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ADVANCEMENT OF METRICS FOR MENSTRUAL HYGIENE MANAGEMENT IN THE WORKPLACE

FINAL REPORT

DECEMBER 2021

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DISCLAIMER

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ACRONYMS AND ABBREVIATIONS

AMREC	Adaptive Management and Research Consultants
ARISE	Agency, Resources, and Institutional Structures for Sanitation-related Empowerment Scale
ARISE-M	Agency, Resources, and Institutional Structures for Sanitation-related Empowerment Scale: Menstruation
AUB	Abnormal Uterine Bleeding
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CIs	Cognitive Interviews
DHS	Demographic and Health Survey
GMMG	Global Menstrual Monitoring Group
IRB	Institutional Review Board
IUD	Intra-Uterine Device
JMP	Joint Monitoring Program
LAM	Lactational Amenorrhea Method
MBQ	Menstrual Bleeding Questionnaire
MHH	Menstrual Health and Hygiene
MI	Menstrual Insecurity
MICS	Multiple Indicator Cluster Surveys
MIQ	Menorrhagia Impact Questionnaire
MMAS	Menorrhagia Multi-Attribute Scale
MPNS	Menstrual Practice Needs Scale
NISER	Nepal Institute for Social and Environmental Research
ODK	Open Data Kit
PHQ	Patient Health Questionnaire
PMA	Performance Monitoring for Action
PPE	Personal Protective Equipment
RCT	Randomized Control Trial
RMSEA	Root Mean Square Error of Approximation
SAMNS	Self-Efficacy in Addressing Menstrual Needs Scale
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SD	Standard Deviation
SE	Self-Efficacy
TLI	Tucker-Lewis Index
TSS	Toxic Shock Syndrome
TVET	Technical and Vocational Education and Training

UK	United Kingdom
U.S.	United States
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, Sanitation, and Hygiene
WASHPaLS	Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability
WHO	World Health Organization
WLSMV	Weighted Least Square Parameter Estimate

EXECUTIVE SUMMARY

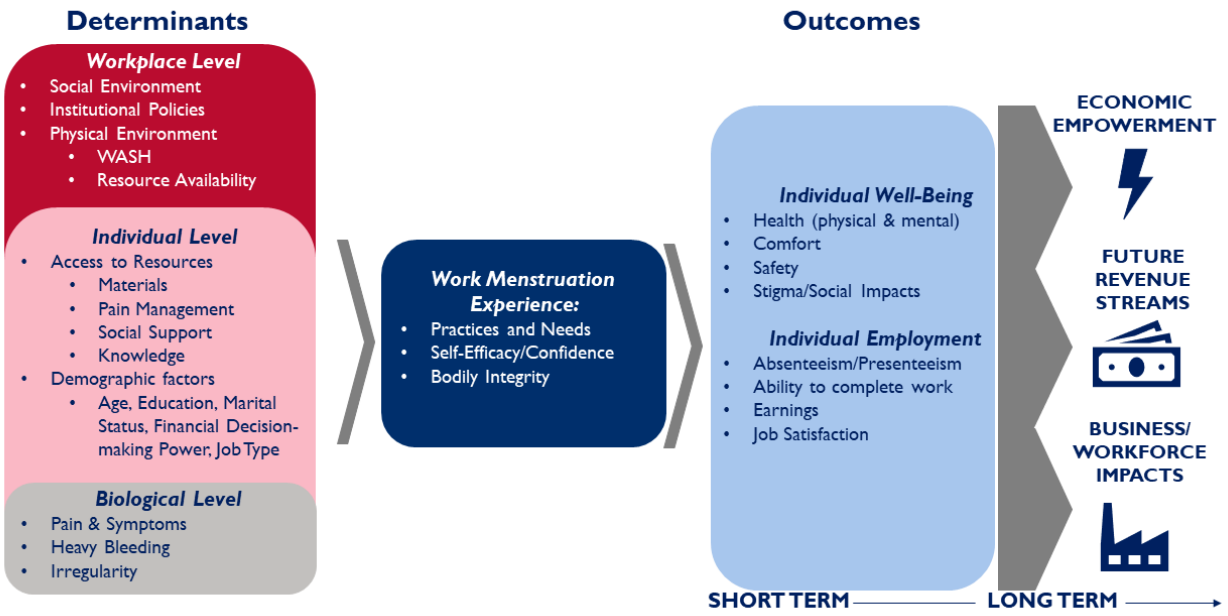
Research to understand lived experiences of menstruation continues to expand globally, yet the experiences of menstruators who are working remain understudied and overlooked. Assessments of working women's experiences are needed to broaden understanding of menstrual experiences, determinants, and outcomes. Specifically, limited information is known about menstruation-related outcomes (e.g., health, well-being, economic engagement) and determinants, including at the workplace (e.g., access to facilities), individual (e.g., access to resources), and biological levels (e.g., heavy bleeding, pain) among women who are working outside the home. Indicators supported by rigorously tested measures would enable comparability across populations and geographies over time and evaluation of programs that aim to improve workplace experiences, determinants, and/or outcomes.

The goals of this activity were twofold: 1) to advance development of or adapt existing measures to more comprehensively capture menstrual needs, practices, behaviors, and outcomes relate to menstruation and work; and 2) field test measures in Kenya and Nepal to arrive at a set of validated metrics that may be considered as indicators in broad-scale monitoring efforts. Through a review of existing documents and tools related to menstruation and WASH monitoring as well as rigorous testing and large scale survey deployment, we tested over 150 measures and identified 21 potential indicators for monitoring menstruation related to work (see table at end of Executive Summary). The potential indicators include 12 to assess determinants (eight at the workplace level and four at the individual level), five to assess work menstruation experiences, and four to assess individual well-being and employment outcomes. The indicator list serves as an important first step to monitoring of menstrual health related to work. The indicator list requires further external review by experts and relevant stakeholders to identify gaps, priorities, and next steps for monitoring menstrual health related to work. The measures and indicators also need additional testing over time, as these data reflect specific populations during a very specific (COVID-influenced) time.

Section 4 of the report provides a detailed overview of the proposed indicators, including how each proposed indicator was identified, how it is measured, and what previous work informed the indicator identification and measurement. To validate the set of measures used to assess the proposed indicators, we undertook a multi-step process to adapt or develop and then test items with over 1000 women who recently experienced menstruation while working outside the home in two different contexts: Kathmandu, Nepal and Nairobi, Kenya. Section 3 of the report details our approach.

The indicator list has several strengths, most notably:

- We **leveraged previous indicator work** that has identified or proposed indicators related to menstruation, either in different contexts (e.g., schools) or among different populations (e.g., girls) in order to maintain alignment with current initiatives that have also generated broad consensus about what to monitor.
- The indicators included are **informed by a conceptual model** (see figure below) that demonstrates how determinants at various levels influence menstruation experiences while working outside the home, which may in turn impact individual well-being and employment-related outcomes. Using the conceptual model to guide indicator selection assures that the indicators proposed are comprehensive of menstrual health and work. A detailed description of the conceptual model—the determinants, experience and the outcomes related to menstruation and work—is provided in Section 2 of the report.



- We intentionally **adapted or developed all indicators and measures for assessment at the individual level.** Other monitoring efforts include assessments of institutions (e.g., schools, healthcare facilities). However, systems for assessing workplaces are not widely established. Therefore, we modified and tested items that would typically be assessed at the institution (workplace) level to be asked of individuals. This modification will allow for information about workplaces and also facilitate uptake into existing survey systems.
- We **randomly sampled participants** to allow us to engage—and therefore test our items with—a diverse population that represents a range of job types. The 21 indicators proposed reflect each part of our guiding conceptual model, from determinants, to experiences and outcomes.
- In addition to the proposed set of indicators, each step of our approach has yielded worthwhile outputs that can serve future research and practice. Specifically, the **rapid literature review** allowed us to expand upon both the previous literature review and upon the conceptual model depicting links between menstrual health in the workplace and women's economic empowerment and business outcomes developed by Iris Group, as part of the United States Agency for International Development's (USAID) Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project. The **expanded conceptual model** guided our own tool review, adaptation, and development process, and can be used to guide future research and programs. Our intentional engagement with varied stakeholders resulted in **an extensive, validated final survey tool,** which assesses far more than what was used for assessing the indicators. The items in the final survey tool were vetted by working women and partners in each location, as well as experts in menstrual health and development. The final survey tool can be used with other populations, and our processes of refining the tool can be leveraged to refine it with other populations. Deploying the final tool at scale in two locations generated a rich **dataset** about menstrual health and work at all points along our expanded conceptual model. Further analysis should be undertaken.

And finally, the rich information about menstrual health and work generated in the process of identifying and testing indicators and measures is the most comprehensive assessment of menstrual health and work to date. Briefly, across almost all measures—including determinants at the workplace and individual levels, work menstruation experiences, and health and employment-related outcomes—

participants in Nepal appear to fare better than participants in Kenya. Notably, a greater proportion of participants in Kenya than in Nepal did not feel completely confident working during menstruation or managing menstruation outside the home, and reported that concerns about safety prevented them (at least some of the time) from changing materials as needed. A greater proportion of Nepali participants also reported being satisfied with their ability to meet their menstrual needs while at their job. Additional insights are provided in the report, which includes data on close to 200 items.

This work was funded by the USAID WASHPaLS project, an activity of USAID's Global Health Bureau, and implemented by Tetra Tech. A team of researchers at the Rollins School of Public Health at Emory University, a research university, and Athena Infonomics, a global research and data consultancy firm conceptualized and implemented tool development, data collection, and data analysis processes.

Potential List of Indicators

Domain	Indicator
Workplace level determinants	
Social Environment	Proportion of women who agreed or strongly agreed that women where they work hide the fact that they were menstruating
Institutional Policies	Proportion of women who reported being able to take a break to meet their menstrual needs whenever they needed to while working outside the home during their last menstrual period
Physical Environment: Material Access	Proportion of women whose workplaces provided menstrual materials to employees, whether for free or at a cost
Physical Environment: WASH	Proportion of women who reported that they had access to sanitation facilities that are single-sex at their workplace
Physical Environment: WASH	Proportion of women who reported changing their menstrual materials *at their workplace* in a space that was clean, private, and safe during their last menstrual period
Physical Environment: WASH	Proportion of women who changed their menstrual materials *while working* outside the home in a space that was clean, private, and safe during their last menstrual period
Physical Environment: WASH)	Proportion of women who changed their menstrual materials *while working* outside the home in a space that was clean, private, safe, lockable, and available when needed during their last menstrual period
Physical Environment: WASH	Proportion of women who reported that there was water and soap available in a private place to manage menstruation at their workplace
Individual-level determinants	
Knowledge	Proportion of women who reported that they could usually predict when their menstruation will start
Menstrual Materials	Proportion of women who reported always having enough menstrual materials during their last menstrual period while working outside the home
Pain Management	Proportion of women who reported always being able to get pain remedies when needed during their last menstrual period while working outside the home
Social Support	Proportion of women who report that they would feel comfortable seeking help for menstrual problems from a health care provider
Workplace menstruation experiences	
Menstrual Practices while working	Proportion of women who changed their menstrual materials during their last menstrual period while working outside the home [among those who needed to change them]
Pain remediation	Proportion of women who reported that they were able to reduce their menstrual (abdominal/back/ cramping) pain when they needed to during their last menstrual period while working outside the home

Domain	Indicator
Bodily Integrity	Proportion of women who reported that their work responsibilities prevented them from addressing their menstruation-related needs at least some of the time during their last menstrual period
Self-Efficacy: Working	Proportion of women who reported not feeling completely confident working during their menstruation
Self-Efficacy Managing	Proportion of women who reported not feeling completely confident in their ability to manage menstruation when working outside the home
Outcomes	
Individual well-being: Stress	During their last menstrual period while working…Proportion of women who reported experiencing stress at least sometimes when they last needed to access a location to change their menstrual materials
Individual well-being: Safety	During their last menstrual period while working…Proportion of women who reported that concerns about safety at least some of the time prevented them from changing their materials when they needed to
Work Engagement: Job Satisfaction	Proportion of women who are satisfied with their ability to meet their menstrual needs at their current job
Work Engagement: Lost earnings	Proportion of women who reported lost earnings or decreased pay in the past year due to their menstruation

1.0 INTRODUCTION

Research to understand lived experiences of menstruation continues to expand globally (Bobel, 2018). However, qualitative research (Hennegan et al., 2019), intervention evaluation (Austrian et al., 2021; Kansiime et al., 2020; Miiro et al., 2018; Montgomery et al., 2016; Montgomery et al., 2012; Philips-Howard, Nyothach et al., 2016), measurement development (Hennegan, Nansubuga, Akullo et al., 2020; Sommer, Zulaika et al., 2019; Benshaul-Tolonen et al., 2020; Hennegan, Nansubuga, Smith et al., 2020; Hunter, 2019), agenda setting (Sommer, Caruso et al., 2016; Sommer & Sahin, 2013; Phillips-Howard, Caruso et al., 2016), and investment in large-scale global programs (Sinden et al., 2015) have largely focused on school-aged, and most often school-going, girls. The research focused on women's and out-of-school youths' experiences of menstruation is comparatively limited (Hennegan et al., 2019; Caruso, Clasen, Hadley et al., 2017; Caruso et al., 2020; Caruso et al., 2019; MacRae et al., 2019).

The experiences of menstruators who work remain particularly understudied and overlooked. (Caruso, Portela et al., 2020; Hennegan, Kibira et al., 2020; Sang et al., 2021; Sommer, Chandraratna et al., 2016; USAID, 2019). Workplace challenges identified thus far are similar to those identified in school settings, including inadequate facility (whether sanitation or other), water, and menstrual material access; stigmatizing social environments; and institutional rules preventing the ability to address needs (Hennegan, Kibira et al., 2020; Sang et al., 2021; Abanyei et al., 2019; Taylor, 2011; Rajaraman et al., 2013). A recent secondary analysis found that 19% of the women surveyed in Burkina Faso, 11% in Niger, and 17% in Nigeria reported missing work because of menstruation (Hennegan, OlaOlorun et al., 2021). Research has identified associations between the use of disposable pads and reduced work absenteeism in Burkina Faso (Krenz & Strulik, 2018) and Bangladesh (Czura et al., 2019), symptoms and presenteeism/productivity and "helpfulness" in India (Motro et al., 2019) and the Netherlands (Schoep et al., 2019), and additional labor in the United Kingdom ([UK] Sang et al., 2021). Recent qualitative research has also illuminated the importance of considering discomfort and anxiety in the work setting during menstruation and the specific challenges of those experiencing pain and heavy bleeding (Uganda—Hennegan, Kibira et al., 2020), as well as irregular bleeding associated with menopause (UK— Sang et al., 2021).

Measures have been developed to assess women's experiences of sanitation (Caruso, Clasen, Yount et al., 2017) and menstruation (Caruso, Portela et al., 2020) in the household setting; and a measure developed to assess needs and practices of girls in school settings (Menstrual Practice Needs Scale [MPNS]) recently was revalidated and found to be acceptable and comprehensible among working women in three settings, markets, schools, and health care facilities in Mukono District, Uganda, though to have a different factor structure (Hennegan, Bukenya, Kibira et al., 2021). Greater poverty was associated with lower MPNS scores, and higher levels of met menstrual needs were associated with increased odds of women not missing work during their last menstruation (Hennegan, Bukenya, Kibira et al., 2021). The authors note that cross-cultural validity of the measure is needed. Further, the study only engages women from three workplace types, and thus more research is needed with women with different work experiences.

While the validation of the MPNS with working women in Uganda is a positive development, it is just a start. Additional assessments of working women's experiences are needed to broaden understanding of menstrual experiences, determinants, and outcomes across workplace settings. Specifically, limited information is known about menstruation-related outcomes (e.g., health, well-being, economic engagement) and determinants, including at the workplace (e.g., access to facilities), individual (e.g., access to resources), and biological levels (e.g., heavy bleeding, pain) among working women. Robust measures would enable comparability across populations and geographies; evaluation of programs that aim to improve workplace experiences, determinants, and outcomes; and could be the basis from which

to identify indicators to monitor these experiences, determinants, and outcomes related to menstruation and work in varied spaces and over time.

Led by Emory University and Athena Infonomics, the Advancement of Metrics for Menstrual Health and Hygiene in the Workplace activity under the Water, Sanitation and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project aimed to adapt existing menstrual health and hygiene (MHH) measure(s) for applicability to the workplace and/or advance the development of metrics to capture menstrual experiences more comprehensively, and associated determinants and impacts related to menstruation in the workplace. Tested in two unique urban locations with women representing varied backgrounds and work experiences, the new and adapted measures can be used for future research. Further, we identify a set of indicators and corresponding measures for monitoring experiences, determinants, and outcomes related to menstruation and work.

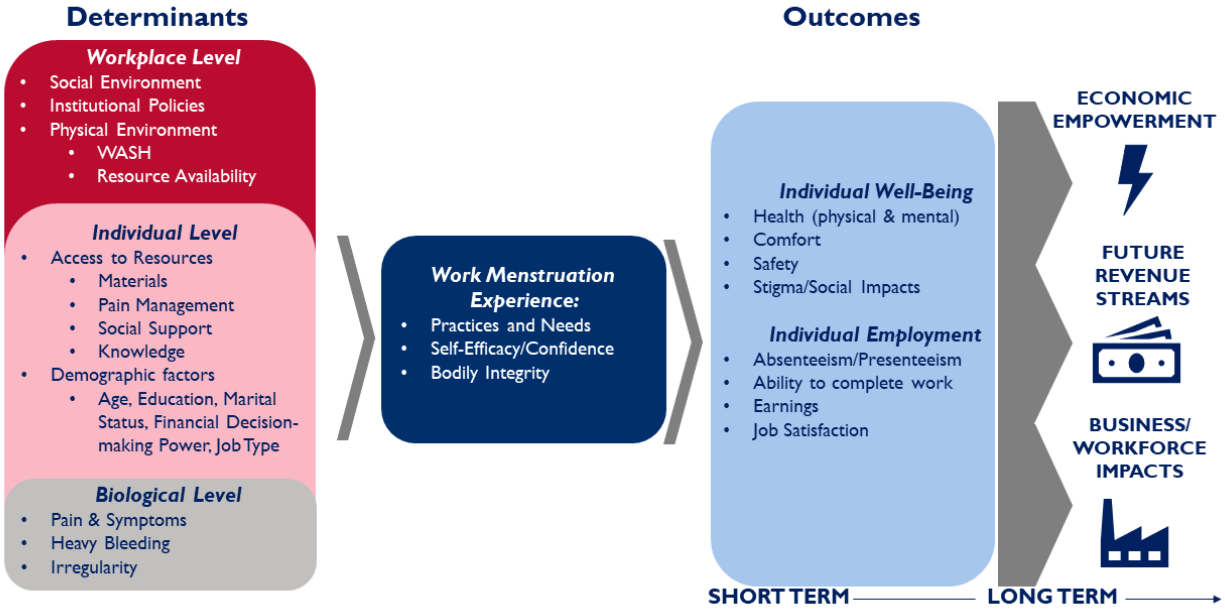
Following this introductory section, Section 2 presents background information on the activity; Section 3 presents the methods utilized in the research activity; Section 4 presents a list of the proposed indicators; Section 5 presents findings of the surveys; and Section 6 provides a discussion of the findings and several recommendations. Annexes include Health and Safety Considerations for Conducting Data Collection During the COVID-19 Pandemic (A), Reporting Notes and Additional Information on a Potential List of Indicators (B), a Table of Deleted Items from Survey Refinement Activities (C), a Table of Adapted Items from Survey Refinement Activities (D), and additional information on scale CFA approach findings (E).

2.0 BACKGROUND

2.1 PRIMARY MENSTRUATION-RELATED THEMES RELEVANT TO THE WORKPLACE

Experiences of menstruation in the workplace are influenced by determinants at the workplace, individual, and biological levels (i.e., workplace, individual, and biological levels), which in turn can impact well-being and employment-related outcomes (see Figure 1). We identified key determinants and outcomes of menstruation in the workplace via a rapid review that sought to update and augment the foundational literature review completed by Iris Group (USAID, 2019). Figure 1, which adapts and expands upon the figure drafted by Iris Group linking menstruation and individual and workplace-related impacts, depicts the multi-level determinants that influence work-related menstruation experience, which can, in turn, influence various personal well-being and employment-related outcomes. In the sections that follow, work-related menstruation experiences—as well as the determinants and outcomes—are explained in further detail.

Figure 1. A Conceptual Model Depicting How Determinants at Multiple Levels Influence Menstruation Experiences in the Workplace, which in Turn Influence Individual Well-Being Outcomes and Downstream Economic Outcomes.



2.1.1 EXPERIENCE OF MENSTRUATION AT WORK

Central to understanding if and how menstruation can impact outcomes related to employment and well-being is understanding the experience of menstruation in the context of work. We have identified four sub-domains of menstruation experience: menstruation practices, menstruation-related needs, self-efficacy/confidence in managing menstruation, and menstruation-related bodily integrity.

A. ***Menstruation Practices:*** The specific practices women and girls conduct to manage their menstruation can impact health and work-related outcomes, like absenteeism or productivity. Notably, research in rural India found associations between lower reproductive tract infections and menstruation practices, including the type of menstrual material used, frequency of changing materials, frequency of personal washing, changing location, and location of drying reusable materials (Torondel et al., 2018). Qualitative research has found that girls in the school setting also report

some practices can cause irritation or even missed class or school time (Long et al., 2013; Long et al., 2013; Ellis et al., 2016). A recently published tool has outlined key menstruation-related practices that should regularly be assessed in research (Hennegan et al., 2020).

B. ***Menstruation-Related Needs:*** Women's menstruation-related needs include, but are not limited to changing, hygiene, disposal, coping with and preventing leaks and stains, and pain/symptom management. A systematic review and meta-synthesis of women's and girls' experiences of menstruation in low- and middle-income countries identified both actual practices and *perceptions of those practices*' *adequacy, comfort, and reliability* as central elements of women's menstruation-related experiences (Hennegan et al., 2019). In developing and validating the MPNS, Hennegan, Nansubuga, Smith et al. (2020) emphasized the importance of assessing both practices and perceptions of those practices to assess women's menstrual health and well-being more completely.

