
R03*	If I speak up publicly about sanitation-related concerns or problems, I may be scolded or punished by members of this community.
R04*	If I speak up publicly about sanitation-related concerns or problems, I may be scolded or punished by local leaders or authorities.

F2: Familial support for community-level sanitation participation

R05	My family would encourage or help me attend a sanitation-related meeting if I wanted to go.
R06	My family would encourage or help me to organize an initiative to improve sanitation.
R07	My family would encourage or help me to participate in a community initiative to improve sanitation.
R08	My family would encourage or help me to take on a leadership role in a sanitation-focused committee or organization.

F3: Relations with service providers and local leaders related to sanitation

R09	My interactions with local leaders or authorities about sanitation-related issues are generally free of conflict.
R10	When a sanitation-related problem arises in my community, I feel comfortable reporting the problem to a local leader or authority.
R11	When a sanitation-related problem arises, I feel comfortable reporting the problem to a service provider.

*Reverse-code indicated items.

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures**
- 5 FULL TOOL
- 6 APPENDICES

Menstruation-Specific Relations Scale**

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

MF: Ability to discuss menstruation and manage menstruation without scolding

M-R01*	I may be scolded or punished for taking too much time when I go to change my menstrual materials/ manage my menstruation.
M-R02*	If I speak up about menstruation-related sanitation concerns or problems in my household, I may be scolded or punished.
M-R03*	If I speak up publicly about menstruation-related sanitation concerns or problems, I may be scolded or punished by members of this community.
M-R04	When I face a problem related to menstruation and my sanitation location, I can discuss the problem with members of my family.
M-R05	When I face a problem related to menstruation and my sanitation location, I can discuss the problem with friends or neighbors.

* Reverse-code indicated items.

+These items were validated separately from the full relations scale and may be deployed alongside the sanitation relations scale or separately if the subject of interest is menstrual health.

Scoring information

Items are scored on a scale from 1 (Strongly Disagree) through 4 (Strongly Agree). Reverse-coded items are indicated with an asterisk in the tables. The scale score is then calculated as a simple average of all scale items. After reverse-coding, a higher scale score indicates more supportive relations with key actors that shape women's sanitation-related experiences. Each factor can also be scored and is calculated as a simple average of the corresponding items in each factor. See **Section 3.4** for additional scoring guidance.

The items in the menstruation-specific scale should be scored as a separate, standalone scale, not combined with the main sanitation-related scale.

Example interpretations

"Of cities scored on scolding for speaking up about sanitation issues, only one city had a mean score below 3.0; women in most cities do not risk being scolded or punished for speaking up about sanitation issues."

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

5 Link to Full Tool

ARISE scales can be accessed from our website, edge.sph.emory.edu

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

6 Appendices

Appendix A: Glossary of key terms

This glossary contains key terms that may be relevant to understanding and using these scales. Definitions specific to subdomains of empowerment can be located in **Table 1** and **Section 4**.

Cognitive interview: Administration of draft survey questions in the form of an interview which collects additional information about the respondents' mental processes when answering questions and helps determine if the question is measuring what the creator intends.^{15,50}

Construct: "The concept, attribute, or unobserved behavior that is the target of the study"¹⁵

Factor: The items in a scale underlying a specific sub-construct.⁵¹

Pre-testing: Methods in advance of survey administration to ensure that items are meaningful to the study population, which involves examining the extent to which the questions reflect the domain being studied and produce valid measurements.¹⁵

Reverse-code: A coding process for negatively worded Likert questions that reverses the numerical values of the response options.⁵²

Scale: A set of items which reveal theoretical variables that are not directly observable, such as behaviors and attitudes.⁵³

Validation: "An ongoing process that starts with the identification and definition of the domain of study and contributes to its generalizability with other constructs."¹⁵

Validity: There are multiple types of validity that may be assessed through different means: content validity, or "the extent to which a specific set of items reflects a content domain"; construct validity, or "the extent to which a measure 'behaves' the way the construct it purports to measure should behave with regard to established measures of other constructs;" criterion- or predictive validity, or the "empirical association with some criterion or putative 'gold standard'; and face validity, or the extent to which a set of items assess what they appear to measure.⁵¹

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Appendix B:

Menstruation-related empowerment definitions, scales, and items

There are validated menstruation-specific scales for 10 of the 15 constructs. Each of the scales is unidimensional, meaning that it consists of one factor with multiple items. Additionally, one construct, 'Financial/Productive Assets,' does not have a factor but has a single tested item.

All menstruation scales are independent of the full sanitation-related scales and therefore are not meant to be included in full sub-domain scores.

Menstruation items were tested and validated during Phases 2 and 3 of the research, alongside the full sanitation scales.