C. ***Self-Efficacy/Confidence Managing Menstruation:*** While school-based interventions and research have focused on the materials and water, sanitation, and hygiene (WASH) environments as critical to improving outcomes (Montgomery et al., 2016; Montgomery et al., 2012; Alexander et al., 2014) research among schoolgirls in Bangladesh found that simple assessments of water and sanitation environments and the availability of menstrual materials is not sufficient to understand if girls have positive menstruation-related experiences (Alam et al., 2017). Rather, consideration of self-efficacy, or confidence in the ability to manage menstruation, may provide a more complete understanding (Hunter, 2019). Related, in their meta-synthesis, Hennegan et al. (2019) noted that menstruators had improved confidence when they had access to materials, enabling environments, knowledge, and social support. Still, limited research focuses on self-efficacy/confidence specifically (Hunter, 2019; Iris Group, 2020a & 2020b; Sinharoy et al. 2021; UNICEF, 2020). The Iris Group assessed confidence related to management as part of surveys with working women in both Kenya and Nepal; the majority of respondents expressed confidence in their ability to change, dispose of, and wash menstrual products at work (Iris Group, 2020a & 2020b).

D. ***Menstruation-related Bodily Integrity:*** Bodily integrity, or women and girls' control over their bodies (van Eerdewijk et al., 2017), is not discussed explicitly or often in menstruation-related literature. Bodily integrity is increasingly discussed in the literature on sanitation and is worthy of further exploration, particularly given constraints that may be present in the workplace. In the sanitation literature, suppression of urination or defecation urges and withholding food and water to reduce sanitation needs have been discussed due to limited time, competing responsibilities, or unsupportive environments Caruso, 2017; Sahoo et al., 2015; Panchang et al., 2021). In relation to menstruation, women may not be able to do a number of activities as needed or preferred, including changing materials, washing their bodies, accessing, or using preferred materials or changing locations, among others.

2.1.2 DETERMINANTS

Women's work-related menstruation experience may be influenced by determinants at the workplace, individual, and biological levels.

Workplace-Level Determinants

Both the social and physical environment of the workplace can influence menstruation experiences.

A. ***The workplace social environment*** includes prevailing attitudes and norms, as well as spoken and unspoken expectations and rules. Evidence from North America and Western Europe suggests that there are strong negative beliefs about working women during menstruation (Grandey et al., 2020). Research in Uganda found that there was an expectation that menstruation was not discussed but remained a secret in the work context (Hennega, Kibira et al., 2020). In Kenya, 73% of women

reported not feeling comfortable asking their supervisors for menstruation-related leave (Iris Group, 2020a). In Ghana, 47% of male employees reported viewing menstruation as shameful. Research on menstruation in school settings has found that school rules prevent girls from accessing facilities for managing menstruation when needed (Long et al., 2013; Caruso et al., 2013; Haver et al., 2013) How attitudes of individuals in the workplace impact menstruation experiences or well-being and employment outcomes is unclear.

B. ***Institutional policies*** may include workplace-level rules and standards that influence how women experience menstruation in the workplace. Policies may be supportive of those who are menstruating. Schoep et al. (2019) describe how women in the Netherlands appreciated having flexibility in work tasks while menstruating, including the ability to work from home. However, workplace policies can also be harmful. On the surface, "menstrual leave" may appear to accommodate women's needs. However, this type of leave could be a means of discrimination, signaling to women they are not welcome in the workplace when menstruating. Research in India found that menstrual leave could push women out of the workforce. Employers may become reluctant to hire people who are menstruating so they do not have to provide leave, or may prevent women from being assigned important tasks that would advance their careers (Belliappa, 2018). In addition, policies (or lack of policies) that are not menstruation-specific could influence the menstruation experience. For example, while employers in the formal sector may be beholden to workplace standards, employers in the informal sector may have no legal obligation to provide women with a workplace environment that is suitable for their sanitation-related needs (Sommer, Chandratna et al., 2016). Or, as in the school setting, institutional rules may dictate when people have access to facilities to change materials, either preventing them from doing so as needed or locking them out after they leave to prevent their return (Long et al., 2013).

C. ***The workplace physical environment*** includes water and sanitation conditions as well as the availability of needed menstruation-related supplies. Women rely on physical spaces for undertaking a variety of menstrual tasks, including changing their menstrual materials, washing and drying reusable materials, and washing their hands and bodies (Hennegan et al., 2019). Clean, safe facilities with running water and soap help women feel comfortable managing their menstruation (Hennegan et al., 2019; Abanyie et al., 2019) in the workplace as opposed to taking leave or going home to manage their menstrual needs. Abanyie et al. (2019) found that a lack of sanitary facilities in Ghanaian workplaces leads to women using menstrual products for longer than recommended. Twelve percent of respondents in the formal sector reported having no access to a restroom while at work, as did 60% of respondents working in the informal sector. In the Iris baseline survey in Kenya, women reported that their workplace did not provide menstrual hygiene products and only 35% of women reported that they would not have to worry if they ran out of menstrual products while at work (Iris Group, 2020a).

Individual-Level Determinants

At the individual level, access to resources and demographic factors emerge as influential to managing menstruation at work.

A. ***Access to resources,*** including materials for managing menstruation, pain relief, knowledge, and support, have been identified as important to menstrual experience in the workplace.

- ***Access to materials***: In their desk review, Iris Group synthesized existing research that noted that women and girls lack adequate menstrual products for managing menstruation (USAID, 2019). In a sample of working women in Burkina Faso, Krenz and Strulik (2019) found that most participants use inferior menstrual hygiene products, such as old clothes or rags. Access to menstrual products significantly reduced work absenteeism related to menstruation, although

this effect was only significant for Muslim women. A randomized control trial (RCT) among Bangladeshi female garment workers found that 50% of respondents at baseline used traditional menstrual products like old cloth or rags; women who were given free sanitary napkins had 15% fewer absent days at the end of the RCT (Caura et al., 2019). Both the study in Bangladesh and the work by Hennegan et al. (2019) highlight that the cost of materials influences women's ability to access and use appropriate menstrual materials.

- ***Access to pain management***: While limited research is available, access to pain medication and pain management strategies for menstruation influences work experiences. In Uganda, women's access to resources like pain relief medication did help at work, but not all had access or felt it appropriate to take medication (Hennegan, Kibira et al., 2020). Iris Group's baseline survey in Nepal (2020b) found that women used resources like pain medication, hot water bottles, and resting rooms to cope with menstrual pain during work.

- ***Access to social support***: Individual access to social support for managing menstruation has been widely noted, particularly in qualitative school-based research on menstruation, as influencing experiences of menstruation (Hennegan et al., 2019). Sources of social support can be variable, including friends, family, co-workers, and teachers, and can serve different purposes, including informational, instrumental/material, and emotional support (Long et al., 2013; Caruso et al., 2013; Belliappa, 2018) and can enhance the impact of menstruation-related interventions or, in its absence, pose a barrier (Hennegan et al., 2019). In their baseline survey in Nepal, Iris Group (2020b) found that women reported a moderate level of confidence in their ability to ask for advice for managing their periods and menstrual pain or for asking a colleague for menstrual products or pain management resources. Women working in marketplaces in Uganda who did not have co-workers or good relationships with nearby vendors worried that they would miss customers or their goods would be tampered with if they left their worksite to manage their menstrual needs (Caruso et al., 2019).

- ***Access to knowledge and information sources***: All studies in a recent meta-synthesis of qualitative studies reported on the importance of knowledge for women and girls' experiences of menstruation (Hennegan et al., 2019). Specifically, practical knowledge for managing menses was widely sought by women and girls, influenced their practices during menstruation, and a deficit of knowledge and information caused confusion and distress (Hennegan et al., 2019).

B. ***Demographic characteristics***, like age, marital status, education, job type, and access to and control over financial resources for menstruation-related needs likely all influence menstrual experience. Lack of funds to purchase preferred menstrual materials is a major barrier reported by women and girls, especially for commercially produced sanitary napkins (Hennegan et al., 2019). In Uganda, women who worked in marketplaces had expenses related to using pay-per-use sanitation facilities to change their menstrual materials (Hennegan, Kibira et al., 2020).

Biological-Level Determinants

Biological-level determinants refer to the biological experiences of menstruation, including pain and symptoms, heavy bleeding, and irregularity, and can have downstream impacts.

A. ***Pain and Symptoms***: Schoep et al. (2019) found that the strongest predictor of absenteeism at work is pain and discomfort experienced during menstruation. Research with women in rural India found pain and discomfort to be associated with self-reported difficulty working (Caruso, Portela et al., 2020). Working women in Uganda reported distress or disruption at work related to menstrual pain; women also reported feeling weak or lacking energy during the workday (Hennegan, Kibira et al., 2020).

B. ***Heavy Bleeding (menorrhagia)***: A systematic review has identified multiple studies linking heavy bleeding with work impairment (Liu et al., 2007). Japanese women who experienced heavy bleeding reported greater impact on work, including absenteeism and productivity loss, than those with normal or less than normal bleeding (Tanaka et al., 2013). Research in Finland found that 20% of women who experienced menorrhagia missed work in the previous six months (Hurskainen et al., 2001), and research in Canada showed that women with fibroids, which can cause heavy bleeding, took time off work for fibroid-related reasons, often around the time of their menstrual cycle (Pron et al., 2003). Research carried out in the United States estimated that women experiencing heavy bleeding worked 3.6 fewer weeks per year than women who did not experience heavy bleeding, resulting in an estimated loss of $1,692 per woman annually. Money loss, however, may be underestimated because it was based solely on absenteeism and not productivity or presenteeism[1] (Côté et al., 2002).

   Limited research has described heavy bleeding related to work in low and middle-income countries, and additional research is called for (Hennegan et al., 2019). Qualitative research in Uganda focused on understanding women's menstruation experiences in the workplace found heavy bleeding to be a source of anxiety, which caused increased management challenges. Interestingly, while menstruation is considered a secret subject, women who experienced heavy bleeding were considered exempt from this expectation and treated with compassion if discussing heavy bleeding as it was deemed a medical issue (Hennegan, Kibira et al., 2020).

C. ***Irregularity***: Irregularity makes it particularly challenging for menstruators to remain prepared for their menstruation. Timing of menstruation is not always understood and can be particularly erratic when women and girls first start experiencing menstruation, after birth, due to hormonal contraception use, or as menopause begins (MacRae et al., 2019; Sang et al., 2021; Polis et al., 2018).

2.1.3 OUTCOMES

Women's experiences of menstruation in the workplace can influence personal well-being as well as various employment or work-related outcomes.

Individual Well-Being

A. ***Health outcomes*** related to menstruation include physical, mental, and social well-being, all facets of the World Health Organization (WHO) definition of health (WHO, 1946). Illustrative examples of each are provided below. Importantly, the three well-being types noted do interact (for example, experiencing assault to social health, like stigmatization, may impact mental health.

   a. ***Physical Well-being***: Research has demonstrated that using sanitary materials longer than recommended can lead to negative physical health outcomes, like Toxic Shock Syndrome (TSS) (Abanyie, Douri & Anang, 2019) and various practices, including the material type or location of changing have been associated with reproductive tract infections (Miiro et al., 2018; Torondel et al., 2018; Das et al., 2021; Das et al., 2015).

   b. ***Mental Well-being***: A systematic review of women and girls' menstruation-related experiences found that self-esteem, stress, anxiety, and depression were reported by women and girls when menstruating and that those experiencing menstrual disorders, such as dysmenorrhea, reported feelings of powerlessness (Hennegan et al., 2019). Research in rural India found that women experiencing higher scores of some menstrual insecurity factors also reported greater feelings of tension or difficulty working (Caruso, Portela et al., 2020). Women surveyed as part of Iris

[1] Presenteeism is the practice of "workers being on the job, but because of illness or other medical conditions, not fully functioning" (Hemp, 2004).

Group's baseline surveys in Nepal and Kenya (2020a, 2020b) reported feelings of hopelessness and stress at work during menstruation. As part of a revalidation of the MPNS among women in Mukono District, Uganda, total MPNS scores were moderately associated with well-being (assessed using the WHO-5), with stronger associations found with the material and home needs sub-scales (Hennegan, Bukenya, Kibira et al., 2021).

c. ***Social Well-being***: Women and girls have reported altering their movement and participation outside the household when menstruating (Hennegan et al., 2019). School going girls in Bolivia, Philippines, and Sierra Leone reported being isolated from activities or self-isolating to avoid menstruation-related bullying (Long et al., 2013; Caruso et al., 2013; Haver et al., 2013).

B. ***Personal comfort*** at work can be influenced by menstruation. Women and girls find different types of menstrual products more comfortable than others (USAID, 2019; Krenz & Strulik, 2018). Working women in Uganda reported that cheaper brands of disposable pads caused burning, irritation, discomfort, and leakage (Hennegan, Kibira et al., 2020). Women feel it is important to avoid leakage, keep materials in place, and minimize odors related to menstruation (Shannon et al., 2021). Fifty-seven percent of respondents to Iris Group's Nepal baseline survey (2020b) reported their menstrual materials were comfortable; yet 70% of respondents worried that their product could move from its original place.

C. Women may experience ***safety issues*** when they need to manage their menstrual needs in the workplace. While most of the available literature on workplace menstruation issues focuses on the safety of physical spaces for managing menstruation (Hennegan et al., 2019; Sommer, Chandraratna et al, 2016)—as described under Determinants—these physical spaces as well as general experiences of menstruation may affect women's perceptions of their own safety or experiences of verbal, physical, or sexual harassment and violence. For example, women in Papua New Guinea reported that they avoided male colleagues due to a fear of teasing related to menstrual odors (Mohamed et al., 2018).

Individual Employment

Menstruation may also be linked to work-related outcomes, such as ***absenteeism/presenteeism***. A recent secondary analysis found that 19% of the women surveyed in Burkina Faso, 11% in Niger, and 17% in Nigeria reported missing work because of menstruation (Hennegan, Bukenya, Kibira et al., 2021). In Ghana, 32% of women working in the formal sector and 36% of women working in the informal sector missed work due to menstruation (Abanyie et al., 2019). A study in the Netherlands found that 33% of surveyed women miss work due to menstrual symptoms (Schoep et al, 2019). A U.S.-based study found that women with menstrual problems are significantly more likely to be absent from work for illness than women who do not have menstrual problems (Herrmann & Rockoff, 2013). As noted earlier, heavy bleeding has been found to be particularly impactful on work absenteeism (Liu et al., 2001; Tanaka et al., 2013; Hurskainen et al., 2001; Pron et al, 2003; Côté et al., 2002). Women who experience abnormal uterine bleeding (AUB)—bleeding outside of menstruation—also miss work while bleeding (Liu et al., 2007).

Even when those who menstruate do not miss work, they may face difficulties in their ***ability to complete their work*** as a result of menstruation-related concerns and symptoms. In Ghana, 32% of surveyed women working in the formal sector and 31% of women working in the informal sector reported that they were unable to concentrate fully and do their best when at work during menstruation (Abanyie et al., 2019). In the Netherlands, 81% of women surveyed reported that they were less resourceful during menstruation (Schoep et al., 2019). Seventy-three percent of women surveyed in Iris Group's Nepal baseline reported being distracted from their work due to menstruation (Iris Group, 2020b). A study with women recruited via LinkedIn found that women have reduced mental energy for other cognitive tasks or helping behaviors while working during menstruation (Motro et al.,

2019). Iris Group has also proposed that menstruation may ultimately ***impact women's earnings and advancement opportunities at work*** (USAID, 2019). A U.S. study found that menstruation could account for up to 4% of the gender gap in earnings (Herrmann & Rockoff, 2013).

3.0 METHODS

3.1 OVERVIEW

To develop and adapt measures to assess workplace-specific experiences, conditions, and impacts, we carried out a succession of activities to ensure the measures in our final survey instrument were robust prior to testing at scale. Specifically, we conducted a rapid review of literature and tools, adapted existing items, and created new items to fill identified gaps, engaged expert reviewers to assess survey items (content validity), and carried out cognitive interviews with women who work in each study location to assess acceptability and comprehensibility (face validity). Through data analysis, we further validated existing and new scales by confirming hypothesized factor structures with confirmatory factor analysis (CFA). In addition to providing a snapshot of participant experience across two unique settings, the descriptive statistics presented provide further information about the utility of items and responses. Specifically, items with low variability (e.g., the majority of participants selecting the same response) or high rates of participants choosing not to respond should potentially be excluded in future surveys. Additionally, item responses that were not selected in either location are also candidates for removal in future surveys, depending on context and population.

Simultaneous to the above activities to improve measures for assessing workplace-related menstrual experiences, determinants, and outcomes at the individual level, we also intentionally considered and included indicators and related measures that could be used for assessing menstruation in the workplace at scale. Notably, the selection of indicators and measures was informed by current efforts for monitoring menstruation at school or among school-aged girls undertaken by both the Joint Monitoring Programme on Water Supply and Sanitation (JMP) and an independent expert group. Proposed indicators and measures from these groups were modified for women in the workplace as applicable and additional indicators, and measures are proposed to fill identified gaps.

3.2 STUDY SETTING

Data were collected in Nepal and Kenya.

3.2.1 KENYA

In Kenya, surveys were conducted in four sub-counties within Nairobi: Embakasi, Kasarani, Njiru, and Lang'ata. These were decided in agreement with our country expert and the Iris Group team. Each sub-county offered variability in job types, sectors of work, as well as socioeconomic status. However, Embakasi, Kasarani, and Njiru offered access to more industrialized workplaces with the presence of factories and offices. Lang'ata is more varied in terms of sectors of work.

3.2.2 NEPAL

In Nepal, surveys were conducted in two districts within the Kathmandu Valley: Kathmandu district and Lalitpur district. These areas were selected based on discussions with country experts, both from the internal team and from Iris Group. The two districts offered variability in occupation and sectors of work (formal versus informal) as well as in socioeconomic status. Kathmandu and Lalitpur districts have a variety of work settings, with a concentration of urban, service-oriented workplaces such as banks, schools, hospitals etc., as well as a large share of informal workplaces, mostly in the form of markets.

3.3 PROCEDURES

3.3.1 PROPOSED INDICATOR IDENTIFICATION

Our team reviewed existing monitoring documents to inform our identification of a concise set of potential indicators for monitoring menstruation in the workplace. Specifically, we reviewed monitoring documents created by the WHO/United Nations Children's Fund (UNICEF) JMP to assess water and sanitation in school (UNICEF/WHO, 2018; JMP, 2018) and household environments (UNICEF/WHO, 2021), Guidance for Monitoring Menstrual Health and Hygiene by UNICEF (2020), and proposed guidance and indicators for national monitoring of girls' menstrual health and hygiene developed by the Global MHH Monitoring Group (GMMG [in press]). None of the documents contained indicators specific to menstruation in the workplace or while working. However, the indicators proposed or used within the documents served as an important launch point given that they have been well vetted and many have been tested and are easily adaptable to work (e.g., those that ask about the school setting can be adapted to ask about the workplace setting).

In creating our proposed list of indicators, we specifically tailored indicators and corresponding measures to enable assessment among individuals via individual or household-level surveys. Such measures can be adopted by broad scale surveys, like the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS), which collect data from nationally representative samples in a vast number of countries at regular intervals. While systems do exist in myriad countries for assessing institutions like schools and health care facilities, there are not equivalent systems for monitoring and assessing where individuals work, which may include both formal and informal workplaces, or even multiple workplaces. As such, in order to include assessment of locations where menstruators work, we modified indicators and corresponding measures to be asked at the individual level.

Further, specific recommendations presented in the UNICEF guidance document (2020) informed our approach, namely:

- Proposed indicators should undergo further validation, including a more comprehensive and intentional review process that includes key stakeholders.
- Indicators should be assessing something that is able to change in a reasonable timeframe.
- Measures to assess indicators should be pre-tested across locations.
- Measures should provide useful information.
- For interventions, indicators should aim to assess change along a theory of change or results chain. While this work does not involve interventions, the need for a clear theory or conceptual model remains. We developed a conceptual model, which we present as a key output, and identified corresponding indicators along the conceptual model to ensure comprehensiveness.

3.3.2 SURVEY DEVELOPMENT

Our team identified both potential scales and individual items from a number of sources. Specifically, we identified candidate measures and items from the following:

• Iris Group Baseline/Endling Questionnaire for Women	• Menstrual Bleeding Questionnaire (MBQ) (Matteson et al., 2015)
• Menstrual Practice Needs Scale (MPNS) (Hennegan, Nansubuga, Smith et al., 2020)	• Menorrhagia Multi-Attribute Scale (MMAS) (Pattison et al., 2011)

• Menstrual Insecurity (MI) scale (Caruso, Portela et al., 2020)	• Menorrhagia Impact Questionnaire (MIQ) (Bushnell et al., 2010)
• Agency, Resources, and Institutional Structures for Sanitation-related Empowerment Scale: Menstruation (ARISE-M) (Sinharoy et al., 2021)	• Self-Efficacy in Addressing Menstrual Needs Scale (SAMN) (Hunter, 2019)
• General ARISE tool (Sinharoy et al., 2021)	• UNICEF's MHM Monitoring Resource (UNICEF, 2020)
• Performance Monitoring for Action tool (PMA) (Hennegan et al., 2018; Zimmerman & Olson, 2017)	• Demographic and Health Survey (DHS) 8 Household Survey (DHS 8 Household) (ICF, 2021)
• DHS 8 Women's Survey (DHS 8 Women) (ICF, 2021)	• Multiple Indicator Cluster Survey Questionnaire for Individual Women (MICS 6) (UNICEF, 2021)
• JMP Core Questions and Indicators for Monitoring WASH in Schools in the Sustainable Development Goals (JMP, 2018a)	• JMP Core Questions and Indicators for Monitoring WASH in Health Care Facilities in the Sustainable Development Goals (JMP, 2018b)
• JMP for Water Supply, Sanitation, and Hygiene Household Questionnaire (JMP 2018c)	

Items and factors from existing tools were mapped against each of the identified determinants and outcomes of interest and revised as needed to tailor them to adult women in a workplace environment. These revised items comprised the first draft of the survey.

3.3.3 SURVEY REFINEMENT

Expert Review

The survey was then submitted to subject matter experts in the field of menstruation and measurement for review. Marni Sommer, Belen Torendel, Erin Hunter, and Julie Hennegan examined the individual items and the structure of the tool to assess content, and provided feedback to revise and/or drop items.

Feedback from Local Stakeholders

Additional revisions were made based on feedback from local institutional review boards and data collection teams. Demographic questions on religion and caste were edited under advice from the Nepali research team. The Nepal Health Research Council designated one question on specific symptoms related to reproductive health tract infections to be outside the scope of research; this item was also identified by the Nepali research team as sensitive and possibly inappropriate and was dropped from the questionnaire. In accordance with suggestions from Nepali team members, we also opted only to ask women who were married or living with a partner a question about use of contraceptives to avoid offending unmarried participants. In Kenya, the data collection team flagged that a question about ethnicity might be considered sensitive or beyond the scope of the research activity; this question was removed. In Nepal, based on enumerator feedback, two religion response options (Christian [Catholic] and Christian [Protestant]) were combined into a single category (Christian). Also, in Nepal, the team determined that the question asking about the value of in-kind payment was difficult to answer and omitted it.

Members of local research teams advised revisions to translations for clarity. Response options for job types were also revised as a result of enumerator difficulties in categorization.

Cognitive Interviews

We used cognitive interviews to test the appropriateness (content validity) of survey items and to ensure that items are assessing what they intend to measure (face validity) (DeVellis, 2017). Cognitive

interviews were conducted by a pair of trained enumerators. An interviewer conducted the interview while a note-taker recorded field notes. asked consenting participants each question and provided response options. Participants were asked to think aloud as they selected a response option. They were then asked probing questions, such as questions to assess if the item was easy or difficult to understand, what the question meant to the participant, how they may define specific words in the question, or how they went about selecting a response option. These conversations about the questions helped the data collection team understand if participants interpreted questions as they were meant to be understood. Participants were encouraged to ask enumerators for explanations when needed; these explanations were recorded to aid revisions. The note-taker used guides created by the Emory/Athena team to note difficulties with translation and to record respondents' answers and explanations, as well as their own observations related to facial expression and body language. The interview was digitally recorded.

Cognitive interview data were used to revise items that were poorly understood or needed further adaptation from the original text, to eliminate questions and topics that were inappropriate for the context, and to test translations. Due to the number of survey items, we split the survey into two separate cognitive interview guides: one that focused on menstruation practices and the workplace environment (e.g., types of materials used, frequency of changing materials, access to private places to change, access to soap and water, etc.), and one that included various items from pre-existing scales for measuring needs, bodily integrity, self-efficacy, stigma, and the social environment of the workplace.

Cognitive interviews were planned to be conducted with 15-20 adult women (ages 18+) who work for pay outside the home in each site. The planned sampling strategy was to purposively include women with varied work types. However, due to COVID-19 lockdowns and project delays, we had to adjust our timeline and adapt our protocol. Instead of conducting cognitive interviews in the field among the target population, we recruited directly from our survey enumerator teams in each location; in Nepal, we also recruited some participants who were members of the support staff for the data collection agency. In total, the teams conducted 27 cognitive interviews (15 in Kenya; 12 in Nepal). Thirteen individuals participated in interviews in Kenya, with two individuals participating in both types of interviews. Six individuals participated in the interviews in Nepal, with all six participating in both types of interviews.

After each day or two of data collection, each enumerator pair debriefed (virtually) with the Emory/Athena team members. During these debriefing sessions, the enumerators shared the responses of the participants to each survey-style question and probe, as well as any insights the enumerators had into issues related to translation, comprehensibility, difficulty, or contextual relevance. In Nepal, the country coordinator also attended each debriefing session to aid with translation from Nepali to English.

Throughout the debriefing process, enumerators were engaged as active collaborators in the survey refinement process. The Emory/Athena team recorded notes from these debriefings in Excel workbooks and digitally recorded the debriefing sessions to facilitate recall. After cognitive interviews were completed in each country, the Emory/Athena team met with the full data collection team for a group debrief so that data collectors could compare experiences, provide insights, and make recommendations.

After all cognitive interviews and debriefs were completed, the data across both settings were merged into one workbook so that all responses to each question could be viewed at once. The Emory team then reviewed all feedback received from participants and enumerators and identified issues such as translation errors, problems with comprehension or difficulty, and issues of sensitivity. Cognitive interview data were used to revise, eliminate, or add survey items as appropriate, based on whether they were found to be culturally appropriate, relevant, and well understood. Items that captured similar content through different phrasing were reduced according to participant/enumerator feedback and planned statistical analyses.

3.3.4 SURVEY

Participant Eligibility

Adult women (18 years of age or older) who had experienced a menstrual period while working outside their homes for cash or in-kind payments in the previous three (Kenya) or six (Nepal) months and who were free of COVID-19 symptoms or exposure were eligible to participate. We expanded the timeframe in Nepal to include women who experienced a menstrual period while working in the previous six months due to persistent lockdowns associated with COVID-19. We assumed the lockdowns may have prevented women from attending work in the previous three months, and expanding the timeframe to six months may improve our ability to find eligible participants.

We excluded women who failed to pass a COVID-19 screening (including questions about exposure and symptoms as well as a temperature check), who had not experienced a menstrual period while at work outside the home in the past three months (Kenya) or six months (Nepal), who were younger than age 18, and who could not verbally communicate in English or Swahili (Kenya) or English or Nepali (Nepal).

Sample Size

We aimed to survey approximately 600 women in each location. Our sample size was driven by the scale validation process. Consensus is lacking on optimal sample size for scale development, ranging from 5 to 15 respondents per item (Morgado et al., 2017; Johanson & Brook, 2010). For rigor, we aimed to have approximately 15 respondents per item. The longest scale we adapted is the MPNS, which contains 36 items, of which we retained 28 after the adaptation to focus on the workplace and feedback during the cognitive interview process, and added an additional six to test, suggesting the need for 540 participants. We rounded the sample size to 600 to allow for ~10% non-response and missing data.

Data Collection

A. Training

Enumerator teams participated in separate one-week hybrid (mixed virtual, in-person, and field) training prior to data collection in each country. Training covered topics such as research objectives, research ethics and informed consent, recruitment procedures, field research protocols, an introduction to the use of tablets, and an overview of all survey modules. At the end of the classroom training, the enumerators took turns conducting mock interviews with each other using the full survey tool on Android tablets via Zoom breakout rooms (Kenya) or role-play (Nepal). Team survey practice was followed by a day of field-based piloting in both Kenya and Nepal, where each enumerator completed an average of two to three surveys. Enumerators provided feedback on the tool at various stages of the training, including while reviewing each survey module, after conducting mock surveys, and after completing the pilot test.

B. Sampling and Recruitment

We used a two-stage sampling approach in both sites. First, we purposively selected sub-counties and neighborhoods in each location in coordination with local partners. Second, in each selected neighborhood we randomly selected households to approach to determine if there was an eligible woman available and willing to participate in the survey. Further details are provided below.

In Kenya, Adaptive Management and Research Consultants (AMREC, the local data collection firm) and our in-country experts (Annabell Waititu and Wambui Gathoga) selected the sub-counties of Embakasi, Kasarani, Njiru, and Lang'ata since they offered diversity in the types of neighborhoods that could be further sampled. In each of the sub-counties, AMREC purposively selected neighborhoods to obtain as diverse a pool of respondents as possible, with regard to different job types/occupations and

socioeconomic backgrounds. In total, 23 neighborhoods were sampled across the four sub-counties (10 in Embakasi, 3 in Kasarani, 6 in Njiru, and 4 in Lang'ata).

In Nepal, the local data collection partner Nepal Institute for Social and Environmental Research (NISER), with inputs from the country expert (Smriti Shah), purposively selected the three main districts in Kathmandu Valley (Kathmandu, Lalitpur, and Bhaktapur) for their accessibility. Districts outside the Kathmandu Valley are difficult to access due to the terrain and geography of the region and support more rural occupations. Due to heavy rains and difficulties accessing the area during the survey period, Bhaktapur was later dropped from the sample. NISER then selected three neighborhoods in each of the two remaining districts (Kathmandu and Lalitpur) based on socioeconomic diversity.

Within each of the selected neighborhoods in both cities, households were randomly selected by knocking on every third door. If no woman was home or the door was not answered, the enumerator proceeded to the house next door. If a woman answered and was ineligible for participation or refused to participate, the enumerators were instructed to proceed with the random sampling approach, moving on to the third door down the street. Consent was obtained from those who met the eligibility criteria. The surveys were administered only if the enumerators could ensure sufficient privacy. In circumstances where this was a concern, the enumerators requested to move to a different setting within the same house or discontinued the survey. Enumerators tracked the total number of households approached, marking down whether the house was inaccessible, if no one was home, if no one was eligible, if participants were eligible and refused to participate, and if participants were eligible and consented to participate.

In Nepal, the enumerators had to enlist the help of local facilitators as many households had COVID-related concerns about talking to a stranger. The facilitators helped the team avoid areas or houses with reported COVID-19 cases and introduced the enumerator to the household to abate any concerns while adhering to the random sampling approach. Additionally, in Nepal, we accommodated requests from self-employed women who were recruited at their homes but wanted to be interviewed at their workplaces so they could continue to work.

C. Consent Process

The consent process took place once participants were screened and determined to be eligible for inclusion, immediately preceding the survey. Potential participants were provided with copies of the consent forms to keep, and enumerators read the consent form aloud to participants to ensure comprehension. These forms stressed the voluntary nature of the interaction, the risks, the time burden, and the participants' right to withdraw at any time. The consent form included contact information for a local study contact as well as the Emory Institutional Review Board (IRB) so that participants could follow up as needed with any questions. Participants were asked if they had any questions on the consent or the interaction before being asked to verbalize consent. During training, enumerators were encouraged to check for participant understanding, answer any questions, and remember that consent is an ongoing process throughout the interaction.

D. Survey Administration

The final survey included 25 sections (Table 1) and up to 199 questions (Kenya) or 200 questions (Nepal), depending on skip patterns. The survey took approximately 45 minutes to 1 hour 30 minutes to complete. Enumerators conducted surveys using tablets equipped with Open Data Kit (ODK).

Table 1: Survey Sections and Items

	Survey Section	Total Items	Source of Items (if other than Emory/Athena team)
	Screening	13	
Det.	Demographics	29 (Kenya) 30 (Nepal)	Adapted from ARISE[1] (1) Adapted from ICSED[2] (1) Adapted from DHS[3] (Kenya: 8; Nepal: 9) Adapted from Hennegan[4] (2)
Exp.	Self Efficacy	7	Adapted from Iris[5] (1) Adapted from the SAMN[6] (2)
Exp.	Bodily Integrity	5	Adapted from ARISE[1] (4) Adapted from MPNS[7] (1)
Exp.	Menstrual Needs	34	Adapted from MPNS[7] (28)
Exp.	Menstrual Practices	17	Adapted from MPQ[8] (6) Adapted from MPQ[8]/PMA2020[9] (1) Adapted from UNICEF[10] (1) Adapted from ARISE[1] (1)
Exp.	General Menstruation Experiences	8	Adapted from Hennegan[4] (5)
Det (B)	Heavy Bleeding	9	Adapted from SAMANTA[11] (6) Adapted from UK-NHS Heavy periods self-assessment[12] (1) Adapted from Benshaul-Tolonen[13] (1)
Det (B)	Pain and Symptoms	2	Adapted from MI[14] (1) Adapted from Hennegan[4] (1)
Det (I)	Access to Resources – Pain Management	2	Adapted from Iris[5] (1)
Outcome	Individual Well-Being – Menstruation-Related Stress and Tension	3	Adapted from ARISE[1] (3)
Outcome	Individual Well-Being - Safety	4	Adapted from ARISE[1] (2) Adapted from Iris[5] (1)
Det (W)	Workplace Physical Environment	22	Adapted from Iris[1] (11) Adapted from Hennegan[4] (1)
Det (I)	Access to Resources - Materials	1	MPNS[7] (1)
Det (W)	Institutional Policies	3	Adapted from ARISE[1] (2)
Det (W)	Social Environment	4	Adapted from Iris[5] (1) Adapted from UNICEF[11] (1) Adapted from ARISE[1] (1)
Outcome	Social Impact/Stigma	1	Adapted from MI[14] (1)
Det (I)	Knowledge	1	Adapted from Mohammed[15] (1)
Outcome	Individual Well-Being – Health	10	Adapted from DHS[3] (1) Adapted from PHQ-4[16] (4) Adapted from WHO-5[17] (5)
Outcome	Presenteeism	3	Adapted from SPS6[18] (3)
Outcome	Absenteeism	7	Adapted from Hennegan[4] (1) Adapted from WHO-HPQ[19] (1) Adapted from UNICEF[11] (2)
Outcome	Earnings	1	
Outcome	Job Satisfaction	2	Adapted from BIAJS[20] (1)
Det (I)	Access to Resources – Social Support	3	Adapted from ARISE[1] (2)
Other	COVID Impact	7	
	TOTAL	195 (Kenya) 196 (Nepal)	

Sources

1. Sinharoy et al., 2021
2. UNESCO, 2012
3. ICF, 2021
4. Hennegan, Bukenya, Kibira et al, 2021
5. Iris, 2020
6. Hunter, 2019
7. Hennegan, Nansubuga, Smith et al, 2020
8. Hennegan, Nansubuga, Akullo et al, 2020
9. Hennegan, OlaOlorun et al, 2021
10. UNICEF, 2020
11. Calaf et al, 2020
12. NHS, 2021
13. Benshaul-Tolonen et al, 2021
14. Caruso et al, 2020
15. Mohammed et al, 2020
16. Korenke et al, 2009.
17. Topp et al., 2015
18. Koopman et al, 2002
19. Kessler et al., 2003
20. Thompson & Phua, 2012

3.3.5 DATA ANALYSIS

Descriptive Statistics

We used Stata (StataCorp, 2021 [version 16]) to generate and present descriptive statistics of all items in the survey. We also generated scores for select measures as appropriate. Specifically, in addition to the factor scores noted below, we generated scores for the WHO-5, a measure of well-being (Bech et al., 2003; Topp et al., 2015), the Patient Health Questionnaire for Anxiety and Depression (PHQ4), a measure of depression and anxiety (Kroenke et al., 2009), and SAMANTA, a questionnaire to assess heavy bleeding (Calaf et al., 2020).

The WHO-5 Well-Being Scale comprises five items that ask about the frequency of a variety of feelings over the previous two weeks. All five items have response options: at no time, some of the time, less than half of the time, more than half of the time, most of the time, and all the time (scored 0 to 6, respectively). Response options are then summed across these five items such that total scores range from 0 to 25. Scores below 13 indicate poor well-being (Bech et al., 2003; Topp et al., 2015).

The PHQ4 consists of four items that ask about the frequency of being "bothered by the following problems." which are each indicative of symptoms of anxiety or depression. All four items have response options: not at all, several days, more than half the days, or nearly every day (scored 0 to 3, respectively). Response options are then summed across these four items such that total scores range from 0 to 12. Values 0-2 are rated as "normal," 3-5 as "mild," 6-8 as "moderate," and 9-12 as "severe" (Kroenke et al., 2009).

The SAMANTA Questionnaire is made up of six binary (yes/no) items concerning experiences with heavy menstrual bleeding. Two items contribute three points to the sum score if answered "yes." (*Do you experience menstrual bleeding for more than 7 days per month? In general, does menstruation bother you due to its abundance?).* Four of the items contribute one point to the sum score if answered "yes." (*Do you experience 3 or more days of heavier menstrual bleeding during your menstrual period? During any of these heavier menstrual bleeding days, do you spot your clothes at night or would you spot them if you did not use double protection/did not change your clothes during the night? During these heavier menstrual bleeding days, are you worried about staining the chair, sofa, etc.? In general during these heavier menstrual days, do you avoid, as far as possible, some activities, trips or leisure-time plans because you frequently need to change your tampon or sanitary towel?).* Items answered "no" contribute zero points to the sum score. Summed score values greater than or equal to 3 indicate that a woman may have heavy menstrual bleeding (Calaf et al., 2020).

Validation: Confirmatory Factor Analysis

We conducted CFA on the MPNS, Bodily Integrity, Safety, and Self-efficacy scales. CFA is recommended when existing theory or empirical evidence indicates a hypothesized factor structure (Bandalos & Finney, 2018; Richardson, 2018). Thus, we conducted CFAs on each of these scales to validate that the existing,

hypothesized factor structures for these tools fit the data collected from women in the workplace in Kenya and Nepal.

We conducted all CFAs in MPLUS version 8.6 (Muthén & Muthén, 2014) using the weighted least square parameter estimate (WLSMV) as all items had ordinal, categorical responses (Muthén & Muthén, 2014). Women who answered "Choose not to respond" or "Not applicable" for any of the items in the given model were removed from the analytic sample for that CFA. The loadings (i.e., item-factor relationships) were assessed and reported for each item. Best practice for factor analysis indicates that items with factor loadings with an absolute value of <0.30 do not adequately load onto the assigned factor and should be omitted (Bandalos & Finney, 2018; Costello & Osborne, 2005). To assess model fit, we used the root mean square error of approximation (RMSEA) as a measure of absolute model fit as well as the comparative fit index (CFI) and Tucker-Lewis index (TLI) as measures of relative model fit. For RMSEA, values <0.08 indicate adequate fit and values <0.05 indicate good fit (Browne & Cudeck, 1989). For CFI and TLI, values >0.90 indicate adequate fit and values >0.95 indicate good fit (Bentler & Bonett, 1980; Hu & Bentler, 1999; Marsh et al., 2005).

For each of the four scales (MPNS, Bodily Integrity, Safety, and Self-Efficacy), we generated factor scores by summing responses across all items within the given factor and dividing by the number of items in the factor. Factor scores were generated in Stata (version 16). The MPNS' response scale (never, less than half the time, more than half the time, and always) was scored from 1 to 4, respectively. MPNS "needs" factors with higher scores indicate that needs are more likely to have been met. MPNS "insecurity" factors with higher scores indicate that women are more menstruation "insecure" (i.e., more worried about their ability to meet their needs).

The Bodily Integrity and Safety scales' response options (never, sometimes, often, always) were scored from 1 to 4, respectively. The Self-Efficacy scale's response options (not at all confident, slightly confident, very confident, completely confident) were scored from 1 to 4, respectively. Items on these scales which indicate lower bodily integrity, safety, or self-efficacy (e.g., BI06. *I had to delay changing my menstrual material because I did not have access to a satisfactory location.*) were reverse coded such that higher scores uniformly indicate more bodily integrity, safety, or self-efficacy.

3.4 COVID-19 SAFETY PRECAUTIONS

To protect the data collection team, respondents, and local communities from the spread of COVID-19, the research team adhered to COVID-19 safety precautions. These precautions included a daily screening of the members of the data collection team, including temperature checks and symptom and exposure screenings. Members of the data collection team were required to wear masks, and when possible, data collection took place outside or from a distance of 6 feet. Participants submitted to a temperature check and were asked a series of screening questions during recruitment about exposure and symptoms that confirmed their eligibility to safety participate (see Annex A).

3.5 ETHICS APPROVALS

The Emory University Institutional Review Board in Atlanta, Georgia, USA (00002617), the United States International University – Africa in Nairobi, Kenya (USIU-A/IRB/19402921), and the Nepal Health Research Council in Kathmandu, Nepal (344/2021 P) approved study protocols. In Kenya, the National Commission for Science, Technology, and Innovation granted a license to conduct research (NACOSTI/P/21/1161).

4.0 POTENTIAL INDICATORS

Aligned with the revised conceptual model, we identified 21 potential indicators, including 12 for determinants (eight at the workplace level and four at the individual level), five for work menstruation experiences, and four for individual well-being and employment outcomes. Each of these indicators is assessed by asking questions of individuals. Ideally, some assessments of workplace level determinants would be carried out at the places where women spend most of their time when working outside the home. For example, to monitor school water and sanitation, WHO/UNICEF JMP collates and reports on data about toilet and water access at the schools themselves, enabling the reporting of the proportion of schools that provide services by country (JMP, 2020). However, generating and reporting on data about institutions requires established systems for collecting such data. While systems and agreed-upon metrics for assessing school-level data exist in a growing number of countries (which include the collection of data beyond WASH), similar mechanisms for collecting workplace-level data are not widely established. Further, establishing systems or agreement about what to measure at the workplace may not be appropriate given the variety of workplaces that exist and that not all individuals who work do so in formal settings. Therefore, we explicitly identified indicators and corresponding measures that can be assessed by surveying individuals in order to facilitate uptake with existing systems of data collection, like, for example, Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS). Finally, the indicators all refer to women because we tested these indicators and measures with women specifically and we expect they may be taken up by initiatives or data collection efforts that engage women specifically (e.g., DHS). That said, these indicators and measures could be adapted for use with menstruators who do not identify as women and the term 'woman' in each indicator could be changed to 'menstruator' as appropriate.

For indicators representing **workplace-level determinants**, we identified one to assess the social environment, one to assess institutional policies, and six to assess the physical environment, including five related to WASH. While these workplace-level determinant measures and indicators are limited in that they will not be able to generate a snapshot of the proportion of workplaces in a given location that provide supportive MHH-related services, they will be able to generate data on the proportion of women who report working in environments that are or are not supportive when menstruating.

Among the **individual-level determinant indicators**, we identified one related to knowledge, one related to materials, one related to pain management, and one related to social support. We did not include any indicators to assess **biological-level determinants.** In the sections that follow, we report on several biological level measures that can be taken up by governments, research, or programs to help understand a specific population. However, a key criteria for selecting the indicators is that they assess something that can change or be changed in a reasonable timeframe (UNICEF, 2020). At the biological level, we assessed irregularity, pain and symptoms, and heavy bleeding. While these conditions could conceivably change for individuals over time, there is not a strong rationale for regular monitoring of these conditions at the population level.

To monitor **workplace menstruation experience,** we propose five indicators, one for menstrual practices while working, one for pain remediation, one for bodily integrity, and two for self-efficacy. We propose four indicators to monitor outcomes, two related to individual well-being and two related to employment. While these are proposed here, it is important to note that they may be better suited for monitoring or assessing programs or policies that may seek to change these outcomes specifically. If there are no programs, policies, or initiatives taking place that could conceivably have impact on these outcomes, it would not be worth regular monitoring across populations.

Table 2 presents data for each of the indicators proposed and provides an explanation as to how each proposed indicator was identified, how it is measured, and what source informed the indicator

identification and measurement. Many of the proportions provided in Table 2 can also be found in the tables in the following sections and are simple to derive. Some, however, require analysis of several variables. Additional information for generating the data shown is provided in Annex B.