Table of Definitions for Domains with Menstruation Scales

Domain	Sub-Domain	Operationalized Definition	# of Items in Scale
Agency	Decision-Making	Women influence and make decisions about sanitation related to menstruation in home.	3
	Leadership	No menstruation-specific definition, factor, or items.	-
	Collective Action	No menstruation-specific definition, factor, or items.	-
	Freedom of Movement	Women have the autonomy to move freely to access sanitation facilities and change menstrual materials.	3
Resources	Bodily Integrity	Women's ability to access and use satisfactory sanitation locations to meet menstrual health needs.	6
	Health	Women's mental well-being as affected by the ability to manage menstruation.	3
	Safety and Security	Women's freedom from acts or threats of violence when accessing locations to change menstrual materials.	3
	Privacy	Women's ability to maintain desired levels of privacy when managing menstruation and accessing locations to manage menstruation.	6
	Critical Consciousness	No menstruation-specific definition, factor, or items.	-
	Financial/Productive Assets	Women's control over economic resources and long-term stocks of value such as land, for the purposes of meeting individual menstruation needs.	1
	Time	Women's control over their time spent on menstruation-related tasks and activities.	3
	Social Capital	Women's relations and social networks that provide tangible and intangible value and support, including those that enable them to complete menstruation-related tasks and activities.	2
	Knowledge and Skills	No menstruation-specific definition, factor, or items.	-
Institutional Structures	Norms	Collectively held expectations and beliefs of how women and men should behave and interact inside and outside the household regarding menstruation-related discussion and management.	4
	Relations	The interactions and relations – including conflicts, support, hostility, and communication – with key actors that shape women's menstruation-related experiences.	5

- INTRODUCTION
- DEVELOPMENT AND VALIDATION
- HOW TO USE THE SCALES
- ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- FULL TOOL
- APPENDICES

Menstruation-Specific Scales

Agency

Menstruation-Specific Decision-Making Scale

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
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MF: Ability to participate in menstruation-related decisions

M-DM01	I would feel comfortable expressing my opinion about menstruation-related sanitation issues in household discussions.
M-DM02	If my household had decisions to make about making the toilet more female-friendly, such as buying a rubbish bin for menstrual materials, I could influence that decision.
M-DM03	If my household had decisions to make about making the toilet more female-friendly, such as buying a rubbish bin for menstrual materials, I could have the final say on that decision.

Menstruation-Specific Freedom of Movement Scale*

Response Options: 01: Alone without telling anyone; 02: Alone if I tell someone; 03: Alone with permission; 04: Only with accompaniment; 05: Not at all

Item ID	Item
---------	------

MF: Freedom of movement for meeting menstruation-related needs

M-M01*	If I need to change my menstrual materials when at home during the day, I can go:
M-M02*	If I need to change my menstrual materials when away from home during the day, I can go:
M-M03*	If I need to change my menstrual materials at night, I can go to my household's daytime sanitation location:

*Reverse-code all items in scale.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

Resources

Menstruation-Specific Bodily Integrity Scale*

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

Item ID	Item
MF: Satisfaction with menstrual hygiene management related to sanitation location	
M-BI01	During my last menstrual period, I felt satisfied with the location I used most often to change my menstrual materials/manage my menstruation.
M-BI02	During my last menstrual period, I was able to access a satisfactory location when going to change my menstrual materials/manage my menstruation.
M-BI03	During my last menstrual period, I was typically able to access the resources I needed, like water or soap, to clean myself when using a sanitation location during menstruation.
M-BI04*	During my last menstrual period, I had to delay changing my menstrual materials during the daytime when at home because I did not have access to a satisfactory sanitation location.
M-BI05*	During my last menstrual period, I had to delay changing my menstrual materials when I was away from home because I did not have access to a satisfactory sanitation location.
M-BI06*	During my last menstrual period, I had to delay changing my menstrual materials at night when at home because I did not have access to a satisfactory sanitation location.

*Reverse-code indicated items.

Menstruation-Specific Health Scale*

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

Item ID	Item
MF: Menstruation-related fear and stress	
M-H01*	During my last menstrual period, I experienced stress or tension when I needed to access a location to change my menstrual materials/manage my menstruation.
M-H02*	During my last menstrual period, I felt stress or tension when changing my menstrual materials/managing my menstruation.
M-H03*	During my last menstrual period, I felt scared when changing my menstrual materials/managing my menstruation.

*Reverse-code all items in scale.

Menstruation-Specific Safety and Security Scale

Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always

Item ID	Item
MF: Perceptions of own safety related to menstruation	
M-S01	During my last menstrual period, I felt safe in the place where I typically went to change my menstrual materials/manage my menstruation when I was at home.
M-S02	During my last menstrual period, I felt safe in the place where I typically went to change my menstrual materials/manage my menstruation when I was away from home.
M-S03	During my last menstrual period, the location I used to change my menstrual materials/manage my menstruation during the day was safe at night.