Table 2: Potential List of Indicators with Data Overall and by Country

Domain	Proposed Indicator & Information about indicators and related measures	All	Kenya	Nepal
Determinants: Workplace Level				
Social Environment	**Proportion of women who agree or strongly agree that women where they work hide the fact that they are menstruating**	36.9%	57.5%	8.6%
	This indicator aligns with one included in the guidance by UNICEF (2020) to assess stigma. The indicator proposed by UNICEF assesses the extent that individuals being interviewed disagree that menstruation should be kept a secret and is noted as a potential indicator for stigma. For the purpose of understanding the workplace social environment, our adapted measure and indicator does not assess what the participant believes, but assesses the extent participants agree that *women where they work* hide their menstrual status. The assumption is that those who agree that others hide their menstrual status suggests that menstruation is not socially acceptable to discuss or reveal. The question is only asked of women who share a workplace with other individuals and the indicator should only include women who report sharing a workplace with others who menstruate.			
Institutional Policies	**Proportion of women who report being able to take a break to meet their menstrual needs whenever they need to while working outside the home**	69.1%	77.8%	56.4%
	This indicator aligns with one included in the guidance by UNICEF (2020). The proposed UNICEF indicator assesses the proportion of women/girls who were able to change their menstrual materials when they wanted while at [home/school/elsewhere]. UNICEF's suggested accompanying measure is adapted from the MPNS-36 (Hennegan, Nanasuba, Smith et al., 2020). As it is not feasible to assess actual workplace policies, we adapted the indicator, measure, and response options further to serve as a proxy for understanding if workplace policies or rules exist (whether written or unwritten) that impose restrictions on an individual's ability to meet their needs as needed.			
Physical Environment: Material Access	**Proportion of women whose workplaces provide menstrual materials to employees, whether for free or at a cost**	36.6%	40.9%	30.2%
	This indicator aligns with one proposed by the Global MHH Monitoring Group (GMMG, In Press). The proposed GMMG indicator specifically seeks to monitor the availability of materials at the school level in case of emergency. The measure we used to assess this indicator was adapted from the baseline assessment of workplace menstruation carried out by Iris Group (2020a, 2020b).			
Physical Environment: WASH	**Proportion of women reporting that they have access to sanitation facilities that are single-sex at their workplace**	71.3%	78.8%	60.4%
	This indicator aligns with core questions adopted by the WHO/UNICEF JMP for monitoring WASH in Schools (2020, 2018a). JMP specifically reports on the proportion of schools with basic sanitation service as the indicator. Having single-sex toilets is a component of basic sanitation. Our measure is adapted from the school level JMP measure (2018a) to collect data at the individual level about the individual's workplace.			
Physical Environment: WASH	**Proportion of women who reported changing their menstrual materials *at their workplace* in a space that was clean, private, and safe during their last menstrual period**	67.7%	54.7%	78.3%
	This indicator is informed by questions adopted by the WHO/UNICEF JMP for monitoring WASH in Schools (2020, 2018a), questions from the Performance Monitoring for Action (PMA) 2020 survey program (PMA, 2020), and aligns with one of the proposed indicators for monitor MHH among girls by the Global MHH Monitoring Group (GMMG, In Press). This indicator requires several questions. The questions used to assess cleanliness and privacy were adapted from the baseline assessment of workplace menstruation carried out by Iris Group (2020a, 2020b). The Iris Group questions were likely informed by the MPNS			

Domain	Proposed Indicator & Information about indicators and related measures	All	Kenya	Nepal
	(Hennegan, Nansubuga, Smith et al. 2020). The question about safety was adapted from ARISE (Sinharoy et al., 2021). Note that this indicator only reports on those who specifically report changing *at their workplace.*			
Physical Environment: WASH	**Proportion of women who changed their menstrual materials ***while working*** outside the home in a space that was clean, private, and safe during their last menstrual period.**	71.4%	61.6%	79.4%
	This indicator is similar to the one above that asks about conditions in the place the person changed at their workplace. However it is importantly distinct. While the above is specific to women who change at their workplace, this indicator involves all women who changed *while working* regardless of whether or not the location where they changed was at their workplace. As above, this indicator is informed by questions adopted by the WHO/UNICEF JMP for monitoring WASH in Schools (2020, 2018a) and aligns with one of the proposed indicators for monitoring MHH among girls by the Global MHH Monitoring Group (GMMG, In Press). This indicator requires several questions. The questions used to assess cleanliness and privacy were adapted from the baseline assessment of workplace menstruation carried out by Iris Group (2020a, 2020b). The Iris Group questions were likely informed by the MPNS (Hennegan, Nansubuga, Smith et al., 2020). The question about safety was adapted from ARISE (Sinharoy et al., 2021).			
Physical Environment: WASH)	**Proportion of women who changed their menstrual materials ***while working*** outside the home in a space that was clean, private, safe, lockable, and available when needed during their last menstrual period**	4.9%	4.0%	5.6%
	This indicator is similar to the one above that asks about conditions in the place the person changed *while working,* but asks about additional conditions that were informed by the JMP (2020, 2018a): lockability and availability when needed. However it is importantly distinct. While the above is specific to women who change at their workplace, this indicator involves all women who changed *while working* regardless of whether or not the location where they changed was at their workplace. As above, this indicator is informed by questions adopted by the WHO/UNICEF JMP for monitoring WASH in Schools (2020, 2018a) and aligns with one of the proposed indicators for monitoring MHH among girls by the Global MHH Monitoring Group (GMMG, In Press). This indicator requires several questions. The questions used to assess cleanliness and privacy were adapted from the baseline assessment of workplace menstruation carried out by Iris Group (2020a, 2020b). The Iris Group questions were likely informed by the MPNS (Hennegan, Nansubuga, Smith et al., 2020). The question about safety was adapted from ARISE (Sinharoy et al., 2021).			
Physical Environment: WASH	**Proportion of women reporting that there is water and soap available in a private place to manage menstruation at their workplace**	40.5%	30.0%	56.0%
	This indicator aligns with one of the expanded questions reported on by WHO/UNICEF JMP for monitoring WASH in schools (2020, 2018a). The WHO/UNICEF JMP reports on the proportion of schools that have water and soap available in a private place for girls in school. The GMMG (In Press) has proposed to have this be a priority school level indicator for monitoring menstrual health and hygiene among girls. Our measure is adapted from the school level JMP measure (2018a) to collect data at the individual level about the individual's workplace.			
Determinants: Individual Level				
Knowledge	**Proportion of women who reported that they can usually predict when their menstruation will start**	86.7%	82.4%	96.8%
	The GMMG (In Press) recommends an indicator for girls that assesses having correct knowledge related to the fertile period during the ovulatory cycle and using items in the DHS for assessment. UNICEF (2020) also recommends these DHS items to assess knowledge. The indicator proposed by the GMMG is certainly applicable beyond girls and could be adopted for assessing menstruation-related knowledge for anyone. We are not recommending it as an indicator here as it is not specifically relevant to work. However, we do recognize the importance of knowledge related to the menstrual cycle, specifically practical knowledge. As such, our proposed knowledge indicator assesses whether or not women can predict when their menstruation will start. The item is from a cross-sectional survey administered by Hennegan et al in Uganda (Hennegan, Bukenya, Makumbi et al., 2021).			

Domain	Proposed Indicator & Information about indicators and related measures	All	Kenya	Nepal
Materials	**Proportion of women who reported always having enough menstrual materials during their last menstrual period while working outside the home**	69.5%	63.6%	78.0%
	This indicator aligns with one proposed by the Global MHH Monitoring Group (GMMG, In Press). The proposed GMMG indicator specifically seeks to monitor the proportion of girls who report having enough menstrual materials during their last menstruation. The indicator is assessed by using a modified item from the MPNS (Hennegan, Nansubuga, Smith et al., 2020). As is pointed out by the GMMG guidance document, adequate menstrual access also could be assessed by asking about sufficient quality or quantity of materials, or if an individual uses their preferred materials. However asking if individuals have enough represents a basic level of access (GMMG, In Press).			
Pain Management	**Proportion of women who report always being able to get pain remedies when needed during their last menstrual period while working outside the home**	62.0%	54.7%	74.0%
	This indicator aligns with one included in the guidance by UNICEF (2020). The proposed UNICEF indicator assesses the proportion of women/girls who have access to resources for menstrual pain management. Our adaptation more specifically seeks to assess if they were *always* able to get pain remedies for their last menstruation *while at work.* The measure we used is adapted from the Iris Group baseline (2020a, 2020b) and included in the guidance from UNICEF (2020).			
Social Support	**Proportion of women who report that they would feel comfortable seeking help for menstrual problems from a health care provider**	87.9%	87.9%	87.9%
	This indicator aligns with one proposed by the Global MHH Monitoring Group (GMMG, In Press). The proposed GMMG indicator specifically seeks to monitor the proportion of girls who report feeling comfortable seeking help for menstrual problems from a health care provider. The item is from a cross-sectional survey administered by Hennegan et al in Uganda (Hennegan, Bukenya, Makumbi et al., 2021).			
Work Menstruation Experiences				
Menstrual Practices while working	**Proportion of women who changed their menstrual materials during their last menstrual period while working outside the home [among those who needed to change them]**	94.6%	96.3%	91.8%
	This indicator aligns with one proposed by the Global MHH Monitoring Group (GMMG, In Press). The proposed GMMG indicator specifically seeks to monitor the proportion of girls who reported changing their menstrual materials at school during their last period. We modified the indicator, not just switching 'at school' with 'at work', but intentionally saying 'while working outside the home' as not all will have a formal workplace. In addition, the proportion is only among those who needed to change their materials. As is noted by the GMMG, this indicator illuminates those unable or unwilling to change while working. Further, this indicator should be used with and reported alongside the indicators about the environments where individuals reported changing (See workplace level determinants).			
Pain remediation	**Proportion of women who reported that they are able to reduce their menstrual (abdominal/back/ cramping) pain when they needed to while working outside the home**	97.0%	96.6%	97.6%
	This indicator aligns with one proposed by the Global MHH Monitoring Group (GMMG, In Press). The proposed GMMG indicator specifically seeks to monitor the proportion of girls who reported they could reduce pain. The UNICEF (2020) guidance proposes a similar indicator seeking to assess the proportion of women/girls who report being able to effectively manage menstruation-related pain and also proposed a question about pain reduction. The item we used was adapted by those in the UNICEF (2020) guidance document as well as by an item created by Hunter to assess confidence in reducing pain (2019).			
Bodily Integrity	**Proportion of women who reported that their work responsibilities prevented them from addressing their menstruation-related needs at least some of the time during their last menstrual period**	41.4%	42.0%	40.5%

Domain	Proposed Indicator & Information about indicators and related measures	All	Kenya	Nepal
	We did not identify another indicator elsewhere similar to this one, however as bodily integrity is a component of our guiding conceptual model, we felt it important to include an indicator that assessed if and how work prevented women from addressing their menstrual needs. The measure used to assess this indicator is adapted from the ARISE scales (Sinharoy et al., 2021).			
Self-Efficacy: Working	**Proportion of women who reported not feeling completely confident working during their menstruation**	85.5%	94.1%	72.9%
	We did not identify another indicator elsewhere assessing confidence related to working during menstruation. However, to maintain alignment with the guiding conceptual model, we include it here. The item was developed by the Emory team.			
Self-Efficacy Managing	**Proportion of women who reported not feeling completely confident in their ability to manage menstruation when working outside the home**	80.5%	92.7%	62.5%
	This indicator aligns with one included in the guidance by UNICEF (2020). That indicators seeks to assess the proportion of girls that feel confident that they have the practical skills needed to manage their menstruation and offers a corresponding item adapted from the Simavi Ritu baseline survey (Sol et al., 2019). The item we used was informed by this item and from the baseline assessment of workplace menstruation carried out by Iris Group (2020a, 2020b).			
Outcomes				
Individual well-being: Stress	**During their last menstrual period while working… Proportion of women who reported experiencing stress at least sometimes when they last needed to access a location to change their menstrual materials**	25.3%	30.3%	17.0%
	This indicator aligns with one included in the guidance by UNICEF (2020), which seeks to assess the proportion of girls who worried about using the school bathroom during their last menstrual period. The measure used to assess this indicator is adapted from the ARISE scales (Sinharoy et al., 2021).			
Individual well-being: Safety	**During their last menstrual period while working… Proportion of women who reported that concerns about safety at least some of the time prevented them from changing their materials when they needed to**	23.5%	30.6%	13.0%
	We did not identify another indicator elsewhere assessing concerns about safety preventing changing as needed while working. However, to maintain alignment with the guiding conceptual model, we include it here. The item was developed by the Emory team upon recommendation from Marni Sommer during the expert review process.			
Work Engagement: Job Satisfaction	**Proportion of women who are satisfied with their ability to meet their menstrual needs at their current job**	83.5%	78.8%	90.3%
	We did not identify another indicator elsewhere assessing satisfaction with the ability to meet menstrual needs at the individual's current job. However, to maintain alignment with the guiding conceptual model, we include it here. The item was adapted from the Brief Index of Affective Job Satisfaction (BIAJS) (Thompson & Phua, 2012).			
Work Engagement: Lost earnings	**Proportion of women who reported lost earnings or decreased pay in the past year due to their menstruation**	6.5%	7.5%	5.2%
	We did not identify another indicator assessing impact of earning related to working during menstruation. However this indicator does align with two proposed by the Global MHH Monitoring Group that aim to assess menstrual health impacts (GMMG, In Press). Specifically, one of the GMMG indicators seeks to assess the proportion of girls who report menstruation does not impact their day and another that assesses the proportion of girls who report their class participation is impacted by their menstruation.			

5.0 SURVEY FINDINGS

This section first describes the process of refining items in the surveys deployed in each location, and then presents survey results from data collection in each country.

5.1 BRIEF OVERVIEW OF ITEM REFINEMENT

A number of adjustments were made to the survey based on the results of cognitive interviews. The interim report provides an extensive overview of the item refinement process (USAID, 2021) and Annex C and Annex D summarize and justify survey item deletions and adaptations. Below, we share key highlights.

Cognitive interviews revealed that some items were considered inappropriate for the contexts, insensitive, or offensive. For example, the module on Stigma was not well-received, with enumerators in both Kenya and Nepal noting that respondents found some of these items offensive. In addition, these items are only appropriate to those who have co-workers and so were only relevant to a subset of respondents. For these reasons, all but one of the Stigma items were omitted from the final version of the survey.

The team used feedback directly from enumerators or the results of the cognitive interviews to modify items to ensure that they were clear, context-appropriate, and easily understood. For example, in some cases the team included small notes to make items clearer; for MPN4 the team added the italicized text to help clarify the item: "Could you get more of your menstrual materials when you needed to?" *For example, if you needed to purchase materials, retrieve materials from home, or ask someone for materials.*

In other cases, the team incorporated additional response options that were identified through the cognitive interviews. For example, during the Kenyan cognitive interviews, enumerators found that many women reported acquiring their menstrual materials at a supermarket, so this was added to GM08 (*During your last menstrual period, where did you acquire the menstrual materials you used?*) to expand response option 01: "shop, *supermarket*, street vendor, or pharmacy."

For the Nepali translation of the survey, edits were made to the response options that used frequency scales, as cognitive interviews showed that non-specific response options did not translate accurately into Nepali. For example, for MPN18, which asks if participants have a clean place to change their materials, the response options changed from "never," "less than half the time," "more than half the time," and "always," to "never had a clean place," "had a clean place less than half the time," "had a clean place more than half the time," and "always had a clean place." As a result of these changes, the English language text that was used as the source language for translations vary for specific response options to preserve meaning across translations.

5.2 SURVEY RESULTS

In the following sections, we first present data on the recruitment and screening process to show how many households were approached, the proportions eligible and ineligible, and the proportion who consented and ultimately completed the full survey.

We then provide demographic and employment information about women who participated in the survey in in both Kenya and Nepal, followed by a section that presents data on how participants perceived COVID-19 to impact their work experience and their experience with menstruation, specifically accessing materials and locations to change materials at work. Next, we present data on work menstruation experiences, followed by determinants, then outcomes. We present work menstruation experiences first as these data are the primary focus of this research.

5.2.1 RECRUITMENT AND SCREENING

Overall, great effort was required to recruit women to participate in the survey. In both locations, more than twice the number of households were approached than participated in the survey. As described below, a lower proportion of approached households had a woman participate in Kenya than in Nepal, though in Nepal, the number of women who participated is lower than the number who participated in Kenya (Table 3).

In Kenya, the team approached 1,701 households and administered 632 surveys, all of which were completed in full (37% response rate). The 960 households approached where no participants were screened either did not have a woman at home (N=218, 13% of those approached), was inaccessible (e.g., house or compound locked/gated communities) (N=402, 24% of those approached), or the woman that was present refused to participate prior to screening (N=338, 20% of those approached). We did not collect data regarding reasons for refusal, but concern for COVID, not having time, and not being compensated for time are potential reasons. Another 108 potential respondents were deemed ineligible during the screening process, including 31 based on COVID-19 screening, 52 related to menstrual status, and 25 based on employment status. One potential participant was eligible but then refused to participate based on the length of the survey.

In Nepal, the team approached 924 households and administered 437 surveys (47% response rate), of which 99% were completed in full. The team was not able to collect data from the target 600 participants as planned; data collection activities were challenged by COVID-19 lockdowns, local holidays and festivities, hard rains and flooding, and illness of data collectors. The 445 households approached where no participants were screened either did not have a woman at home (N=50, 5% of those approached), were inaccessible (N=179, 19% of those approached), or the woman that was present refused to participate prior to screening (N=216, 23% of those approached). We did not collect data regarding reasons for refusal, but concern for COVID, not having time, and not being compensated for time are potential reasons. Another 39 potential respondents were deemed ineligible during the screening process, including 14 based on COVID-19 screening, 17 related to menstrual status, and 6 based on employment status. Three potential participants were eligible but then refused to participate based on the length of the survey.

Table 3: Screening information, Total and by Country

	All		Kenya		Nepal	
	N	%	N	%	N	%
Total approached	2625		1701		924	
Total refused/inaccessible prescreening	1405	53.5%	960	56.3%	445	49.2%
No woman at home approached	268	10.2%	218	22.8%	50	5.4%
Home locked/inaccessible	581	22.1%	402	42.0%	179	19.4%
Woman refused	554	21.1%	338	35.3%	216	23.4%%
Other	2	0.1%	2	0.1%	0	0.0%
Total who entered screening	1220	46.5%	741	43.6%	479	51.8%
Total Ineligible	147	12%	108	14.6%	39	8.1%
Total ineligible: Age	2	1.4%	0	0.0%	2	5.1%
Total ineligible: COVID	45	30.6%	31	28.7%	14	35.9%
Diagnosis in previous 30 days[1]	9	6.1%	7	6.5%	2	5.1%
Suspected in previous 30 days[1]	5	3.41%	4	3.7%	1	2.6%
Any symptoms in previous 30 days[2]	19	12.9%	13	12.0%	6	15.4%
Exposure in previous 14 days	12	8.2%	7	22.6%	5	12.8%
Total ineligible: Menstruation Status	69	46.9%	52	48.1%	17	43.6%

	All		Kenya		Nepal	
	N	%	N	%	N	%
Currently pregnant / recent birth	22	15.0%	19	17.6%	3	7.7%
Post menopause	11	7.5%	6	5.6%	5	12.8%
Hysterectomy	5	3.4%	0	0.0%	5	12.8%
Never menstruated	2	1.4%	2	1.9%	0	0.0%
No menstruation: Contraception	22	15.0%	19	17.6%	3	7.7%
Last menstruation too long ago[3]	5	3.4%	5	4.6%	0	0.0%
Other	2	1.4%	1	0.9%	1	2.6%
Total ineligible: Employment status	31	21.1%	25	23.1%	6	15.4%
No job in eligible time period[4]	11	7.5%	10	9.3%	1	2.6%
Only works in the home	5	3.4%	4	3.7%	1	2.6%
Not paid for work (cash /kind)	0	0.0%	0	0.0%	0	0.0%
No menstruation at work in time period[4]	15	10.2%	11	10.2%	4	10.3%
Total Eligible	1073	88.0%	633	85.4%	440	91.9%
Unwilling to participate: Too much time	4	0.4%	1	0.2%	3	0.7%
Did not consent	0	0.0%	0	0.0%	0	0.0%
Willing and consented	1069	99.6%	632	99.8%	437	99.3%
Willing, consented, and completed in full	1064	99.2%	632	99.8%	432	98.2%

1. Participant or household member
2. Symptom list: fever (higher than 100.4 F or 38.0 C, cough, shortness of breath or difficulty breathing, or new loss of the sense of taste or smell)
3. Over 3 (Kenya) or 6 (Nepal) months ago
4. Within the previous 3 (Kenya) or 6 months (Nepal)

5.2.2 PARTICIPANT INFORMATION

Basic Demographic Information

Basic demographic information about the participants in Kenya and Nepal is presented in Table 4. The mean age for participants was similar in both locations (Kenya: 29, Range: 18-53; Nepal: 32, Range 18-52). The largest percentage of participants in both locations was married (Kenya: 45%; Nepal: 59%), though many were also single/never married (Kenya: 39%; Nepal: 37%). Only women in Kenya reported being unmarried and living with a partner (8%).

Table 4: Participant Demographic Information, Total and by Country

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
S006	**Age: Mean / Range**	30.5	18-53	29.4	18-53	32.2	18-52
D01	**Marital Status[1]**	1062		632		430	
	Single, never married	403	38.0%	246	38.9%	157	36.5%
	Married	535	50.4%	283	44.8%	252	58.6%
	Unmarried, living with partner	50	4.7%	50	7.9%	0	0.0%
	Divorced/separated	49	4.6%	40	6.3%	9	2.1%
	Widowed	25	2.4%	13	2.1%	12	2.8%
D02	**Education[2]**	1060		629		431	
	Never attended school	13	1.2%	1	0.2%	12	2.8%
	Less than primary education	27	2.6%	3	0.5%	24	5.6%
	Primary education	51	4.8%	27	4.3%	24	5.6%

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	Lower secondary education	88	8.3%	34	5.4%	54	12.5%
	Upper secondary education	235	22.2%	138	21.9%	97	22.5%
	Short-cycle tertiary education (for e.g., TVET)	205	19.3%	191	30.4%	14	3.3%
	Bachelor's or equivalent level	323	30.5%	197	31.3%	126	29.2%
	Master's or equivalent level	112	10.6%	35	5.6%	77	17.9%
	Doctoral or equivalent level	5	0.5%	3	0.5%	2	0.5%
	Not elsewhere classified	1	0.1%	0	0.0%	1	0.2%
D11	**Religion**[3]	1057		626		431	
	Christian (Catholic)	189	17.9%	189	30.2%	-	-
	Christian (Protestant)	371	35.1%	371	59.3%	-	-
	Christian (Unspecified)	41	3.9%	-	-	41	9.5%
	Muslim	16	1.5%	10	1.6%	6	1.4%
	Hindu	332	31.4%	0	0.0%	332	77.0%
	Buddhist	48	4.5%	0	0.0%	48	11.1%
	None	22	2.1%	20	3.2%	2	0.5%
	Other	38	3.6%	36	5.8%	2	0.5%
D09N	**Caste/ethnicity**	432				432	
	Hill Brahmin	88	20.4%	-	-	88	20.4%
	Hill Chhetri	82	19.0%	-	-	82	19.0%
	Terai Brahmin/Chhetri	15	3.5%	-	-	15	3.5%
	Hill Dalit	38	8.8%	-	-	38	8.8%
	Terai Dalit	5	1.2%	-	-	5	1.2%
	Newar	110	25.5%	-	-	110	25.5%
	Hill Janajati	58	13.4%	-	-	58	13.4%
	Terai Janajati	6	1.4%	-	-	6	1.4%
	Muslim	5	1.2%	-	-	5	1.2%
	Other	25	5.8%	-	-	25	5.8%

1. 2 participants in Nepal chose not to answer.
2. 3 participants in Kenya and 1 participant in Nepal chose not to answer.
3. 6 participants in Kenya and 1 participant in Nepal chose not to answer

About one-third of participants in both locations had completed either a bachelor's degree or equivalent (Kenya: 31%; Nepal: 29%). A greater proportion of participants in Nepal had no or less than primary education (8%) than in Kenya (1%). In Kenya, 30% of the participants had completed short-cycle tertiary education compared to 3% in Nepal, which is defined as advanced vocational or professional education that is typically practical and occupation-specific, and prepares individuals to enter the labor market (also referred to as (higher) technical education, community college education, technician or advanced/higher vocational training, associate degree) (UNESCO Institute for Statistics, 2012). A greater proportion of participants in Nepal completed a Master's degree or equivalent (Kenya: 6%; Nepal: 18%). The majority of Kenyan participants (90%) were Christian (either Catholic or Protestant), whereas the majority of Nepali participants (77%) were Hindu. The three caste/ethnic groups that were most represented among Nepali participants were Newar (26%), Hill Brahmin (20%), and Hill Chhetri (19%); ethnicity was not asked about in Kenya due to perceived sensitivity.

Employment Information

Participants reported working in a variety of job types (Table 5). The most common job types reported by both Kenyan and Nepali participants were professional/office work (Kenya: 18%; Nepal: 22%) and retail (Kenya: 16%; Nepal: 18%). The next most common job for Kenyan participants was selling goods in a marketplace, street, or other informal setting (15%), food or lodging (9%), and health care (9%); and for Nepali participants was food or lodging (10%), and teaching, education, and tutoring (10%).

On average, participants reported working approximately the same number of hours in the previous week (Kenya: 43; Nepal: 45). The majority of participants in both locations worked at their primary job throughout the year (Kenya: 90%; Nepal: 95%). A minority reported working seasonally (Kenya: 9%; Nepal: 4%) or once in a while (Kenya: 1%; Nepal: 1%). In both locations, 85% of participants reported working with others in their workplace, and the majority of participants in both countries work in a fixed location (Kenya: 85%; Nepal: 88%). Kenyan participants reported having their primary job for 38.3 months (range: 0.07-420 months), while Nepali participants reported having their primary job for 71.4 months (range: 0.07-360 months).

The majority of participants in both locations are paid a salary or fixed amount (Kenya: 60%; Nepal: 69%), which indicates that the majority of participants likely work in formal sector jobs (Table 6). Very few participants (1%) in either location reported being paid in kind. The same proportion in both locations (38%) reported receiving employment benefits, such as affiliation with a social security scheme or pension fund, paid annual leave, or paid sick leave).

Table 5: Participant Employment Information, Total and by Country

Item Code	Response	All		Kenya		Nepal	
		N	%	N	%	N	%
WRK4	**Job Type**[1]	1063		631		432	
	Farming/agriculture/forestry/fishing	21	2.0%	4	0.6%	17	3.9%
	Teaching/education/tutoring	93	8.8%	50	7.9%	43	10.0%
	Factory/manufacturing/textiles	58	5.5%	31	4.9%	27	6.3%
	Selling goods in a marketplace, street, or other informal setting	112	10.5%	92	14.6%	20	4.6%
	Working in a shop or store (retail)	177	16.7%	99	15.7%	78	18.1%
	Day labor/casual or informal labor (non-farming)	59	5.6%	46	7.3%	13	3.0%
	Food or lodging (e.g., restaurant, hotel)	102	9.6%	58	9.2%	44	10.2%
	Domestic work (e.g., cleaning homes)	59	5.6%	32	5.1%	27	6.3%
	Health care worker	87	8.2%	58	9.2%	29	6.7%
	Civil servant/government employee	62	5.8%	35	5.6%	27	6.3%
	Professional/office work (e.g., financial services, IT, research)	212	19.9%	115	18.2%	97	22.5%
	Other, specify	21	2.0%	11	1.7%	10	2.3%
D18	**Average hours worked previous week**	43.8	0 -136	42.9	1-136	45.4	0 -105
D19	**Number of jobs**	1064		632		432	
	One job	956	89.9%	548	86.7%	408	94.4%
	More than one job	108	10.1%	84	13.3%	24	5.6%
D25b	**Work at fixed location**	916	86.1%	534	84.5%	382	88.4%
WRK3	**Job Stability**	1064		632		432	
	Yearly	977	91.8%	568	89.9%	409	94.7%
	Seasonal	76	7.1%	58	9.2%	18	4.2%
	Once in a while	11	1.0%	6	1.0%	5	1.2%
WRK7	**Average/Range months at current primary job**	51.8	0.07-420	38.3	0.07-420	71.4	0.07-360
WRK9	**Other people working at workplace**	900	84.6%	534	84.5%	366	84.7%
	Number of people working at workplace (mean)	23.2	-	21.4	-	25.9	-
	1. One participant in Kenya chose not to answer.						

Table 6: Participant Compensation Information, Total and by Country

Item Code	Response	All		Kenya		Nepal	
		N	%	N	%	N	%
PAY1	**How paid**[1]	1045		615		430	
	By the Hour	15	1.4%	6	1.0%	9	2.1%
	By the Day	216	20.7%	146	23.7%	70	16.3%
	Salaried/Fixed Annual Amount	661	63.3%	366	59.5%	295	68.6%
	By Piece Or Item Made/Sold	121	11.6%	70	11.4%	51	11.9%
	Other	32	3.1%	27	4.4%	5	1.2%
PAY3	**Most recently paid in cash or kind** [1, 2]	1045		615		430	
	In cash OR salaried/fixed amount	1044	99.9%	615	100.0%	429	99.8%
	In Kind	10	1.0%	7	1.1%	3	0.7%
	Earnings						
PAY4	Average cash earnings per month (USD)[3]	174.90	--	170.64	--	169.74	--
PAY6	Mean value of goods paid in kind (USD)[4]	--	--	4.9	--	--	--
PAY2	**Pay impact if missing work**[5]	1034		617		417	
	I have "sick days" (no loss of pay)	426	41.2%	222	36.0%	204	48.9%
	I have to "make up" the hours	83	8.0%	41	6.7%	42	10.1%
	Lose pay for unworked days/hours	236	22.8%	158	25.6%	78	18.7%
	Lose pay for unsold goods	58	5.6%	36	5.8%	22	5.3%
	Another family member / co-worker covers for me so pay is not lost	60	5.8%	20	3.2%	40	9.6%
	There is no impact	171	16.5%	140	22.7%	31	7.4%
D34A	**Benefits**[6]	1055		626		429	
	Employment includes benefits	397	37.6%	235	37.5%	162	37.8%

1. 17 participants in Kenya and 2 in Nepal chose not to answer.
2. Participants who answered PAY1, "How are you paid," with "salary/fixed annual amount," were assumed to be paid in cash—they were not asked PAY3, but they have been combined here with those who answered 'in cash' to PAY3; additionally, PAY3 was a select all that apply item.
3. 17 participants in Kenya and 2 in Nepal were not asked this question because they chose not to answer PAY1; 1 participant in Nepal was not asked this question because she reported only being paid in-kind in response to PAY3; 167 in Kenya and 139 in Nepal chose not to answer.
4. This question was only asked in Kenya and only to those who reported being paid in-kind (N=7)
5. 8 participants in Kenya and 7 in Nepal chose not to answer; 7 in Kenya and 8 in Nepal said 'don't know'.
6. 6 participants in Kenya and 3 in Nepal chose not to answer.

5.2.3 IMPACT OF COVID-19 ON WORK AND MENSTRUATION EXPERIENCES

The survey included a module that asked participants about their experiences during the COVID-19 pandemic and resulting lockdowns and restrictions. While this module was at the very end of the survey to avoid distraction from the primary focus of the research, we report responses about how COVID-19 impacted work (Table 7) and menstruation (Table 8) experiences early in this report to provide an important context within which to view the findings related to menstruation and work that follows.

While most participants in both locations reported that they had not experienced any changes to their current job as a result of the pandemic (Kenya: 55%; Nepal: 83%), in Kenya, 14% of participants reported having lost their job, and 12% reported temporarily losing their job or temporarily needing to stop work. These experiences were less commonly reported in Nepal (Table 7).

Some participants in both locations reported earning the same as they would in a typical year (Kenya: 39%; Nepal: 42%), though a majority in each location (68% in Kenya; 60% in Nepal) reported earning less than they had previously. Most common reasons for earning less included having fewer customers or clients (Kenya: 31%; Nepal: 19%) or being unable to work as much as they normally had (Kenya: 27%; Nepal: 37%).

Participants in Kenya (73%) and Nepal (74%) reported COVID-related requirements at their workplace, and many participants in both locations reported that their work hours changed because of the pandemic (Kenya: 44%; Nepal: 43%). The same proportion in Kenya and Nepal (18%) reported working from home more often. More participants in Kenya (37%) than in Nepal (19%) reported that modifications to physical environment were made to their workplace, and similarly, more participants in Kenya (12%) than in Nepal (1%) reported working in a different location than usual.

The majority of participants in Kenya (55%) and Nepal (62%) reported experiencing no difficulties related to their transport to and from work. However, 25% of participants in Kenya and 33% in Nepal reported that they experienced difficulties going to or from their workplace due to restrictions imposed by the government; and 30% of Kenyan but just 1% of Nepali participants reported difficulties going to or from their workplace because the price of transportation was too high.

Table 7: Impact of COVID-19 on Work Experience and Income, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
The following was read to participants directly before the section on COVID-19 (Tables 7 and 8): I would like to ask you a few questions about ways in which the coronavirus pandemic and related lockdowns and economic impacts may have affected your work and your menstrual experiences.							
COV03[1]	**Experienced transport difficulties related to**[2]	1059		629		430	
	Going to or from workplace due to mobility restrictions imposed by government	299	28.2%	159	25.3%	140	32.6%
	Accessing preferred mode of transportation to go to or from workplace	158	15.0%	101	16.1%	57	13.3%
	Accessing any mode of transportation to go to or from workplace	111	10.5%	88	14.0%	23	5.4%
	Going to or from workplace because of transportation shortages	131	12.4%	101	16.1%	30	7.0%
	Going to or from workplace because the price of transportation was too high	196	18.5%	190	30.2%	6	1.4%
	Going to or from workplace because household income has dropped	116	11.0%	111	17.7%	5	1.2%
	None of the above	611	57.7%	345	54.9%	266	61.9%

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
COV05	**Experiences because of coronavirus pandemic or related restrictions[3]**	1055		627		428	
	Lost job	99	9.4%	87	13.9%	12	2.8%
	Chose to change jobs for pandemic reasons	28	2.7%	27	4.3%	1	0.2%
	Chose to change jobs for reasons unrelated to the pandemic	37	3.5%	32	5.1%	5	1.2%
	Temporarily laid off or had to stop working	83	7.9%	74	11.8%	9	2.1%
	No change; still working at same job	698	66.2%	345	55.0%	353	82.5%
	None of the above	110	10.4%	62	9.9%	48	11.2%
COV06[1]	**Impact of COVID on work[4]**	1060		631		429	
	Worked from home more often	190	17.9%	112	17.8%	78	18.2%
	Worked in a different location than usual (other than home)	80	7.6%	76	12.0%	4	0.9%
	Work hours changed	463	43.7%	279	44.2%	184	42.9%
	Had COVID-related requirements at my workplace	777	73.3%	461	73.1%	316	73.7%
	Had modifications to physical environment at workplace	313	29.5%	232	36.8%	81	18.9%
	None of the above	143	13.5%	91	14.4%	52	12.1%
COV07[1]	**Impact of COVID on earnings[5]**	1054		624		430	
	Earned less than typical because unable to work as much as normal	327	31.0%	166	26.6%	161	37.4%
	Earned less than typical because raw materials or goods needed were more expensive or unavailable	81	7.7%	66	10.6%	15	3.5%
	Earned less because there were fewer customers or clients	274	26.0%	192	30.8%	82	19.1%
	Lost all or most earnings	64	6.1%	53	8.5%	11	2.6%
	Earned approximately the same as typical	420	39.9%	240	38.5%	180	41.9%
	Earned more than typical	30	2.9%	22	3.5%	8	1.9%
	None of the above	90	8.5%	61	9.8%	29	6.7%

1. Participants able to select more than one option.
2. 3 participants in Kenya and 2 participants in Nepal chose not to respond.
3. 5 participants in Kenya and 4 participants in Nepal chose not to respond.
4. 1 participant in Kenya and 3 participants in Nepal chose not to respond.
5. 8 participants in Kenya and 2 participants in Nepal chose not to respond.

Participants in both Kenya (35%) and Nepal (22%) indicated that they had experienced some type of difficulty purchasing menstrual materials in the previous six months (Table 8). Among Kenyan participants, declines in household income (20%), shops and markets being closed (17%), and the high price of materials (17%) were the most common reasons for their difficulties. Among Nepali participants, shops and markets being closed (14%), mobility restrictions imposed by the government (9%), and the high price of materials (5%) were the most common reasons. More Nepali (49%) than Kenyan (28%) participants stated that they had experienced difficulties accessing their preferred type of menstrual materials.

More participants in Kenya than in Nepal reported feeling uncomfortable in the place used to change their menstrual materials while working because of COVID-19-related concerns (Kenya: 35%; Nepal: 7%), longer wait times to access the place used to change menstrual materials while at work due to limited capacity (Kenya: 16%; Nepal: 1%), or challenges accessing the place typically used to change menstrual materials while working due to coronavirus-related restrictions (Kenya: 11%; Nepal: 2%).

Table 8: Impact of COVID-19 on Menstruation Experiences, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
COV01[1]	**Experienced difficulties purchasing menstrual materials in past six months due to**[2]**:**	1060		630		430	
	Mobility restrictions imposed by government	121	11.4%	84	13.3%	37	8.6%
	Shops or markets being closed	168	15.9%	107	17.0%	61	14.2%
	Shortages in the shops or markets	66	6.2%	56	8.9%	10	2.3%
	Price of materials was too high	125	11.8%	104	16.5%	21	4.9%
	Household income has dropped	141	13.3%	123	19.5%	18	4.2%
	None of the above	748	70.6%	411	65.2%	337	78.4%
COV02	**Experienced difficulties accessing preferred type of menstrual materials in past six months**[3]	381	37.1%	170	28.3%	211	49.3%
COV04[1]	**Experience difficulties related to**[4]	1055		627		428	
	Accessing the place typically used to change menstrual materials at workplace due to coronavirus-related restrictions	80	7.6%	71	11.3%	9	2.1%
	Longer wait times to access the place used to change menstrual materials while at workplace due to limited capacity	107	10.1%	103	16.4%	4	0.9%
	Felt uncomfortable in place used to change menstrual materials because of coronavirus-related concerns	250	23.7%	219	34.9%	31	7.2%
	None of the above	764	72.4%	373	59.5%	391	91.4%

1. Participants able to select more than one option.
2. 2 participants in Kenya and 2 respondents in Nepal chose not to respond.
3. 32 participants in Kenya and 4 respondents in Nepal chose not to respond.
4. 5 participants in Kenya and 4 respondents in Nepal chose not to respond.

5.2.4 WORK MENSTRUATION EXPERIENCES

This section presents data on participants' practices, needs, bodily integrity, and self-efficacy related to menstruation when working. Participants were specifically asked to think about their last experience menstruating while working outside the home when responding to questions about menstruation experiences. On average, it had been 15 days since Kenyan participants were menstruating while working outside the home and 21 days since Nepali participants were menstruating while working outside the home. Both Kenyan and Nepali participants reported menstruating for an average of four days while working outside the home (Table 9).

Menstruation Practices while Working

Tables 9 and 10 present data on women's menstruation practices, specifically their use of materials and the facilities they access while working outside the home.

More Kenyan (95%) than Nepali (83%) participants reported changing menstrual materials during the last menstrual period experienced while working; a small percentage (Kenya: 4%; Nepal: 7%) reported going home to change materials. When asked to indicate *all* of the menstrual materials they used during their last menstrual period while working outside the home, participants most commonly reported single-use/ disposable sanitary pads in both locations (Kenya: 88%; Nepal: 85%) followed by cloth (24%) for Nepali participants and tampons (10%) and reusable pads (9%) for Kenyan participants. Participants in Kenya indicated that comfort (82%), disposability (37%), ease of use (36%), and availability (34%) were the

primary reasons they used a material most often; while participants in Nepal indicated ease of use (68%), comfort (62%), leak prevention (53%), and availability (44%) as their primary reasons.

To prevent blood leaking or staining their clothing, the majority of participants in both locations reported changing their absorbent materials frequently (Kenya: 80%; Nepal: 73%); wearing dark-colored or thick clothing was also a fairly common strategy for participants in both locations (Kenya: 29%; Nepal: 22%). A non-negligible proportion of participants in both locations—though slightly greater in Kenya—reported experiencing leaks or stains on their clothing while working outside the home (Kenya: 20%; Nepal: 15%).

The majority of participants in both countries (Table 10) reported using a facility or toilet at their workplace to change their menstrual materials while working (Kenya: 75%; Nepal: 93%). In Kenya, 18% of participants used a public or shared toilet outside of their workplace to change their menstrual materials while working, and 3% of participants used a facility/toilet at another place of business. Few Nepali participants (7%) reported using any location other than the facility/toilet at their workplace to change their menstrual materials while working.

The majority of participants in both locations reported that they most frequently used a sanitation facility at their workplace for urination (Kenya: 71%; Nepal: 89%) and defecation (Kenya: 71%; Nepal: 75%) while working, though a sizeable proportion of Kenyan participants reported using a public or shared toilet outside of their workplace for both urination (19%) and defecation (19%) and 12% of Nepali participants reported using an "other" type of facility for defecation while working.

Participants who reported changing while working outside the home during their last menstruation also reported needing to bring other resources with them to their changing location. Specifically, 57% of Kenyan and 16% of Nepali participants also bring their own toilet paper to their changing location, and 16% of Kenyan and 22% of Nepali participants reported also bringing a bag for used menstrual materials (Table 9).

Table 9: Menstruation Practices while Working Outside the Home, Total and by Country

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
MAW01	**Mean length of time since menstruating while working outside the home (days)[1]**	17.3	1-183	14.6	1-122	21.2	1-183
MAW02	**Mean number of days bleeding while working outside the home**	4.0	0-20	3.9	0-20	4.2	1-15
MAW03	**During this menstrual period, did you ever change your menstrual materials while working outside the home?[2]**	1063		631		432	
	Yes	958	90.1%	599	94.9%	359	83.1%
	No, I went home to change	55	5.2%	23	3.7%	32	7.4%
	No, I did not need to change my materials	42	4.0%	7	1.1%	35	8.1%
	Other	8	0.8%	2	0.3%	6	1.4%
MAW04	***All* materials used to catch/absorb blood while working outside the home[3]**	1064		632		432	
	Cloth	111	10.4%	9	1.4%	102	23.6%
	Reusable sanitary pads	77	7.2%	58	9.2%	19	4.4%
	Single-use/disposable sanitary pads	920	86.5%	554	87.7%	366	84.7%
	Tampons	75	7.1%	64	10.1%	11	2.6%
	Menstrual cup	16	1.5%	7	1.1%	9	2.1%
	Absorbent underwear/panties	9	0.9%	2	0.3%	7	1.6%
	Toilet paper	35	3.3%	31	4.9%	4	0.9%
	Cotton wool	16	1.5%	13	2.1%	3	0.7%
	Underwear alone	10	0.9%	10	1.6%	0	0.0%
	Other	3	0.3%	3	0.5%	0	0.0%
	Not applicable/did not work at my workplace during my last menstruation	1	0.1%	1	0.2%	0	0.0%
MAW07	**Main reasons for using this material[4]**	1062		631		431	
	It is comfortable	782	73.6%	514	81.5%	268	62.1%
	It is easy to use	516	48.6%	225	35.7%	291	67.5%
	It prevents leaks	392	36.9%	162	25.7%	230	53.4%
	It is inexpensive/affordable	266	25.1%	202	32.0%	64	15.9%
	It does not need to be changed often	55	5.2%	33	5.2%	22	5.1%
	It is disposable	344	32.4%	231	36.6%	113	26.2%
	It is easily available	400	37.7%	212	33.6%	188	43.6%
	It is safe/clean/hygienic	329	31.0%	185	29.3%	144	33.4%
	It is my only option	45	4.2%	34	5.4%	11	2.6%

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	Other	9	0.9%	5	0.8%	4	0.9%
MAW16	**What measures did you take to prevent blood leaking or staining your clothing?**[4]	1062		631		431	
	Changed my absorbent materials frequently	818	77.0%	503	79.7%	315	73.1%
	Wore extra layers of clothing	86	8.1%	29	4.6%	57	13.2%
	Wore dark-colored or thick clothing	275	25.9%	182	28.8%	93	21.6%
	Used more than one type of menstrual material	35	3.3%	20	3.2%	15	3.5%
	Avoided sitting down	48	4.5%	40	6.3%	8	1.9%
	Avoided moving around	23	2.2%	15	2.4%	8	1.9%
	None	111	10.5%	47	7.5%	64	14.9%
	Other	12	1.1%	8	1.3%	4	0.9%
MAW17	**Experienced any leaks or stains on your clothing while working outside the home during last menstrual period**[5]	192	18.1%	128	20.3%	65	14.8%
WPE30	**Do you usually take anything other than menstrual materials with you to the place where you change your menstrual materials while you are working?**[4] [6] *[Only participants reporting changing while working outside the home]*	956		598		358	
	Own toilet paper	398	41.6%	342	57.2%	56	15.6%
	Own cleaning supplies	62	6.5%	48	8.0%	14	3.9%
	Own water for cleansing	20	2.1%	19	3.2%	1	0.3%
	Own soap	33	3.5%	31	5.2%	2	0.6%
	Bag for used menstrual materials	175	18.3%	98	16.4%	77	21.5%
	Only menstrual materials	475	49.7%	232	38.8%	243	67.9%
	Nothing	52	5.4%	43	7.2%	9	2.5%

1. 1 participant in Kenya and 3 participants in Nepal chose not to answer. 2 participants in Kenya and 2 participants in Nepal answered "don't know."
2. 1 participant in Kenya chose not to answer.
3. 0 participants reported: natural materials (leaves, grass), mattress/foam, or using no materials.
4. 1 participant in Kenya and 1 participant in Nepal chose not to answer.
5. 1 participant in Kenya chose not to answer.
6. 1 participant in Kenya and 1 in Nepal chose not to respond. 33 in Kenya and 73 in Nepal were excluded because they did not report ever having changed materials while working outside the home (MAW03).