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Menstruation-Specific Privacy Scale*	
Response Options: 01: Never; 02: Sometimes; 03: Often; 04: Always	
Item ID	Item
MF: Privacy for menstrual hygiene management	
M-P01*	During my last menstrual period, I worried that someone would see me changing my menstrual materials/managing my menstruation while using a sanitation location.
M-P02*	During my last menstrual period, I worried that someone would see me carrying menstrual materials on my way to a sanitation location.
M-P03*	During my last menstrual period, I had to use locations to change my menstrual materials/manage my menstruation that were not private enough for me.
M-P04*	During my last menstrual period, I had difficulty finding a private place to change my menstrual materials/manage my menstruation.
M-P05*	During my last menstrual period, I worried that someone would see my menstrual blood in the sanitation location that I use to change my menstrual material.
M-P06*	During my last menstrual period, I worried that someone would see me washing my menstrual materials in a sanitation location.

* Reverse-code all items in scale.

Menstruation-Specific Financial and Productive Assets Item*	
Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree	
Item ID	Item
M-F01*	I depend on someone else to pay for menstruation-related expenses.

* Reverse-code indicated item.

Menstruation-Specific Time Scale*	
Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree	
Item ID	Item
MF: Time for meeting menstruation-related needs	
M-T01*	I would like to have more time to meet my menstruation-related needs.
M-T02*	I often have to wake up earlier than I want to access a location to manage my menstruation.
M-T03*	I often miss out on activities I would like to do because of time spent taking care of my menstruation-related needs.

* Reverse-code all items in scale.

Menstruation-Specific Social Capital Scale	
Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree	
Item ID	Item
MF: Social capital for meeting menstruation-related needs	
M-SC01	I have someone in my household who could get menstruation-related items if I asked them to, such as if I were too busy.
M-SC02	I have a friend or neighbor who could get menstruation-related items if I asked them to, such as if I were too busy.

Institutional Structures

Menstruation-Specific Norms Scale

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
MF: Acceptability of women's menstruation-related discourse and behavior	
M-N01	It is appropriate for women to discuss menstruation-related sanitation issues in front of men.
M-N02	In this community, it is acceptable for a woman to express menstruation-related concerns when her family is making decisions related to the sanitation location.
M-N03	It is appropriate for women to discuss menstruation-related sanitation issues publicly.
M-N04*	In this community, women are expected to be accompanied when going to locations to change their menstrual materials/manage their menstruation.

*Reverse-code indicated item.

Menstruation-Specific Relations Scale**

Response Options: 01: Strongly Disagree; 02: Disagree; 03: Agree; 04: Strongly Agree

Item ID	Item
MF: Ability to discuss menstruation and manage menstruation without scolding	
M-R01*	I may be scolded or punished for taking too much time when I go to change my menstrual materials/ manage my menstruation.
M-R02*	If I speak up about menstruation-related sanitation concerns or problems in my household, I may be scolded or punished.
M-R03*	If I speak up publicly about menstruation-related sanitation concerns or problems, I may be scolded or punished by members of this community.
M-R04	When I face a problem related to menstruation and my sanitation location, I can discuss the problem with members of my family.
M-R05	When I face a problem related to menstruation and my sanitation location, I can discuss the problem with friends or neighbors.

* Reverse-code indicated items.

+These items were validated separately from the full relations scale and may be deployed alongside the sanitation relations scale or separately if the subject of interest is menstrual health.

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

Appendix C:

Tool development and validation process

Phase I: Item Development

The objective of the first phase of the project (September 2018 – October 2019) was to generate survey items to measure subdomains of sanitation-related empowerment. To do this, the team conducted a systematic review and synthesis of peer-reviewed literature on empowerment related to water and sanitation, along with a landscape analysis of existing measurement tools, all guided by the KIT framework developed by van Eerdewijk and colleagues (2017). The review identified Privacy and Freedom of movement as critical aspects of women's sanitation-related empowerment that were not captured in the KIT conceptual model. Privacy emerged as having important links to satisfaction with sanitation quality and mental wellbeing, which conceptually fell within the bodily integrity group of subdomains under Resources. Freedom of movement is recognized in the global empowerment literature as a subdomain of women's agency. In the water and sanitation literature, the ability of women to freely move about their neighborhoods and communities without constraints was found to be linked to women's ability to participate in decision-making, leadership, and collective action. Through this process, we adapted the conceptual model and the definitions of all subdomains to be sanitation-specific.

Using the adapted conceptual model and operational definitions as our guide, we developed survey questions (or "items") to measure the relevant concepts within each subdomain. In some cases, we adapted existing items identified in our landscape analysis, but in most cases, we wrote new survey items. We intentionally developed more items than we thought we would need, knowing that some would be dropped after testing. The items produced through this process were then tested via cognitive interviews and key informant interviews with WASH and gender experts and some study participants in Kampala, Uganda and Tiruchirappalli, India. Finally, a panel of four expert reviewers were invited to evaluate the items. The objective of these interviews and expert reviews was to ensure the contextual relevance and framing of the items. Based on the interviews and on feedback from expert reviewers, the team revised the survey modules.

Phase II: Scale Development and Initial Validation

Beginning November 2019, the revised scales were put to a second round of testing via cognitive interviews in Tiruchirappalli and Kampala to assess the extent to which respondents understood, interpreted, and responded to the survey items as intended. After a final round of revisions based on the cognitive interviews, survey deployment began in both cities. Using empirical guidance on the optimal number of respondents to test scale items, we decided to sample 1000 women in each city. Together with local partners, the team purposively selected low-income and middle-income neighborhoods in each city to ensure variation in socio-economic representation of respondents. The team also re-surveyed approximately 80 participants per city a second time within a one-month period to assess test-retest reliability (in other words, to test how consistent their scores were over time). The survey included all scale items plus modules on demographics, water and sanitation access and behaviors, menstruation, and additional items for validation, including six new indices that we developed for validation purposes. We then followed a rigorous and systematic

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

process to refine the scales by assessing the psychometric properties of each item in the scales and dropping the items that did not perform as well as others. We also conducted a series of statistical analyses to test reliability and various forms of validity. Together, these analyses produced evidence of the reliability and validity of the scales, ensuring that the scales measure the constructs that they are intended to measure in a consistent way across populations and over time. This phase concluded in September 2021.

Phase III: Scale Evaluation and Further Validation

For phase three, the revised scales derived from the preceding phase were re-tested with cognitive interviews before the next round of survey implementation in eight cities across five countries: Dakar, Senegal; Lusaka, Zambia; Kampala, Uganda; Narsapur, Warangal, and Tiruchirappalli, India; and Saidpur and Meherpur, Bangladesh. The next round of data collection was conducted August 2021 through June 2022, with approximately 700 women in each of the eight cities. As before, re-surveys were conducted to assess test-reliability of responses with approximately 125 participants in Lusaka and Dakar. In addition, we also developed short forms of five of the scales (Decision-making, Health, Safety and Security, Norms, and Relations), with the goal of being able to offer versions of all 16 scales that had ten items or fewer. The short forms were tested in separate samples of women in Kampala and Tiruchirappalli. We then conducted statistical analyses using many of the same methods as in Phase II to further evaluate the psychometric properties of the scales. The additional testing provided important evidence of validity in these new contexts.

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES

Appendix D:

Demographic, WASH, and menstruation questions

These questions are not a part of our validated, empowerment-specific scales. They are example questions about WASH conditions and behaviors that may be useful for additional analyses. For example, you might hypothesize that women who report that their sanitation location is physically challenging to access or use have lower bodily integrity scores, or women who have the care of sanitation-related tasks for multiple dependents and use public latrines have lower time scores. Survey questions should be included to enable testing of those hypotheses.

These questions come from a variety of sources, including the Demographic and Health Surveys for Households⁵⁴ and for Women and the Menstrual Practices Questionnaire.⁵⁵ Many of them were also generated by our team, based on findings from our literature review⁶ or cognitive interviews in the field. Your needs may vary as to other questions you deploy alongside the ARISE Scales. This is not an exhaustive list of possibilities.

WASH Questions		
Item	Response Options	Source (if not from Emory team)
Sanitation		
Where is the sanitation location you usually go to for defecation during the day when you are at home?	01 = In own dwelling 02 = In own yard/plot 03 = Elsewhere	Adapted from DHS8 Household Questionnaire
What type of sanitation facility do you usually use for defecation during the day when you are at home?	01 = Flush/ Pour-Flush toilet 02 = Dry toilet 03 = Bucket/flying toilet 04 = No facility/bush/field 05 = Hanging toilet 06 = Washroom or bathing area 88 = Other; specify	Adapted from DHS8 Household Questionnaire
What type of containment system is your toilet connected to?	01= Sewer system 02= Septic Tank/lined tank 03= Single Pit 04= Twin Pit 05=No containment (Open drain/Open ground) 88 = Other 99 = Don't know 66 = Choose not to answer	
Do you share this sanitation location with others who are not members of your household?	01 = Yes 02 = No 03 = I use a private stall/stance in a shared latrine block	Adapted from DHS8 Household Questionnaire
Do you share this sanitation location only with members of other households that you know, or is the facility open to the use of the general public?	01 = Shared with known households (not public) 02 = Shared with general public	Adapted from DHS8 Household Questionnaire

- 1 INTRODUCTION
- 2 DEVELOPMENT AND VALIDATION
- 3 HOW TO USE THE SCALES
- 4 ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- 5 FULL TOOL
- 6 APPENDICES