Table 10: Locations Used Most Often for Urination, Defecation, and Menstruation While Working, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
The following was read to participants directly before this section: Now, I'd like to ask you a bit about the facilities that you personally most often use when you are working outside the home. Please think of the job where you spend most of your time if you have more than one job.							
WPE10	**Sanitation facility used most often for urination while working**[1]	1063		631		432	
	At workplace	836	78.7%	450	71.3%	386	89.4%
	A public/shared toilet outside my workplace	129	12.1%	120	19.0%	9	2.1%
	At another place of business	33	3.1%	23	3.7%	10	2.3%
	At my home	29	2.7%	20	3.2%	9	2.1%
	At someone else's home	14	1.3%	9	1.4%	5	1.2%
	Use the outdoors/in the bush or a field (do not use a facility)	14	1.3%	4	0.6%	10	2.3%
	Other	4	0.4%	1	0.2%	3	0.7%
	Do not use toilet facilities while working	4	0.4%	4	0.6%	0	0.0%
WPE11	**Sanitation facility used most often for defecation while working**	1064		632		432	
	At workplace	774	72.7%	449	71.0%	325	75.2%
	A public/shared toilet outside my workplace	128	12.0%	119	18.8%	9	2.1%
	At another place of business	34	3.2%	23	3.6%	11	2.6%
	At my home	44	4.1%	23	3.6%	21	4.9%
	At someone else's home	13	1.2%	9	1.4%	4	0.9%
	Use the outdoors/in the bush or a field (do not use a facility)	14	1.3%	5	0.8%	9	2.1%
	Other	53	5.0%	1	0.2%	52	12.0%
	Do not use toilet facilities while working	4	0.4%	3	0.5%	1	0.2%
WPE12	**Place used to change menstrual materials most often while working**[2]						
	[Only participants reporting changing while working outside the home]	958		599		359	
	Facility/toilet at my workplace	783	81.7%	448	74.8%	335	93.3%
	Public/shared toilet outside my workplace	111	11.6%	107	17.9%	4	1.1%
	Facility/toilet at another place of business	27	2.8%	20	3.3%	7	1.9%
	Toilet at my home	12	1.3%	8	1.3%	4	1.1%
	Toilet at someone else's home	13	1.4%	10	1.7%	3	0.8%
	Use the outdoors/in the bush or a field (do not use a facility)	6	0.6%	4	0.7%	2	0.6%
	Private room at my workplace (without toilet/latrine)	2	0.2%	2	0.3%	0	0.0%
	Other	4	0.4%	0	0.0%	4	1.1%

1. 1 participant in Kenya chose not to answer.
2. 1 participant in Nepal chose not to answer. 33 participants in Kenya and 73 in Nepal were excluded because they reported never having changed menstrual materials while working outside the home (MAW03)

Menstruation Needs and Insecurity While Working

Participants responded to items from an adapted version of the MPNS to assess menstruation-related needs and insecurity while working (Table 11). The version administered did not include any items about participants' experiences with menstruation while at home. Instead, when participants were introduced to questions in this section, they were instructed to *Please think about your last menstrual period you had while working at your main job outside the home.* Participants were re-reminded throughout the section.

The mean overall score for Factor 1, Material and Work Environment Needs score was 3.58 out of a possible score of 4 (SD = 0.49; Range: 1.33-4) In Kenya, the mean score for this factor was 3.52 (SD = 0.53; Range: 1.33-4) and in Nepal the mean score was 3.68 (SD = 0.39; Range: 1.67-4). Additional information about the CFA results is reported in Annex E. Higher scores indicate that women more frequently have needs met.

The mean overall score for Factor 2, Material and Work Environment Insecurity was 1.48 out of a possible score of 4 (SD = 0.52; Range: 1-4). In Kenya, the mean score for this factor was 1.53 (SD = 0.57; Range:1-4) and in Nepal the mean score was 1.40 (SD = 0.40; Range:1-3.57). Additional information about the CFA results is reported in Annex E. Higher scores indicate that women more frequently felt worried/concerned about their ability to meet their need.

Individual items also provide rich information about participant's needs and insecurity related to menstruation while working. The majority of participants in both locations reported that their material and work environment needs were met (Table 11). Most participants reported that they always or more than half time found their menstrual materials to be comfortable (Kenya: 93%; Nepal: 93%); that they had enough materials to change whenever they wanted (Kenya: 92%; 96%); that they were satisfied with their materials (Kenya: 94%; Nepal: 97%); and that they could get more materials when they need them (Kenya: 89%; Nepal: 95%). The majority of participants also reported that they more than half the time or always had a place to store menstrual materials (Kenya: 93%; Nepal: 77%), that they were able to dispose of (Kenya: 85%; Nepal: 95%) and change materials when they wanted (Kenya: 85%; Nepal: 93%), and that they were satisfied with the place they used to change materials (Kenya: 81%; Nepal: 94%).

Responses to questions on material and work environment insecurity show that most participants never worry or worry less than half the time about the ability to meet their menstrual needs at work. The majority of participants worried less than half the time or never that blood would pass through their garments (Kenya: 78%; Nepal: 76%), nor were they worried about a lack of ability to dispose of (Kenya: 77%; Nepal: 90%) or change materials (Kenya: 84%; Nepal: 94%). Very few participants reported a fear of being seen (Kenya: 7%; Nepal: 2%) or harmed by people (Kenya: 5% Nepal: 1%) or other sources (Kenya: 6%; Nepal 2%) always or more than half the time.

A minority of participants reported ever using reusable materials for menstruation (Kenya: 5%; Nepal: 20%). Nepali participants were better able to wash their menstrual materials at work, with 83% reporting they could always or more than half the time wash their materials, compared to 46% in Kenya (Table 13).

Additional questions related to menstrual needs and the ability to meet those needs were asked as a part of this module but were not included in the factor structures of the scales. Responses to those questions can be seen in Table 14.

Table 11: Adapted Menstrual Practice Needs Scale (MPNS): Factor 1 "Material and Work Environment Needs" Item Responses, CFA Factor Loadings, Fit Statistics and Scale Scores

Item Code	Item	All (N 1064)		Kenya (N 628)		Nepal (N 432)		CFA Factor Loading (N=934)[1]
		N	%	N	%	N	%	
Factor 1: Material and Work Environment Needs								
The following was read to the participants directly before the Menstrual Practice Needs section (Tables 11-14): I am going to read a series of questions about different experiences that might apply to you. I will ask you often this applied to you during your last menstrual period. For each question, I'll ask if this applied to you: never (none of the time), less than half the time, more than half the time, or always during your last period. Please think about the last menstrual period you had while working at your main job outside the home.								
MPN1	Were the materials you used to absorb or catch menstrual blood comfortable? [2]	1063		632		431		0.705
	Never	13	1.2%	7	1.1%	6	1.4%	
	Less than half the time	59	5.6%	36	5.7%	23	5.3%	
	More than half the time	311	29.3%	166	26.3%	145	33.6%	
	Always	680	64.0%	423	66.9%	257	59.6%	
MPN2	Did you have enough of your menstrual materials to change them as often as you wanted to?	1064		632		432		0.808
	Never	9	0.9%	6	1.0%	3	0.7%	
	Less than half the time	56	5.3%	43	6.8%	13	3.0%	
	More than half the time	260	24.4%	181	28.6%	79	18.3%	
	Always	739	69.5%	402	63.6%	337	78.0%	
MPN3	Were you satisfied with your menstrual materials? [3]	1062		630		432		0.820
	Never	6	0.6%	4	0.6%	2	0.5%	
	Less than half the time	47	4.4%	34	5.4%	13	3.0%	
	More than half the time	264	24.9%	163	25.9%	101	23.4%	
	Always	745	70.2%	429	68.1%	316	73.2%	
MPN4	Could you get more of your menstrual materials when you needed to? For example, if you needed to purchase materials, retrieve materials from home, or ask someone for materials. [4]	1063		631		432		0.694
	Never	20	1.9%	14	2.2%	6	1.4%	
	Less than half the time	70	6.6%	54	8.6%	16	3.7%	
	More than half the time	237	22.3%	176	27.9%	61	14.1%	
	Always	736	69.2%	387	61.3%	349	80.8%	
MPN9	Did you feel comfortable carrying spare menstrual materials to the place where you changed them?[5]	1007		618		389		0.694
	Never	43	4.3%	33	5.3%	10	2.6%	
	Less than half the time	89	8.8%	53	8.6%	36	9.3%	
	More than half the time	159	15.8%	106	17.2%	53	13.6%	

Item Code	Item	All (N 1064)		Kenya (N 628)		Nepal (N 432)		CFA Factor Loading (N=934)[1]
		N	%	N	%	N	%	
	Always	716	71.1%	426	68.9%	290	74.6%	
MPN10	Did you have a place to store extra menstrual materials?[6]	1028		619		409		0.608
	Never	94	9.1%	15	2.4%	79	19.3%	
	Less than half the time	42	4.1%	28	4.5%	14	3.4%	
	More than half the time	116	11.3%	96	15.5%	20	4.9%	
	Always	776	75.5%	480	77.5%	296	72.4%	
MPN12	Were you able to dispose of your used menstrual materials when you wanted to?[7]	957		593		364		0.875
	Never	33	3.4%	31	5.2%	2	0.6%	
	Less than half the time	75	7.8%	59	10.8%	16	4.4%	
	More than half the time	135	14.1%	106	17.9%	29	8.0%	
	Always	714	74.6%	397	67.0%	317	87.1%	
MPN16	Were you able to change your menstrual materials when you wanted to?[8]	1003		618		385		0.805
	Never	27	2.7%	22	3.6%	5	1.3%	
	Less than half the time	91	9.1%	70	11.3%	21	5.5%	
	More than half the time	221	22.0%	164	26.5%	57	14.8%	
	Always	664	66.2%	362	58.6%	302	78.4%	
MPN17	Were you satisfied with the place you used to change your menstrual materials?[9]	1002		620		382		0.840
	Never	51	5.1%	45	7.3%	6	1.6%	
	Less than half the time	87	8.7%	71	11.5%	16	4.2%	
	More than half the time	190	19.0%	149	24.0%	41	10.7%	
	Always	674	67.3%	355	57.3%	319	83.5%	

1. 130 participants were excluded from CFA due to "choose not to respond"/"not applicable" responses to any item in Factor 1 or Factor 2
2. 1 participant in Nepal chose not to answer
3. 2 participants in Kenya chose not to answer
4. 1 participant in Kenya chose not to answer
5. 14 participants in Kenya and 43 in Nepal chose "not applicable."
6. 11 participants in Kenya chose "not applicable" and 2 chose not to answer. 23 participants in Nepal chose not to answer.
7. 39 participants in Kenya and 67 in Nepal chose "not applicable." 1 participant in Nepal chose not to answer.
8. 12 participants in Kenya and 47 in Nepal chose "not applicable." 2 participants in Kenya chose not to answer.
9. 12 participants in Kenya and 50 in Nepal chose "not applicable."

Table 12: Adapted Menstrual Practice Needs Scale (MPNS) Factor 2 "Material and Work Environment Insecurity" Item Responses, CFA Factor Loadings, Fit Statistics and Scale Scores

Item Code	Item	All (N 1064)		Kenya (N 628)		Nepal (N 432)		CFA Factor Loadings (N=934)[1]
		N	%	N	%	N	%	
Factor 2: Material and work environment insecurity								
Participants were reminded to focus on the last time they had their menstrual period while working at their main job outside the home.								
MPN5	Were you worried that your menstrual materials would allow blood to pass through to your outer garments?[2]	1062		630		432		0.594
	Never	387	36.4%	245	38.9%	142	32.9%	
	Less than half the time	435	41.0%	248	39.4%	187	43.3%	
	More than half the time	134	12.6%	68	10.8%	66	15.3%	
	Always	106	10.0%	69	11.0%	37	8.6%	
MPN6	Were you worried that your menstrual materials would move from place while you were wearing them?[3]	1063		631		432		0.672
	Never	500	47.0%	323	51.2%	177	41.0%	
	Less than half the time	359	33.8%	197	31.2%	162	37.5%	
	More than half the time	122	11.5%	67	10.6%	55	12.7%	
	Always	82	7.7%	44	7.0%	38	8.8%	
MPN14	Were you worried about where to dispose of your used menstrual materials?[4]	969		603		366		0.776
	Never	664	68.5%	381	63.2%	283	77.3%	
	Less than half the time	132	13.6%	84	13.9%	48	13.1%	
	More than half the time	64	6.6%	48	8.0%	16	4.4%	
	Always	109	11.2%	90	14.9%	19	5.2%	
MPN19	Were you worried that you would not be able to change your menstrual materials when you needed to?[5]	1010		621		389		0.821
	Never	617	61.1%	328	52.8%	289	74.3%	
	Less than half the time	269	26.6%	191	30.8%	78	20.1%	
	More than half the time	73	7.2%	59	9.5%	14	3.6%	
	Always	51	5.0%	43	6.9%	8	2.1%	
MPN20	Were you worried that someone would see you while you were changing your menstrual materials?[6]	1007		621		386		0.915
	Never	860	85.4%	502	80.8%	358	92.8%	
	Less than half the time	95	9.4%	75	12.1%	20	5.2%	
	More than half the time	26	2.6%	20	3.2%	6	1.6%	
	Always	26	2.6%	24	3.9%	2	0.5%	

Item Code	Item	All (N 1064)		Kenya (N 628)		Nepal (N 432)		CFA Factor Loadings (N=934)[1]
		N	%	N	%	N	%	
MPN21	Were you worried that someone would harm you while you were changing your menstrual materials?[7]	1006		620		386		0.915
	Never	912	90.7%	545	87.9%	367	95.1%	
	Less than half the time	60	6.0%	45	7.3%	15	3.9%	
	More than half the time	21	2.1%	19	3.1%	2	0.5%	
	Always	13	1.3%	11	1.8%	2	0.5%	
MPN22	Were you worried that something else would harm you while you were changing your menstrual materials (e.g., animals, insects, unsafe structure)[8]	1007		621		386		0.856
	Never	901	89.5%	538	86.6%	363	94.0%	
	Less than half the time	61	6.1%	44	7.1%	17	4.4%	
	More than half the time	22	2.2%	19	3.1%	3	0.8%	
	Always	23	2.3%	20	3.2%	3	0.8%	
Mean Factor 1 (Material and Work Environment Needs) Scores and Ranges		3.58	1.33 - 4	3.52	1.33 - 4	3.68	1.67 - 4	
Mean Factor 2 (Material and Work Environment Insecurity) Scores and Ranges		1.48	1 - 4	1.53	1 - 4	1.40	1 - 3.57	
RMSEA (90% CI)								0.128 (0.123-0.134)
CFI								0.877
TLI								0.857

1. 130 participants were excluded from CFA due to "choose not to respond" or "not applicable" responses to any item in either Factor 1 or Factor 2
2. 2 participants in Kenya chose not to respond.
3. 1 participant in Kenya chose not to respond.
4. 29 participants in Kenya and 65 in Nepal chose "Did not change materials at work". 1 participant in Nepal chose not to answer.
5. 11 participants in Kenya and 43 participants in Nepal chose "Did not change materials at work".
6. 11 participants in Kenya and 46 participants in Nepal chose "Did not change materials at work".
7. 11 participants in Kenya and 46 participants in Nepal chose "Did not change materials at work", and 1 participant in Kenya chose not to answer.
8. 11 participants in Kenya and 46 participants in Nepal chose "Did not change materials at work".

Table 13: Adapted Menstrual Practice Needs Scale (MPNS): REUSE Item Responses

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
Reuse Items							
Participants were reminded to focus on the last time they had their menstrual period while working at their main job outside the home.							
MPN31a	Do you ever use reusable menstrual materials while working?[1]	1062		631		431	
	Yes	120	11.3%	33	5.2%	87	20.2%
	No	942	88.7%	598	94.8%	344	79.8%
MPN31	Were you able to wash your menstrual materials if you needed to? [2,]	48		24		24	
	Never	11	22.9%	10	41.7%	1	4.2%
	Less than half the time	6	12.5%	3	12.5%	3	12.5%
	More than half the time	9	18.8%	4	16.7%	5	20.8%
	Always	22	45.8%	7	29.2%	15	62.5%
MPN29	Did you have enough water to soak or wash your menstrual materials? [3, 4]	45		23		22	
	Never	11	24.4%	9	39.1%	2	9.1%
	Less than half the time	5	11.1%	3	13.0%	2	9.1%
	More than half the time	4	8.9%	2	8.7%	2	9.1%
	Always	25	55.6%	9	39.1%	16	72.7%
MPN32	Did you have enough soap to wash your menstrual materials? [3, 5]	43		22		21	
	Never	9	20.9%	8	36.4%	1	4.8%
	Less than half the time	4	9.3%	3	13.6%	1	4.8%
	More than half the time	5	11.6%	3	13.6%	2	9.5%
	Always	25	58.1%	8	36.4%	17	81.0%
MPN33	Were you able to dry your menstrual materials if you needed to? [6]	37		20		17	
	Never	11	29.7%	8	40.0%	3	17.6%
	Less than half the time	5	13.5%	4	20.0%	1	5.9%
	More than half the time	5	13.5%	3	15.0%	2	11.8%
	Always	16	43.2%	5	25.0%	11	64.7%
MPN35	Were you worried that your menstrual materials would not be dry when you needed them? [7, 8]	35		18		17	
	Never	19	54.3%	7	38.9%	12	70.6%
	Less than half the time	3	8.6%	0	0.0%	3	17.6%
	More than half the time	6	17.1%	4	22.2%	2	11.8%
	Always	7	20.0%	7	38.9%	0	0.0%
MPN36	Were you worried that others would see your menstrual materials while they were drying? [7, 9]	31		15		16	
	Never	16	51.6%	6	40.0%	10	62.5%
	Less than half the time	4	12.9%	0	0.0%	4	25.0%

	More than half the time	1	3.2%	1	6.7%	0	0.0%
	Always	10	32.3%	8	53.3%	2	12.5%
MPN34	Were you worried that someone would see you while you were washing your menstrual materials? [3,10]	38		19		19	
	Never	20	52.6%	9	47.4%	11	57.9%
	Less than half the time	8	21.1%	2	10.5%	6	31.6%
	More than half the time	3	7.9%	3	15.8%	0	0.0%
	Always	7	18.4%	5	26.3%	2	10.5%
MPN37	Did you have a place to store used materials that you wanted to bring home [to wash]? [2, 11]	80		29		51	
	Never	14	17.5%	0	0.0%	14	27.5%
	Less than half the time	5	6.3%	5	17.2%	0	0.0%
	More than half the time	17	21.3%	6	20.7%	11	21.6%
	Always	44	55.0%	18	62.1%	26	51.0%
MPN44	Did you feel comfortable storing used materials that you wanted to bring home [to wash]? [12,13]	79		29		50	
	Never	16	20.3%	10	34.5%	6	12.0%
	Less than half the time	9	11.4%	5	17.2%	4	8.0%
	More than half the time	18	22.8%	3	10.3%	15	30.0%
	Always	36	45.6%	11	37.9%	25	50.0%
MPN38[15]	Did you feel comfortable carrying used menstrual materials home to wash? [12, 14]	80		29		51	
	Never	14	17.5%	8	27.6%	6	11.8%
	Less than half the time	9	11.3%	6	20.7%	3	5.9%
	More than half the time	19	23.8%	4	13.8%	15	29.4%
	Always	38	47.5%	11	37.9%	27	52.9%

1. 1 participant in Kenya and 1 participant in Nepal chose not to answer.
2. Only asked to women who reported reusing materials (n=120). 8 participants in Kenya and 62 participants in Nepal chose 'not applicable. 1 participant in Kenya and 1 participant in Nepal chose not to answer
3. Only asked to women who reported reusing AND washing their reusable materials (N=50). Participants who chose 'not applicable' to MPN31 were excluded.
4. 1 participant in Kenya and 1 in Nepal chose not to answer. 1 participant in Kenya and 2 in Nepal chose 'not applicable.'
5. 1 participant in Kenya and 1 in Nepal chose not to answer. 2 participants in Kenya and 3 in Nepal chose 'not applicable.'
6. 1 participant in Kenya and 2 in Nepal chose not to respond. 12 in Kenya and 68 in Nepal chose 'not applicable.'
7. Only asked to women who reported reusing AND drying their reusable materials (N=37). Participants who chose 'not applicable' to MPN33 were excluded.