WASH Questions		
Item	Response Options	Source (if not from Emory team)
Is the place where you go for defecation during the day the same location you usually use for urination during the day?	01 = Yes 02 = No	
Is there a different location you would use if you had to urinate at night and were not able to wait until morning?	01 = Yes 02 = No 66 = Choose not to answer	
Why do you use this location instead of your daytime location [select all that apply]:	Multiple response: 01 = Concerns about violence or theft 02 = Concerns about animals or insects 03 = Fear of ghosts 04 = Concerns about slipping, falling, or getting hurt in the dark 05 = The sanitation facility is locked or closed at night 06 = I am not allowed to go to the facility at night 07 = the daytime location is too far away 08 = It is too dark on the way to the sanitation location 09 = The sanitation location is too dark inside 10 = There are people I might encounter who make me uncomfortable 11 = It is inconvenient to go out at night 12 = I cannot leave my children alone 13 = I do not want to ask someone to go with me	
What type of sanitation facility do you usually use for urination at night?	01 = Flush/Pour-Flush toilet 02 = Dry toilet 03 = Bucket/flying toilet 04 = No facility/bush/field 05 = Hanging toilet 06 = Washroom and bathing area 88 = Other; specify: _____	
Is there a different location you would use if you had to defecate at night and were not able to wait until morning?	01 = Yes 02 = No 66 = Choose not to answer	
What type of sanitation facility do you usually use for defecation at night?	01 = Flush/Pour-Flush toilet 02 = Dry toilet 03 = Bucket/flying toilet 04 = No facility/bush/field 05 = Hanging toilet 06 = Washroom and bathing area 88 = Other; specify: _____	
The following sanitation questions were asked twice, once regarding the sanitation location used for defecation and once regarding the sanitation location used for urination.		

WASH Questions		
Item	Response Options	Source (if not from Emory team)
How many households in total use this sanitation location, including your own household?	Numeric	Adapted from DHS8 Household Questionnaire
Do men also use this sanitation location?	01 = Yes 02 = No 66 = Choose not to answer	
How many minutes do you need to walk to this sanitation location?	numeric (minutes)	
Is this sanitation location within 500 meters of your home?	01 = Yes 02 = No 99 = Don't Know 66 = Choose not to answer	
Do you pay money for this sanitation location? [Enumerator note: Indicate no if the respondent says that this is included in their rent.]	01 = Yes 02 = No 66 = Choose not to answer	
Do you have to carry water with you to this sanitation location?	01 = Yes 02 = No, water is available at this location 03 = No, water is not needed 66 = Choose not to answer	
Is water always available at this location?	01 = Yes 02 = No 66 = Choose not to answer	
Is it possible for someone to see you while you are using this sanitation location?	01 = Yes 02 = No 66 = Choose not to answer	
Is this sanitation location lockable from the inside?	01 = Yes 02 = No 77 = Not applicable 66 = Choose not to answer	
Does this sanitation location have sufficient lighting on the inside?	01 = Yes 02 = No 77 = Not applicable 66 = Choose not to answer	
Is there sufficient lighting on the way to this sanitation location?	01 = Yes 02 = No 66 = Choose not to answer	
Is it physically challenging to access or use this sanitation location?	01 = Yes 02 = No 66 = Choose not to answer	
Is there sufficient room inside this sanitation location?	01 = Yes 02 = No 66 = Choose not to answer	

WASH Questions		
Item	Response Options	Source (if not from Emory team)
In the past month (30 days) has there been any problem with the functioning of your toilet/latrine that has prevented you from using it?	01 = Yes 02 = No 66 = Choose not to answer	
Do you usually have to wait at this sanitation location before you can use it?	01 = Yes 02 = No 66 = Choose not to answer	
How many minutes do you usually wait at this sanitation facility before you use it?	Numeric	
Is this sanitation location located in a private place?	01 = Yes 02 = No 66 = Choose not to answer	
Is there a sanitation location/facility – such as a pay-per-use latrine – that you would like to use regularly but cannot because of the cost?	01 = Yes 02 = No 66 = Choose not to answer	
If you work outside the home, do you have access to a sanitation location that you can use as needed?	01 = Yes 02 = No 66 = Choose not to answer 77 = Not Applicable	
Do you engage in any paid sanitation-related work? Examples of sanitation-related work include physical work like repairs, construction, or pit emptying, but also working for sanitation-related businesses and marketing.	01 = Yes 02 = No	
Do you care for anyone in your household like children, elderly, disabled, or sick who requires your assistance when urinating or defecating?	01 = Yes 02 = No	
Does your community have problems with accessibility, functionality, or maintenance of toilets/latrines?	01 = Yes 02 = No	
Have members of your community ever joined together with others to address a common sanitation issue?		
[ENUMERATOR NOTE: Such as demanding, constructing, funding, or acquiring land for latrines; educating the community about sanitation issues; petitioning local leaders with sanitation improvement as the goal; influencing media around sanitation; or participating in a protest or movement about sanitation issues]	01 = Yes 02 = No 99 = Don't know	

WASH Questions		
Item	Response Options	Source (if not from Emory team)
Do you consider the public toilets in your community to be unsafe?	01 = Yes 02 = No	
Water		
Do you have to collect or carry water for sanitation related needs or tasks, such as flushing the toilet, washing diapers, washing menstrual cloths, or cleaning the latrine/toilet?	01 = Yes 02 = No 66 = Choose not to answer	
[if yes] How long does it take for you to collect water?	numeric	
[if yes] How many times a week do you have to go to the water source to collect water for sanitation needs?	numeric	
Do you have to pay for the water used for sanitation related purposes, such as flushing the toilet, washing diapers, washing menstrual cloths, or cleaning the latrine/toilet? This might include paying at a collection site, paying for delivery of water, or paying a metered water bill.	01 = Yes 02 = No 66 = Choose not to answer	
Menstruation		
Have you experienced a menstrual period in the past 1 year (12 months)?	01 = Yes 02 = No 66 = Choose not to answer	
[if yes] When was your most recent menstrual period? Enumerator note: Please encourage the participant to make her best estimate. Round up if more than 2 weeks or halfway through the month; for example, if her response is 1.5 months or 1 month and 3 weeks ago, round to 2 months. Round down if less than 2 weeks into the month; e.g. 1 month and 1 week ago = 1 month.	numeric	