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	8. 2 participants in Kenya chose not to answer. 9. 5 participants in Kenya and 1 in Nepal chose not to answer 10. 3 participants in Kenya and 1 in Nepal chose not to respond; 3 participants in Kenya and 5 in Nepal chose 'not applicable' 11. 11 participants in Nepal chose not respond; 4 in Kenya and 25 in Nepal chose 'not applicable.' 12. Only asked to women who reported reusing AND storing reusable materials (N=91). Participants who chose 'not applicable' to MPN37 were excluded. 13. 10 in Nepal chose not to answer and 2 in Nepal chose 'not applicable.' 14. 7 in Nepal chose not to answer and 4 answered 'not applicable.' . 15. Not in original MPNS. Added by Emory team						

Table 14: Adapted Menstrual Practice Needs Scale (MPNS) Responses for Items Not Included in the Factor Analyses

Item Code	Item	All (N 1064)		Kenya (N 628)		Nepal (N 432)	
		N	%	N	%	N	%
Items Not in Scales because removed in workplace revalidation by Hennegan, Bukenya & Kibira (2021)							
Participants were reminded to focus on the last time they had their menstrual period while working at their main job outside the home.							
MPN7	Were you worried about how you would get more of your menstrual material if you ran out?[1]	1063		631		432	
	Never	655	61.6%	338	53.6%	317	73.4%
	Less than half the time	256	24.1%	180	28.5%	76	17.6%
	More than half the time	78	7.3%	51	8.1%	27	6.3%
	Always	74	7.0%	62	9.8%	12	2.8%
MPN8	Did you feel comfortable carrying spare menstrual materials with you to work? [2]	1009		616		393	
	Never	26	2.6%	19	3.1%	7	1.8%
	Less than half the time	49	4.9%	32	5.2%	17	4.3%
	More than half the time	120	11.9%	91	14.8%	29	7.4%
	Always	814	80.73%	474	77.0%	340	86.5%
MPN11	Were you able to wash your hands when you wanted to? [3]	1062		631		431	
	Never	27	2.5%	24	3.8%	3	0.7%
	Less than half the time	89	8.4%	70	11.1%	19	4.4%
	More than half the time	166	15.6%	138	21.9%	28	6.5%
	Always	780	73.4%	399	63.2%	381	88.4%
MPN18	Did you have a clean place to change your menstrual materials? [4]	1001		619		382	
	Never	33	3.3%	27	4.4%	6	1.6%
	Less than half the time	102	10.2%	88	14.2%	14	3.7%
	More than half the time	173	17.3%	134	21.7%	39	10.2%
	Always	693	69.2%	370	59.8%	323	84.6%
MPN30	Did you have access to a basin or bucket to soak or wash your menstrual materials whenever you needed it? [5]	45		23		22	
	Never	14	31.1%	12	52.2%	2	9.1%
	Less than half the time	5	11.1%	4	17.4%	1	4.6%
	More than half the time	4	8.9%	2	8.7%	2	9.1%
	Always	22	48.9%	5	21.7%	17	77.3%
Items not in the original MPNS but added by the Emory team for testing purposes							
MPN40K	Was there enough light in the place you used to change your menstrual materials?[6]	1004		620		384	
	Never	39	3.9%	38	6.1%	1	0.3%
	Less than half the time	72	7.2%	66	10.6%	6	1.6%
	More than half the time	137	13.6%	112	18.1%	25	6.5%
	Always	756	75.3%	404	65.2%	352	91.7%

Item Code	Item	All (N 1064)		Kenya (N 628)		Nepal (N 432)	
		N	%	N	%	N	%
MPN41	Were you worried that you would not be able to reduce menstruation-related symptoms such as pain or discomfort? [7]	941		540		401	
	Never	490	52.1%	267	49.4%	223	55.6%
	Less than half the time	291	30.9%	163	30.2%	128	31.9%
	More than half the time	83	8.8%	49	9.1%	34	8.5%
	Always	77	8.2%	61	11.3%	16	4.0%
MPN42	Were you able to access items like pain relief to manage menstruation-related symptoms such as pain, or discomfort?[8]	808		471		337	
	Never	119	14.7%	93	19.6%	26	7.7%
	Less than half the time	92	11.4%	73	15.5%	19	5.6%
	More than half the time	171	21.2%	135	28.7%	36	10.7%
	Always	426	52.7%	170	36.1%	256	76.0%

1. 1 participant in Kenya chose not to respond.
2. 16 participants in Kenya chose 'not applicable.' 38 participants in Nepal chose 'not applicable' and 1 chose not to answer.
3. 1 participant in Kenya and 1 participant in Nepal chose not to answer
4. 1 participant in Kenya chose not to respond. 12 in Kenya and 50 in Nepal chose 'not applicable.'
5. Only asked to women who reported reusing AND washing their reusable materials (N=50). 1 participant in Kenya and 1 in Nepal chose not to answer; 2 participants in Nepal chose 'not applicable.'
6. 12 participants in Kenya and 48 in Nepal chose 'not applicable.'
7. 1 in Kenya chose not to respond; 91 participants in Kenya and 31 participants in Nepal chose 'Did not experience symptoms, pain, or discomfort while at workplace.'
8. 8 participants in Kenya and 5 participants in Nepal chose not to answer;153 participants in Kenya and 90 in Nepal chose 'Did not experience symptoms, pain, or discomfort while at workplace.'

Bodily Integrity

The average Bodily Integrity factor score was 3.45 out of a total possible score of 4 (SD = 0.55; Range: 1-4). Additional information about the CFA results is reported in Annex E. Higher scores indicate more perceived bodily integrity. In Kenya, the average Bodily Integrity factor score was 3.31 (SD = 0.59; Range:1-4) and in Nepal the average score was 3.64 (SD = 0.41; Range: 2-4).

Overall, responses to the items indicate that participants experience fairly high levels of menstruation-related bodily integrity in their workplaces (Table 15). The majority of participants in both locations reported that they were often or always able to use the menstrual materials that they prefer (Kenya: 80%; Nepal: 96%) and to access the resources they needed to clean themselves during menstruation (Kenya: 66%; Nepal: 91%). The majority of participants in both locations reported that their responsibilities at work never prevented them from addressing their menstruation-related needs (Kenya: 58%; Nepal: 60%) and that they never had to delay changing their menstrual materials because they lacked access to a satisfactory location (Kenya: 62%; Nepal: 75%). A slim majority of Nepali participants reported that they never had to hurry when changing their menstrual materials or addressing their menstrual needs (53%), compared to 45% of Kenyan participants.

Table 15: Bodily Integrity Item Responses, Scale CFA Factor Loadings, Fit Statistics, and Scale Scores

Item Code	Item	All (N 1064) N	%	Kenya (N 628) N	%	Nepal (N 432) N	%	CFA Factor Loadings (N=1048)
The following was read to the participants directly before this section: I am going to read a series of statements and ask you to tell me how often you have had each experience. For each of these statements you can answer: never, sometimes, often, or always. Please focus on the last time you were menstruating while working at your main job at your workplace. Some jobs are not just in one location. If you work in many locations, please think of the location where you spend the most time.								
BI01[2]	My responsibilities at work prevented me from addressing my menstruation-related needs [3]	1060		628		432		0.767
	Never	621	58.4%	364	58.0%	257	59.5%	
	Sometimes	363	34.1%	200	31.8%	163	37.7%	
	Often	51	4.8%	39	6.2%	12	2.8%	
	Always	25	2.3%	25	4.0%	0	0.0%	
BI02 [2]	I had to hurry when changing my menstrual materials/addressing my menstrual needs.[4]	1056		629		427		0.839
	Never	510	48.3%	285	45.3%	225	52.7%	
	Sometimes	392	37.1%	211	33.5%	181	42.4%	
	Often	78	7.4%	64	10.2%	14	3.3%	
	Always	76	7.2%	69	11.0%	7	1.6%	
BI03	I was able to use the menstrual materials I prefer.	1064		632		432		-0.490
	Never	27	2.5%	21	3.3%	6	1.4%	
	Sometimes	117	11.0%	104	16.5%	13	3.0%	
	Often	174	16.4%	114	18.0%	60	13.9%	
	Always	746	70.1%	393	62.2%	353	81.7%	
BI06 [2]	I had to delay changing my menstrual material because I did not have access to a satisfactory location.[5]	1063		631		432		0.674
	Never	718	67.5%	394	62.4%	324	75.0%	
	Sometimes	254	23.9%	166	26.3%	88	20.4%	
	Often	44	4.1%	31	4.9%	13	3.0%	
	Always	47	4.4%	40	6.3%	7	1.6%	
BI08	I was able to access the resources I needed, like water or soap, to clean myself during menstruation.[6]	1054		625		429		-0.559
	Never	82	7.8%	63	10.1%	19	4.4%	
	Sometimes	169	16.0%	150	24.0%	19	4.4%	
	Often	91	8.6%	60	9.6%	31	7.2%	
	Always	712	67.6%	352	56.3%	360	83.9%	
Mean Score and Range		3.45	1 - 4	3.31	1 - 4	3.64	2 - 4	

RMSEA (90% CI)	0.167 (0.145-0.191)
CFI	0.923
TLI	0.847

1. 16 participants were excluded from CFA due to "choose not to respond" or "not applicable" responses to any item.
2. Reverse coded for factor scoring.
3. 4 participants in Kenya chose not to respond.
4. 1 participant in Kenya chose not to respond. 2 participants in Kenya and 5 in Nepal responded "not applicable."
5. 1 participant in Kenya chose not to respond.
6. 2 participants in Kenya chose not to respond. 5 participants in Kenya and 3 in Nepal responded "not applicable."

Self-Efficacy

Participants were asked a series of questions related to their menstruation-related self-efficacy in the workplace. Seventy-two percent of Nepali participants and 45% of Kenyan participants reported that they feel very or completely confident working during menstruation (Table 16). The majority of participants in both locations reported that they felt very or completely confident; 64% of Kenyan and 86% of Nepali participants expressed confidence about changing menstrual materials while working outside the home. Seventy percent of Kenyan participants and 58% of Nepali participants reported confidence finding a location to change menstrual materials while working outside the home. In contrast, a minority of participants in Kenya felt very or completely confident in their ability to wash their reusable menstrual materials (26%) while working outside the home, compared to a majority of participants in Nepal (57%).

The average Self-efficacy factor score was 2.76 out of a total possible score of 4 (SD = 0.70; Range: 1-4). Higher scores indicate more self-efficacy (i.e., confidence in ability to manage menstruation in the workplace). In Kenya, the average Self-efficacy factor score was 2.54 (SD = 0.65; Range: 1-4) and in Nepal the average score was 3.09 (SD = 0.64; Range: 1-4).

Additional information about the CFA results is reported in Annex E.

Table 16: Self-Efficacy Item Responses, Scale CFA Factor Loadings, Fit Statistics, and Scale Scores

Item Code	Item	All (N 1064) N	%	Kenya (N 628) N	%	Nepal (N 432) N	%	CFA Factor Loadings (N 1050)[1]
SE10	How confident do you feel working during your menstruation?[2]	1063		631		432		0.834
	Not at all confident	104	9.8%	93	14.7%	11	2.5%	
	Slightly Confident	365	34.3%	253	40.1%	112	25.9%	
	Very confident	440	41.4%	248	39.3%	192	44.4%	
	Completely confident	154	14.5%	37	5.9%	117	27.1%	
SE01	Managing menstruation at work can involve changing, washing, disposing of materials, and other behaviors. How confident do you feel in your ability to manage your menstruation when working outside the home?[3]	1060		631		429		0.894
	Not at all confident	84	7.9%	76	12.0%	8	1.9%	
	Slightly Confident	307	29.0%	236	37.4%	73	17.0%	
	Very confident	460	43.4%	273	43.3%	187	43.8%	
	Completely confident	207	19.5%	46	7.3%	161	37.5%	
SE03	If your period starts while at your workplace working outside the home but you have not brought your own menstrual material (such as: pad, cloth, tissue, cotton, etc.) … How confident are you that you are able to obtain materials to manage your menstruation? [4]	1060		628		432		0.847
	Not at all confident	110	10.4%	101	16.1%	9	2.1%	
	Slightly Confident	250	23.6%	181	28.8%	69	16.0%	
	Very confident	484	45.7%	288	45.9%	196	45.4%	
	Completely confident	216	20.4%	58	9.2%	158	36.6%	
SE04	How confident are you that you can change your menstrual material (such as: pad, cloth, tissue, cotton, etc.) while working outside the home if it becomes necessary? [5]	1062		630		432		0.912
	Not at all confident	58	5.5%	52	8.3%	6	1.4%	
	Slightly Confident	234	22.0%	178	28.3%	56	13.0%	
	Very confident	533	50.2%	333	52.9%	200	46.3%	
	Completely confident	237	22.3%	67	10.6%	170	39.4%	
SE05	How confident are you in your ability to find a location where you can change your menstrual materials while you are working outside the home? [6]	1062		630		432		0.846
	Not at all confident	55	5.2%	47	7.5%	8	1.9%	
	Slightly Confident	202	19.0%	143	22.7%	59	13.7%	

Item Code	Item	All (N 1064) N	%	Kenya (N 628) N	%	Nepal (N 432) N	%	CFA Factor Loadings (N 1050)[1]
	Very confident	541	50.9%	349	55.4%	192	44.4%	
	Completely confident	264	24.9%	91	14.4%	173	40.0%	
SE08	How confident are you that you are able to prevent blood staining your clothing even while working long hours outside the home during your period? [7]	1056		628		428		0.687
	Not at all confident	116	11.0%	79	12.6%	37	8.6%	
	Slightly Confident	342	32.4%	206	32.8%	136	31.8%	
	Very confident	415	39.3%	274	43.6%	141	32.9%	
	Completely confident	183	17.3%	69	11.0%	114	26.6%	
SE07	How confident are you in your ability to wash your reusable menstrual materials while working outside the home? [8]	53		23		30		Not included in scale
	Not at all confident	17	32.1%	11	47.8%	6	20.0%	
	Slightly Confident	13	24.5%	6	26.1%	7	23.3%	
	Very confident	14	26.4%	5	21.7%	9	30.0%	
	Completely confident	9	17.0%	1	4.3%	8	26.7%	
Mean Score and Range		2.76	1 - 4	2.54	1 - 4	3.09	1 - 4	
RMSEA (90% CI)								0.148 (0.131-0.165)
CFI								0.988
TLI								0.981

1. 14 participants were excluded from CFA due to "choose not to respond" or "not applicable" responses to any item.
2. 1 participant in Kenya chose not to respond.
3. 1 participant in Kenya and 3 participants in Nepal chose not to respond.
4. 1 participant in Kenya chose not to respond and 3 chose "not applicable."
5. 2 participants in Kenya chose "not applicable."
6. 2 participants in Kenya chose "not applicable."
7. 2 participants in Kenya chose not to respond. 2 in Kenya and 4 in Nepal chose "not applicable."
8. Only asked of women who use reusable materials.

5.2.5 DETERMINANTS

In the following sections, we present data on biological-, individual-, and workplace-level determinants.

Biological-Level Determinants

A. Participants' Experiences of Menstruation

Participants reported a similar menstruation duration across sites; mean number of days menstruating was 4.32 days in Kenya and 4.50 days in Nepal (see Table 17). On average, participants in Kenya had started their last menstrual period 14.77 days before the survey occurred, while Nepali participants had started their last menstrual period 19.12 days prior to the survey. About one-third of Kenyan participants (32%) indicated that they experienced irregular periods compared to 16% of Nepali participants.

B. Heavy Bleeding

The majority of participants in both sites reported that they experienced moderate bleeding during their menstrual periods (Kenya: 65%; Nepal: 66%) (Table 17). While only 15% of participants in both locations self-reported heavy bleeding, participant responses to individual items from the SAMANTA measure indicate that heavy bleeding may be more pervasive. Over one-third of participants in both locations reported affirmatively to four of the six heavy bleeding assessment questions, including having experienced heavy bleeding for more than three days (Kenya: 37%; Nepal: 52%); felt bothered due to heaviness of menstrual bleeding (Kenya: 39%; Nepal: 62%); spotted at night (Kenya: 43%; Nepal: 55%); or worried about staining the furniture (Kenya: 43%; Nepal: 56%). Participants also reported avoiding activities because of a need for frequent changing (Kenya: 40%; Nepal: 33%). A small proportion reported bleeding for more than seven days (Kenya: 6%; Nepal: 7%).

The average overall SAMANTA heavy bleeding score was 3.42 out of a total possible score of 10 (SD = 2.66; Range: 0-10). In Kenya, the average SAMANTA score was 2.99 (SD = 2.83; Range: 0-10) and in Nepal the average score was 4.05 (SD = 2.26; Range: 0-10). Overall, 60% of the sample had scores of 3 or greater, indicating that a woman may have heavy menstrual bleeding. In Kenya, less than half (48%) may have heavy menstrual bleeding, whereas in Nepal, more than three-quarters of the sample (77%) may have heavy menstrual bleeding.

Table 17: Participant Menstruation and Heavy Bleeding Experiences, Total and by Country

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
S013	**Average time since start of last menstruation start (days)**	16.6	--	14.8	--	19.1	--
GM01	**Expecting last menstruation when it started**	1064		632		432	
	Yes, expecting last menstruation when it started	878	82.5%	494	78.2%	384	88.9%
GM02	**Can usually predict when menstruation will start**	1064		632		432	
	No, I don't know when it will start	142	13.4%	111	17.6%	31	7.2%
	Yes, I keep a calendar/track	424	39.7%	255	40.4%	167	38.7%
	Yes, my body tells me (e.g., sore breasts, cramping)	666	62.6%	343	54.3%	323	74.8%
	Yes, I am on oral contraceptives, so I know when my period will begin	18	1.7%	16	2.5%	2	0.5%
	Yes, other	26	2.4%	1	0.2%	25	5.8%
S012	**Self-Report Irregular Periods**	272	25.6%	202	32.0%	70	16.2%
HMB01	**Self-Report Menstrual Blood Volume**[1]	1063		631		432	
	Light	208	19.6%	125	19.8%	83	19.2%
	Moderate	694	65.3%	411	65.1%	283	65.5%
	Heavy (clots/flooding)	161	15.1%	95	15.1%	66	15.3%
	Heavy Bleeding Scale Scores (Mean, Range)[2]	3.42	0-10	2.99	0-10	4.05	0-10
	Number and Proportion with scores 3 and higher[2]	628	60.2%	300	48.6%	328	77.0%
HMB02	Bleeding >7 days	71	6.7%	40	6.3%	31	7.2%
HMB03	Heavy Bleeding >3 days[3]	454	42.7%	231	36.6%	223	51.6%
HMB04	Bothered due to heaviness of menstrual bleeding[4]	514	48.4%	246	39.1%	268	62.0%
HMB05	Spotting at night[5]	504	47.7%	268	43.0%	236	54.6%
HMB06	Worried about staining furniture[6]	509	48.2%	271	43.2%	238	55.5%
HMB07	Avoid activities b/c of need for frequent changing[7]	389	36.8%	249	39.6%	140	32.6%
BLE01	**Average length of last menstruation (days)**	4.4	--	4.32	--	4.5	--

1. 1 participant in Kenya chose not to answer.
2. Heavy Bleeding Scale scores and proportion greater than or equal to 3 are calculated out of 1043 (617 in Kenya, 426 in Nepal) because 21 (15 in Kenya, 6 in Nepal) chose not to answer to at least one of the six Heavy Bleeding (SAMANTA) Scale items .
3. 1 participant in Kenya chose not to answer.
4. 3 participants in Kenya chose not to answer.
5. 8 participants in Kenya chose not to answer.
6. 4 participants in Kenya and 3 participants in Nepal chose not to answer.
7. 3 participants in Kenya and 3 participants in Nepal chose not to answer.

C. Pain and Symptoms

Only a minority of participants reported experiencing no pain or menstruation-related symptoms (Kenya: 10%; Nepal: 8%) (Table 18). The most commonly reported symptoms from the 14 queried were the same in both countries and included abdominal pain or cramping (Kenya: 64%; Nepal: 70%); backache (Kenya: 47%; Nepal: 63%); pain in the breasts (Kenya: 34%; Nepal: 43%); and fatigue (Kenya: 34%; Nepal: 41%). Additionally, 41% of Kenyan participants and 56% of Nepali participants reported feelings of excessive tiredness during menstruation.

On average, Kenyan participants ranked their pain severity 3.9 out of 10, and Nepali participants ranked their pain a 2.4 out of 10, suggesting moderate severity. The majority of the participants in both countries ranked their pain s0everity a 5 or lower.

Table 18: Participant Experience of Menstrual Pain and Symptoms, Total and by Country

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
PAN03	**Experience of menstrual pain and symptoms**[1,2]	1056		626		430	
	Headache	213	20.2%	135	21.6%	78	18.1%
	Backache	564	53.4%	294	47.0%	270	62.8%
	Abdominal Pain or Cramping	705	66.8%	403	64.4%	302	70.2%
	Nausea/Felt Like Vomiting/Vomiting	134	12.7%	85	13.6%	49	11.4%
	Loss of Appetite/Changes in My Appetite	232	22.0%	116	18.5%	116	27.0%
	Aching in My Legs	147	13.9%	48	7.7%	99	23.0%
	Pain in My Breasts	398	37.7%	214	34.2%	184	42.8%
	Weakness or Dizziness	225	21.3%	91	14.5%	134	31.2%
	Fatigue	388	36.7%	213	34.0%	175	40.7%
	Irritability, Anxiety, or Tension	210	19.9%	112	17.9%	98	22.8%
	Depression	27	2.6%	9	1.4%	18	4.2%
	Diarrhoea	91	8.6%	72	11.5%	19	4.4%
	Constipation	82	7.8%	53	8.5%	29	6.7%
	Not Applicable/No Symptoms	98	9.3%	63	10.1%	35	8.1%
	Other	6	0.6%	5	0.8%	1	0.2%
	2 or more symptoms	595	56.3%	313	50.0%	282	65.6%
ANE01	**Feeling of excessive tiredness during menstruation**[3]	1060		629		431	
	Yes, feeling of excessive tiredness	495	46.7%	255	40.5%	240	55.7%
PAN02	**Severity of menstrual pain (range from 0-10)**[4]	4.1		3.9		2.4	
	0	133	12.6%	111	17.9%	22	5.1%
	1	69	6.6%	39	6.3%	30	6.9%
	2	101	9.6%	58	9.3%	43	10.0%
	3	138	13.1%	72	11.6%	66	15.3%
	4	139	13.2%	64	10.3%	75	17.4%
	5	171	16.2%	95	15.3%	76	17.6%
	6	108	10.3%	66	10.6%	42	9.7%
	7	79	7.5%	48	7.7%	31	7.2%
	8	55	5.2%	28	4.5%	27	6.3%
	9	25	2.4%	17	2.7%	8	1.9%
	10	35	3.3%	23	3.7%	12	2.8%

1. Participants were able to indicate more than one response.
2. 6 participants in Kenya and 2 participants in Nepal chose not to answer.
3. 3 participants in Kenya and 1 participant in Nepal chose not to answer.
4. 11 participants from Kenya chose not to answer.

D. Experience of Menstruation Related to Contraception Use

All participants in Kenya and participants who indicated that they were married in Nepal (Table 19) were asked about their use of contraception (local team members in Nepal advised not to ask Nepali participants who were single/never married, divorced/separated, or widowed about contraception due to perceived sensitivity). Almost half (49%) of Kenyan participants and a quarter (28%) of Nepali participants stated that they use a form of contraception. Among the Kenyan participants who reported using contraception, the most common types of contraception utilized were implants (23%), male condoms (22%), and the pill/oral contraceptives (20%). Among Nepali participants who reported using contraception, the most common methods used were the pill/oral contraception (26%), injectables (16%), and implants (13%).