WASH Questions		
Item	Response Options	Source (if not from Emory team)
What materials did you use most often in your past three menstrual cycles?	SELECT ALL THAT APPLY 01= Cloth 02=Reusable sanitary pads 03=Single-use/disposable sanitary pads 04=Tampons 05=Menstrual cup 06 = Absorbent underwear/period panties 07=Toilet paper 08=Cotton wool 09= Natural material (leaves, grass) 10= Mattress or foam 11=Underwear alone 88=No materials used 99= Other 66 = Choose not to answer	Adapted from Menstrual Practices Questionnaire
Where do you most often change your absorbent material when at home during the day?	01 = In private toilet inside my house 02 = In bathroom inside my house 03 = In other room inside my house 04 = In private toilet outside my house 05 = In shared or public toilet 06 = In private bathroom outside my house 88 = Other 66 = Choose not to answer	Adapted from Menstrual Practices Questionnaire
Where do you most often change your absorbent material when at home at night?	01 = In private toilet inside my house 02 = In bathroom inside my house 03 = In other room inside my house 04 = In private toilet outside my house 05 = In shared or public toilet 88 = Other 66 = Choose not to answer	
When you dispose of the absorbent material, where do you usually you put it?	01 = flush down the toilet or put in pit latrine 02 = in a rubbish bin inside or outside the house 03 = thrown in open drain 04 = thrown somewhere else outside in the open 05 = burn it 06 = bury outside 07 = do not dispose 66 = Choose not to answer	Adapted from Menstrual Practices Questionnaire
In general, during your menstrual period, would you avoid participating in income-generating activities because you could not access a sanitation location frequently enough to change menstrual materials?	01 = Yes 02 = No 66 = Choose not to answer	

Appendix E:

Subdomain score sheets

The following Subdomain score sheets outline the scoring for each scale. One score sheet would be used for one participant. The mean score is a simple, unweighted average of all of the items in a scale. All items in a scale must be included to score the scale. The score sheets include the reverse-coding of all relevant items, so no additional steps are needed when selecting response options.

Please note, if a participant chooses not to answer or has missing data for one or more of the items in a scale, that participant's scale score would not be calculated.

Agency: Decision-Making

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Ability to speak up in community-level sanitation decision-making

DM01	1	2	3	4
DM02	1	2	3	4
DM03	1	2	3	4

F2: Ability to influence community-level sanitation decision-making

DM04	1	2	3	4
DM05	1	2	3	4
DM06	1	2	3	4

F3: Ability to participate in household sanitation decision-making

DM07	1	2	3	4
DM08	1	2	3	4
DM09	1	2	3	4

F4: Ability to make household-level sanitation decisions

DM10	1	2	3	4
DM11	1	2	3	4

F5: Ability to make small household-level sanitation decisions

DM12	1	2	3	4
DM13	1	2	3	4

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

M Scale: Ability to participate in menstruation-related sanitation decisions

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
M-DM01	1	2	3	4
M-DM02	1	2	3	4
M-DM03	1	2	3	4

Total Score:

Mean Score:

Agency: Leadership

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Support for women's sanitation-related leadership

L01	1	2	3	4
L02	1	2	3	4

F2: Trust in women's sanitation-related leadership abilities

L03	1	2	3	4
L04	1	2	3	4
L05	1	2	3	4
L06	1	2	3	4

Total Score:

Mean Score:

Agency: Collective Action

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Shared sanitation-related goals and interests

CA01	1	2	3	4
CA02	1	2	3	4

F2: Sense of trust and community related to sanitation

CA03	1	2	3	4
CA04	1	2	3	4
CA05	1	2	3	4

F3: Sense of mutual support related to sanitation

CA06	1	2	3	4
CA07	1	2	3	4
CA08	1	2	3	4

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Agency: Freedom of Movement

Item ID	Alone without telling anyone	Alone if I tell someone	Alone with permission	Only with accompaniment	Not at all
---------	------------------------------	-------------------------	-----------------------	-------------------------	------------

F1: Freedom of movement for meeting personal sanitation needs

M01	5	4	3	2	1
M02	5	4	3	2	1
M03	5	4	3	2	1

F2: Freedom of movement for attending sanitation-focused events

M04	5	4	3	2	1
M05	5	4	3	2	1

Total Score:

Mean Score:

M Scale: Freedom of movement for meeting menstruation-related events

Item ID	Alone without telling anyone	Alone if I tell someone	Alone with permission	Only with accompaniment	Not at all
M-M01	5	4	3	2	1
M-M02	5	4	3	2	1
M-M03	5	4	3	2	1

Total Score:

Mean Score:

Resources: Bodily Integrity

Item ID	Never	Sometimes	Often	Always
---------	-------	-----------	-------	--------

F1: Satisfaction with sanitation location

BI01	1	2	3	4
BI02	1	2	3	4
BI03	1	2	3	4

F2: Withholding and suppression of urination/defecation

BI04	4	3	2	1
BI05	4	3	2	1
BI06	4	3	2	1
BI07	4	3	2	1
BI08	4	3	2	1

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

M Scale: Satisfaction with menstrual hygiene management related to sanitation location

Item ID	Never	Sometimes	Often	Always
M-BI01	1	2	3	4
M-BI02	1	2	3	4
M-BI03	1	2	3	4
M-BI04	4	3	2	1
M-BI05	4	3	2	1
M-BI06	4	3	2	1

Total Score:

Mean Score:

Resources: Health

Item ID	Never	Sometimes	Often	Always
---------	-------	-----------	-------	--------

F1: Perceived sanitation-related illness

H01	4	3	2	1
H02	4	3	2	1
H03	4	3	2	1

F2: Perceived illness due to suppression and withholding of urination / defecation

H04	4	3	2	1
H05	4	3	2	1
H06	4	3	2	1

F3: Fear of injury from physical conditions of sanitation location

H07	4	3	2	1
H08	4	3	2	1

F4: Sanitation-related anxiety, embarrassment, and shame

H09	4	3	2	1
H10	4	3	2	1
H11	4	3	2	1

F5: Sanitation-related stress and fear

H12	4	3	2	1
H13	4	3	2	1
H14	4	3	2	1
H15	4	3	2	1
H16	4	3	2	1

Total Score:

Mean Score:

1 INTRODUCTION**2 DEVELOPMENT
AND VALIDATION****3 HOW TO USE THE
SCALES****4 ARISE SCALES**

Agency

Resources

Institutional
Structures**5 FULL TOOL****6 APPENDICES**

M Scale: Menstruation-related fear and stress

Item ID	Never	Sometimes	Often	Always
M-H01	4	3	2	1
M-H02	4	3	2	1
M-H03	4	3	2	1

Total Score:

Mean Score:

Resources: Safety and Security

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Perceptions of women's risk of harm when going for sanitation

S01	4	3	2	1
S02	4	3	2	1
S03	4	3	2	1

F2: Perceptions of women's risk of harm when going to sanitation-related meetings

S04	4	3	2	1
S05	4	3	2	1
S06	4	3	2	1

F3: Perceptions of women's risk of domestic violence related to sanitation

S07	4	3	2	1
S08	4	3	2	1
S09	4	3	2	1
S10	4	3	2	1
Item ID	Never	Sometimes	Often	Always

F4: Perceptions of own risk of harm when going for sanitation

S11	4	3	2	1
S12	4	3	2	1
S13	4	3	2	1
S14	4	3	2	1
S15	4	3	2	1

F5: Perceptions of general personal safety related to sanitation

S16	4	3	2	1
S17	4	3	2	1
S18	4	3	2	1

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

M Scale: Perceptions of own safety related to menstruation

Item ID	Never	Sometimes	Often	Always
M-S01	1	2	3	4
M-S02	1	2	3	4
M-S03	1	2	3	4

Total Score:

Mean Score:

Resources: Privacy

Item ID	Never	Sometimes	Often	Always
---------	-------	-----------	-------	--------

F1: Privacy for sanitation

P01	4	3	2	1
P02	4	3	2	1
P03	4	3	2	1
P04	4	3	2	1
P05	4	3	2	1

Total Score:

Mean Score:

M Scale: Privacy for menstrual hygiene management

Item ID	Never	Sometimes	Often	Always
M-P01	4	3	2	1
M-P02	4	3	2	1
M-P03	4	3	2	1
M-P04	4	3	2	1
M-P05	4	3	2	1
M-P06	4	3	2	1

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Resources: Critical Consciousness: Self-efficacy

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Ability to create sanitation-related change in the community

SE01	1	2	3	4
SE02	1	2	3	4

F2: Ability to create sanitation-related change at home

SE03	1	2	3	4
SE04	1	2	3	4
SE05	1	2	3	4
SE06	1	2	3	4

Total Score:

Mean Score:

Resources: Critical Consciousness: Awareness of inequalities

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Inequalities in ability to meet sanitation needs

AI01	1	2	3	4
AI02	1	2	3	4
AI03	1	2	3	4

F2: Inequalities in sanitation-related decision-making

AI04	1	2	3	4
AI05	4	3	2	1
AI06	4	3	2	1

Total Score:

Mean Score:

- INTRODUCTION
- DEVELOPMENT AND VALIDATION
- HOW TO USE THE SCALES
- ARISE SCALES
 - Agency
 - Resources
 - Institutional Structures
- FULL TOOL
- APPENDICES

Resources: Financial and Productive Assets

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Control over money for sanitation

F01	1	2	3	4
F02	1	2	3	4
F03	1	2	3	4

F2: Ability to acquire money for sanitation

F04	1	2	3	4
F05	1	2	3	4
F06	1	2	3	4

F3: Inadequate finances to meet basic sanitation needs

F07	4	3	2	1
F08	4	3	2	1

Total Score:

Mean Score:

M Item: Control over money to meet menstruation needs

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
M-F01	4	3	2	1

Total Score:

Mean Score:

Resources: Time

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Time on sanitation-related responsibilities

T01	4	3	2	1
T02	4	3	2	1
T03	4	3	2	1

F2: Time meeting personal sanitation needs

T04	4	3	2	1
T05	4	3	2	1
T06	4	3	2	1

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

M Scale: Time for meeting menstruation-related needs

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
M-T01	4	3	2	1
M-T02	4	3	2	1
M-T03	4	3	2	1

Total Score:

Mean Score:

Resources: Social Capital

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Personal support and help related to sanitation

SC01	1	2	3	4
SC02	1	2	3	4
SC03	1	2	3	4
SC04	1	2	3	4

F2: Community support and information related to sanitation

SC05	1	2	3	4
SC06	1	2	3	4
SC07	1	2	3	4
SC08	1	2	3	4

Total Score:

Mean Score:

M Scale: Social capital for meeting menstruation-related needs

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
M-SC01	1	2	3	4
M-SC02	1	2	3	4

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Resources: Knowledge and Skills

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Knowledge and skills related to community sanitation

K01	1	2	3	4
K02	1	2	3	4
K03	1	2	3	4

F2: Knowledge related to personal sanitation repairs and maintenance

K04	1	2	3	4
K05	1	2	3	4

F3: Knowledge to influence community-level sanitation decisions

K06	1	2	3	4
K07	1	2	3	4
K08	1	2	3	4

F4: Knowledge and skills to influence household-level sanitation decisions

K09	1	2	3	4
K10	1	2	3	4

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Institutional Structures: Norms

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Gendered sanitation-related household roles and responsibilities

N01	4	3	2	1
N02	4	3	2	1
N03	4	3	2	1
N04	4	3	2	1
N05	4	3	2	1
N06	4	3	2	1

F2: Gendered expectations surrounding sanitation value chain work

N07	4	3	2	1
N08	4	3	2	1
N09	4	3	2	1

F3: Restrictions on women speaking at sanitation-related meetings

N10	4	3	2	1
N11	4	3	2	1
N12	4	3	2	1

F4: Acceptability of women's participation in sanitation-related meetings

N13	1	2	3	4
N14	1	2	3	4
N15	1	2	3	4

F5: Acceptability of women's participation in community-level sanitation-related activities

N16	1	2	3	4
N17	1	2	3	4
N18	1	2	3	4
N19	1	2	3	4

F6: Acceptability of women disagreeing with their husbands regarding sanitation issues

N20	1	2	3	4
N21	1	2	3	4

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

M Scale: Acceptability of women's menstruation-related discourse and behavior

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
M-N01	1	2	3	4
M-N02	1	2	3	4
M-N03	1	2	3	4
M-N04	4	3	2	1

Total Score:

Mean Score:

Institutional Structures: Relations

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
---------	-------------------	----------	-------	----------------

F1: Scolding for speaking up about sanitation issues

R01	4	3	2	1
R02	4	3	2	1
R03	4	3	2	1
R04	4	3	2	1

F2: Familial support for community-level sanitation participation

R05	1	2	3	4
R06	1	2	3	4
R07	1	2	3	4
R08	1	2	3	4

F3: Relations with service providers and local leaders related to sanitation

R09	1	2	3	4
R10	1	2	3	4
R11	1	2	3	4

Total Score:

Mean Score:

M Scale: Ability to discuss menstruation and manage menstruation without scolding

Item ID	Strongly Disagree	Disagree	Agree	Strongly Agree
M-R01	4	3	2	1
M-R02	4	3	2	1
M-R03	4	3	2	1
M-R04	1	2	3	4
M-R05	1	2	3	4

Total Score:

Mean Score:

1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

Appendix F:

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1 INTRODUCTION

2 DEVELOPMENT
AND VALIDATION

3 HOW TO USE THE
SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

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1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional Structures

5 FULL TOOL

6 APPENDICES

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1	INTRODUCTION
2	DEVELOPMENT AND VALIDATION
3	HOW TO USE THE SCALES
4	ARISE SCALES
	Agency
	Resources
	Institutional Structures
5	FULL TOOL
6	APPENDICES

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1 INTRODUCTION

2 DEVELOPMENT AND VALIDATION

3 HOW TO USE THE SCALES

4 ARISE SCALES

Agency

Resources

Institutional
Structures

5 FULL TOOL

6 APPENDICES

edge