Among participants utilizing contraception, a minority (40% overall) reported no changes to menstruation (Kenya: 38%; Nepal: 49%). In both locations, about a quarter of participants reported that contraception use had caused irregular periods (Kenya: 24%; Nepal: 25%). Other common changes included heavier periods (Kenya:14%; Nepal: 10%), lighter periods (Kenya:12%; Nepal: 8%), longer periods (Kenya:10%; Nepal: 8%), and spotting between periods (Kenya:11%; Nepal: 5%).

Table 19: Contraception Use among Participants and Reported Changes to Menstruation, Total and by Country

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
GM05	**Uses Contraception**[1]	370	43.2%	305	48.6%	65	28.4%
GM06	**Contraception type**[2]						
	Female sterilization	15	4.1%	8	2.6%	7	11.5%
	Male sterilization	5	1.4%	0	0.0%	5	8.2%
	Implant	77	21.2%	69	22.9%	8	13.1%
	IUD	48	13.2%	42	13.9%	6	9.8%
	Injectables	71	19.6%	61	20.2%	10	16.4%
	Pill	76	20.9%	60	19.9%	16	26.2%
	Emergency contraception	16	4.4%	15	5.0%	1	1.6%
	Male condom	72	19.8%	66	21.9%	6	9.8%
	Female condom	4	1.1%	3	1.0%	1	1.6%
	Foam/Jelly	1	0.3%	0	0.0%	1	1.6%
	Std. days/cycle beads	8	2.2%	8	2.6%	0	0.0%
	Rhythm method	3	0.8%	3	1.0%	0	0.0%
	Withdrawal	18	5.0%	17	5.6%	1	1.6%
	Other traditional methods	3	0.8%	3	1.0%	0	0.0%
GM07	**Reported changes in menstruation due to contraception**[3]	359		298		61	
	Irregular periods	87	24.2%	72	24.2%	15	24.6%
	Spotting in between periods	35	9.7%	32	10.7%	3	4.9%
	No periods	7	1.9%	5	1.7%	2	3.3%
	Shorter periods	22	6.1%	18	6.0%	4	6.6%
	Longer periods	35	9.7%	30	10.1%	5	8.2%
	Lighter periods	42	11.7%	37	12.4%	5	8.2%
	Heavier periods	49	13.6%	43	14.4%	6	9.8%
	No changes	144	40.1%	114	38.3%	30	49.2%

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	1. Only married participants in Nepal (N=252, 58.3%) were asked about their use of contraception; 145 participants in Kenya and 8 in Nepal who answered that they had "no partner/sex" were excluded. 5 participants in Kenya and 23 in Nepal chose not to answer; 0% reported Lactation Amenorrhea Method (LAM) and 0% reported using a diaphragm. 2. 3 participants in Kenya and 4 in Nepal chose not to answer 3. 7 participants in Kenya and 4 participants in Nepal chose not to answer.						

Individual-Level Determinants

Individual-level determinants assessed include knowledge, material access, pain management access, and social support.

A. Knowledge

A greater proportion of participants in Kenya than Nepal knew about menstruation prior to menarche (Kenya: 86%; Nepal: 60%), but a greater number of participants in Kenya reported not being able to predict their menstruation (Kenya: 17.6%; Nepal: 7.2%) (Table 20).

Table 20: Participants' Knowledge Related to Menstruation, Total and by Country

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
KNO04	**Knew about menstruation before first menstrual period**	803	75.5%	545	86.2%	258	59.7%
GM01	**Expecting last menstruation when it started**	1064		632		432	
	Yes, expecting last menstruation when it started	878	82.5%	494	78.2%	384	88.9%
GM02	**Can usually predict when menstruation will start**	1064		632		432	
	No, I don't know when it will start	142	13.4%	111	17.6%	31	7.2%
	Yes, I keep a calendar/track	422	39.7%	255	40.4%	167	39.0%
	Yes, my body tells me (e.g., sore breasts, cramping)	666	62.6%	343	54.3%	325	75.8%
	Yes, I am on oral contraceptives so I know when my period will begin	18	1.7%	16	2.5%	2	0.5%
	Yes, other	26	2.4%	1	0.2%	25	5.8%

B. Material Access

Material access questions were asked as part of the MPNS and are reported in the previous section on *Work Menstruation Experience* (Table 9). The majority of participants in both countries—though greater proportions in Nepal—expressed that they could "always" get more of their menstrual materials when needed (Kenya: 61%; Nepal: 81%), were "always" satisfied with their menstrual materials (Kenya: 68%; Nepal: 73%) and were "never" worried about how to obtain more of their menstrual materials if they ran out (Kenya: 54%; Nepal: 73%). Additionally, the majority of participants in both countries reported that they "always" had enough of their menstrual materials to change them as often as they wanted to (Kenya: 64%; Nepal: 78%) (Table 9).

C. Pain Management Access

Participants were asked about access to pain relief and the measures they took to reduce pain or discomfort, and if these measures were effective (Table 21). Pain remedies were not always accessible to participants. Only 42% of Kenyan and 58% of Nepali participants reported being able to always get the pain remedies they needed. Among those who were never or only sometimes able to acquire pain remedies (Kenya: 23.9%; Nepal: 7%), participants most commonly indicated that they could not acquire them because these remedies were not available at or near their where they worked (Kenya: 25%; Nepal: 59%).

The most common strategies reported by Kenyan participants were taking medication or pain relievers (46%), drinking hot tea or other liquids (13%), and resting or taking breaks (7%); 23% of Kenyan participants did nothing despite experiencing pain or discomfort. The most common strategies reported by Nepali participants were drinking hot tea or liquids (74%), taking medication or pain relievers (35%), and doing stretches or exercises (17%); only 3% of Nepali participants reported doing nothing despite experiencing pain. Most (80%) of Nepali participants reported that these measures reduced their pain/discomfort either quite a bit or completely, as compared to 63% of Kenyan participants.

The majority of participants in both locations reported that they would feel comfortable talking to a healthcare provider if they had a concern about their menstrual period (Kenya: 88%; Nepal: 88%).

Table 21: Pain Management Strategies, Access, Effectiveness, and Care Seeking, Total and by Country

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
MAW19	**What measures did you take to reduce pain or discomfort?[1]**	792		569		223	
	Took medication/pain relievers	342	43.2%	263	46.2%	79	35.4%
	Used a heat pack or hot water bottle	55	6.9%	20	3.5%	35	15.7%
	Used an ice pack	7	0.9%	2	0.4%	5	2.2%
	Used traditional remedies/herbs	23	2.9%	12	2.1%	11	4.9%
	Rested/took a break	68	8.6%	41	7.2%	27	12.1%
	Did stretches/exercises	64	8.1%	26	4.6%	38	17.0%
	Hot tea/liquids	240	30.3%	74	13.0%	166	74.4%
	Changed diet	25	3.2%	13	2.3%	12	5.4%
	Did nothing despite experiencing pain	135	17.0%	129	22.7%	6	2.7%
	Other	7	0.9%	7	1.2%	0	0.0%
	Not applicable/did not experience pain or discomfort	110	13.9%	99	17.4%	11	4.9%
PAN04	**During your last menstrual period, were you able to get menstrual pain remedies you needed?[2]**	841		490		351	
	Never	45	5.4%	38	7.8%	7	2.0%
	Sometimes	95	11.3%	79	16.1%	16	4.6%
	Often	88	10.5%	52	10.6%	36	10.3%
	Always	372	44.2%	204	41.6%	168	47.9%
	Choose not to use remedies	241	28.7%	117	23.9%	124	35.3%
PAN05	**Why were you not able to get these remedies?[3]**	126		104		22	
	Too expensive	16	12.7%	14	13.5%	2	9.1%
	Not available at/near my work	39	31.0%	26	25.0%	13	59.1%
	I don't know what to get	3	2.4%	3	2.9%	0	0.0%
	I don't know where to get it	1	0.8%	0	0.0%	1	4.6%
	I don't have someone to get it for me	6	4.8%	5	4.8%	1	4.6%

Item Code	Response	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	Other	64	50.8%	58	55.8%	6	27.3%
MAW20	**Extent to which measures reduced pain**[4]	531		323		208	
	Not at all	3	0.5%	3	0.9%	0	0.0%
	Slightly	166	31.3%	124	38.4%	42	20.2%
	Quite a bit	268	50.5%	141	43.7%	127	61.1%
	Completely	94	17.7%	55	18.8%	39	18.8%
MAW20a	**Would you feel comfortable seeking help from a healthcare provider if you had a concern about your menstrual period**[5]	1059		630		429	
	Yes	931	87.9%	554	87.9%	377	87.9%

1. 63 participants in Kenya and 35 participants in Nepal were excluded because they responded "not applicable" when asked about symptoms during menstruation (PAN03). 200 participants in Kenya and 173 participants in Nepal were excluded because they "chose not to use remedies" or "did not experience pain/need pain remedies" in response to PAN04. One participant in Kenya and one participant in Nepal chose not to answer.
2. 1 participant in Nepal chose not to answer.
3. Only asked of participants who responded "Never" or "Sometimes" to item PAN04. 12 respondents in Kenya and 1 respondent in Nepal chose not to answer.
4. Participants only asked if responded "Yes" to experiencing pain symptoms and "Always," "Often," or "Sometimes" to PAN04. 63 participants in Kenya and one in Nepal chose not to answer.
5. 2 participants in Kenya and 3 participants in Nepal chose not to answer.

D. Social Support

The majority of participants in both locations—though greater proportions in Kenya—reported knowing someone at their workplace who would give them menstrual products if they needed them (Kenya: 70%; Nepal: 95%) and knowing someone at their workplace who they could talk to about problems related to menstruation (Kenya: 68%; Nepal: 97%) (Table 22).

Table 22: Participant Social Support at Work, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
Social Support							
WSE19	**I know someone at my workplace who would give me menstrual products if I need them**[1, 2]	889		530		359	
	Strongly Disagree	50	5.6%	42	7.9%	8	2.2%
	Disagree	129	14.5%	117	22.1%	12	3.3%
	Agree	486	54.7%	321	60.6%	165	46.0%
	Strongly Agree	224	25.2%	50	9.4%	174	48.5%
WSE20	**I know someone at my workplace who I could talk to about problems related to menstruation**[1, 3]	895		532		363	
	Strongly Disagree	47	5.3%	44	8.3%	3	0.8%
	Disagree	136	15.2%	129	24.2%	7	1.9%
	Agree	456	51.0%	290	54.5%	166	45.7%
	Strongly Agree	256	28.6%	69	13.0%	187	51.5%

1. Participants were asked if they answered "Yes to "Do other people work at your workplace?" (WRK9)
2. 4 participants in Kenya and 7 in Nepal chose not to answer
3. 2 participants in Kenya and 3 in Nepal chose not to answer.

Workplace-Level Determinants

Workplace-level determinants assessed include social environment, institutional (workplace) policies and physical environment.

A. Social Environment

Participants were asked various questions to assess the social environment within their workplaces (Table 23). The majority of participants in both locations disagreed or strongly disagreed with statements about restricting women's ability to work while menstruating, including *During my menstrual period, I am restricted from doing certain tasks at my job* (Kenya: 96%; Nepal: 96%) and *People where I work believe that women should not work while they are menstruating* (Kenya: 92%; Nepal: 96%). Similarly, the majority of participants in both countries disagreed or strongly disagreed with the statement, *At my workplace, I may be scolded or punished for taking too much time when I go to change my menstrual materials/manage my menstruation* (Kenya: 92%; Nepal: 96%).

More participants in Nepal than Kenya agreed or strongly agreed that people help women who are menstruating at their workplace if needed (Kenya: 77%; Nepal: 93%). Finally, while in Nepal, the majority of participants disagreed or strongly disagreed that women in their workplaces hide the fact that they are menstruating (91%), the majority of Kenyan participants agreed or strongly agreed with this statement (58%).

Table 23: Participants Assessments of their Workplace Social Environment, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
Social Environment							
The following was read to participants directly before this section: Next, I will ask you some questions about the social environment at your workplace. I will read each statement and then ask if you: strongly disagree, disagree, agree, or strongly agree.							
WSE07	**During my menstrual period, I am restricted from doing certain tasks at my job.**[1]	1054		622		432	
	Strongly Disagree	784	74.4%	437	70.3%	347	80.3%
	Disagree	229	21.7%	162	26.0%	67	15.5%
	Agree	30	2.9%	18	2.9%	12	2.8%
	Strongly Agree	11	1.0%	5	0.8%	6	1.4%
WSE09	**Where I work, women hide the fact that they are menstruating.**[2]	852		492		360	
	Strongly Disagree	337	39.6%	84	17.1%	253	70.3%
	Disagree	201	23.6%	125	25.4%	76	21.1%
	Agree	168	19.7%	153	31.1%	15	4.2%
	Strongly Agree	146	17.1%	130	26.4%	16	4.4%
WSE10	**Where I work, people help women who are menstruating if they need it, such as sharing menstrual materials if needed.**[3]	858		504		354	
	Strongly Disagree	46	5.4%	34	6.8%	12	3.4%
	Disagree	96	11.2%	82	16.3%	14	4.0%
	Agree	425	49.5%	302	59.9%	123	34.8%
	Strongly Agree	291	33.9%	86	17.1%	205	57.9%
WSE11	**People where I work believe that women should not work while they are menstruating.**[4]	874		512		362	
	Strongly Disagree	608	69.6%	315	61.5%	293	80.9%
	Disagree	209	23.9%	155	30.3%	54	14.9%
	Agree	39	4.5%	29	5.7%	10	2.8%
	Strongly Agree	18	2.1%	13	2.5%	5	1.4%
WSE18	**At my workplace, I may be scolded or punished for taking too much time when I go to change my menstrual materials/manage my menstruation.**[5]	822		505		317	
	Strongly Disagree	575	70.0%	321	63.6%	254	80.1%
	Disagree	193	23.5%	142	28.1%	51	16.1%
	Agree	39	4.7%	34	6.7%	5	1.6%
	Strongly Agree	15	1.8%	8	1.6%	7	2.2%

1. 10 participants in Kenya chose not to answer.
2. 2 participants in Kenya chose not to answer and 40 chose "I don't know." 6 participants in Nepal chose "not applicable." 98 participants in Kenya and 66 in Nepal were not asked this question because they answered "No" when asked "Do other people work at your workplace?" (WRK9).

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	3. 1 participant in Kenya chose not to answer and 29 chose "I don't know." 12 participants in Nepal chose "not applicable." 98 participants in Kenya and 66 in Nepal were not asked this question because they answered "No" when asked "Do other people work at your workplace?" (WRK9). 4. 4 participants in Kenya chose not to answer. 18 participants in Kenya and 1 in Nepal chose "don't know." 3 participants in Nepal chose "not applicable." 98 participants in Kenya and 66 in Nepal were not asked this question because they answered "No" when asked "Do other people work at your workplace?" (WRK9). 5. 5 participants in Kenya chose not to answer and 2 chose "not applicable." 98 participants in Kenya and 66 in Nepal were not asked this question because they answered "No" when asked "Do other people work at your workplace?" (WRK9). Additionally, 22 participants in Kenya and 49 in Nepal were excluded because they did not change their materials while working outside of the home (MAW03).						

B. Institutional Workplace Policies

Participants were asked about rules in their workplace related to menstruation (Table 24). These may not be formal policies or formally written rules; rules do not have to be written or formalized to have power, they just need to be understood. As such, the questions asked assess women's perception of what is allowed and not allowed in their workplace related to menstruation. When asked to consider when they are menstruating at work, the majority of participants reported that they can use the toilet facilities (Kenya: 83%; Nepal 80%) or take a break to meet their menstrual needs (Kenya: 78%; Nepal: 56%) whenever they need to do so. While less than 1% in each location reported not being able to use facilities when needed or take a break to meet menstrual needs, 17% of participants in Kenya and 19% in Nepal could only use toilet facilities if they informed or asked permission of someone, had someone to cover their post, or had a specific break. 22% of participants in Kenya and 43% in Nepal could only take a break to meet their menstrual needs if they informed or asked permission of someone, had someone to cover their post, or had a specific break. Only slightly more than one-third of participants in either location (Kenya: 40%; Nepal: 37%) could take a break to rest when menstruating as needed. In Kenya, 12% of participants indicated that they could not take a menstruation-related break to rest at all.

Table 24: Participants Reporting of Institutional Policies at their Workplace, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
The following was read to participants directly before this section: Next, I would like to ask you a few questions about rules and restrictions that may exist in your workplace. For each of these questions, I will ask if you can do an activity, and you can answer: (a) that you cannot do that activity at all, (b) that you can only do that activity during specific breaks (such as the lunch hour) or when you can get someone to cover your post, (c) only after you ask for permission or (d) whenever you need to without restrictions.							
WSE01	**If I am menstruating at work and I need to use the toilet facilities, I am allowed to go**[1]	1062		630		432	
	Not at all	5	0.5%	1	0.2%	4	0.9%
	Only during specific breaks or when I can get someone to cover my post	83	7.8%	52	8.3%	31	7.2%
	Only after asking permission or informing someone	104	9.8%	52	8.3%	52	12.0%
	Whenever I need to	870	81.9%	525	83.3%	345	79.9%
WSE02	**If I am menstruating at work and I need to take a break to meet my menstrual needs (such as changing materials, bathing, or washing materials or clothing)-I am allowed to go**[2]	1058		627		431	
	Not at all	8	0.8%	4	0.6%	4	0.9%
	Only during specific breaks or when I can get someone to cover my post	104	9.8%	68	10.9%	36	8.4%
	Only after asking permission or informing someone	215	20.3%	67	10.7%	148	34.3%
	Whenever I need to	731	69.1%	488	77.8%	243	56.4%
WSE06	**If I am menstruating at work and I need to take break to rest, I am allowed to do so:** [2]	1058		627		431	
	Not at all	88	8.3%	78	12.4%	10	2.3%
	Only during specific breaks or when I can get someone to cover my post	139	13.1%	97	15.5%	42	9.7%
	Only after asking permission or informing someone	424	40.1%	203	32.4%	221	51.3%
	Whenever I need to	407	38.5%	249	39.7%	158	36.7%

1 2 participants from Kenya Nepal chose not to answer.
2. 5 participants from Kenya and 1 participant from Nepal chose not to answer.

B. Physical environment

Participants were asked about the facilities available at their workplace as well as the facilities they use for their urination, defecation, and menstruation needs (Tables 25-27). Approximately three-quarters of participants in both locations reported that their workplaces have designated toilets/sanitation facilities for workers (Kenya: 77%; Nepal: 77%), and in both locations, the most common toilet type at the workplace was a flush/pour flush toilet (Kenya: 92%; Nepal: 82%) (Table 25). The majority of participants worked in places that had separate toilets/sanitation facilities for women (Kenya: 79%; Nepal: 60.%).

In Nepal, the majority of participants reported that their workplaces had private facilities for bathing/washing or washing reusable materials (58%) while only 36% of Kenyan participants reported that their workplaces had these facilities. Among those whose workplaces did have these facilities, the majority of participants in both locations (Table 25) reported that both water and soap were available in these facilities (Kenya: 84%; Nepal: 96%).

The small number of participants in each country who did not use their workplace facility/toilet to change their menstrual materials (N=30) were asked for reasons they did not use this location. The most common reasons for not doing so in Kenya were the facility was not clean enough (24%); there were too many people around (24%); the facility was not private enough (16%); and the facility was too expensive/payment was required (16%). In Nepal, 20% of participants who did not use their workplace facility noted the following reasons: not clean enough, not private enough, not separate from men, do not like them, and prefer another location (Table 26).

The majority of participants in both countries reported (Table 26) that the location they use for changing is separate from men (Kenya: 73%; Nepal: 57%); is structurally private (Kenya: 95%; Nepal: 98%); is clean (Kenya: 88%; Nepal: 95%); is lockable from the inside (Kenya: 95%; Nepal: 99%); and has a handwashing station (Kenya: 88%; Nepal: 93%) with both soap and water available (Kenya: 80%; Nepal: 95%). In both sites, the majority of participants usually do not have to wait to use this location (Kenya: 77%; Nepal: 91%) or pay to use the location (Kenya: 81%; Nepal: 98%). When asked if this location is locked and/or guarded, 53% of Kenyan and 43% of Nepali participants reported that the location is locked but not guarded, while 17% of Kenyan and 25% of Nepali participants reported that the location is both locked and guarded. 46% of Kenyan and 42% of Nepali participants stated that their location does not have either a shelf or hooks inside, a key feature of female-friendly facilities.

Table 25: Workplace Facility and Resource Availability and Characteristics, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 630)		Nepal (N 432)	
		N	%	N	%	N	%
Presence of Workplace Facilities							
The following was read to participants directly before this section: Now, I am going to ask you some general questions about the facilities available at your workplace. As before, please think of the job where you spend most of your time if you have more than one job. If your work takes place in multiple locations, please think of the place where you spend most of your time. I would like to know about these facilities, even if you do not typically use the facilities. Please answer to the best of your ability, but it is alright if you do not know the answer.							
WPE01	**Designated toilets/sanitation facilities for workers at workplace**[1]	1062		630		432	
	Yes	820	77.2%	487	77.3%	333	77.1%
	Don't know	5	0.5%	2	0.3%	3	0.7%
WPE02	**[If YES] Types of toilets/sanitation facilities available for workers**[2]	820		487		333	
	Flush/pour-flush toilet	727	88.7%	450	92.4%	277	83.2%
	Dry toilet	96	11.7%	62	12.7%	34	10.2%
	Bucket/flying toilet	0	0.0%	0	0.0%	0	0.0%
	No facility/field/bush	1	0.1%	1	0.2%	0	0.0%
	Hanging toilet	0	0.0%	0	0.0%	0	0.0%
	Other	27	3.3%	0	0.0%	27	8.1%
WPE02a	**Separate toilets/sanitation facilities for women only**[2, 3]	584	71.3%	383	78.8%	201	60.4%
WPE05	**Private workplace facilities for bathing/washing/washing reusable materials**[4]	1060		629		431	
	Yes	475	44.8%	225	35.8%	250	58.0%
	Don't know	7	0.7%	3	0.5%	4	0.9%
WPE06	**[If YES] Water/soap available**[5]	473		225		248	
	Yes, water and soap	426	90.1%	188	83.6%	238	96.0%
	Yes, water only	42	8.9%	36	16.0%	6	2.4%
	Yes, soap only	0	0.0%	0	0.0%	0	0.0%
	No, neither water nor soap	5	1.1%	1	0.4%	4	1.6%

1. 2 participants in Kenya chose not to answer.
2. 145 participants in Kenya and 99 in Nepal were excluded because they did not answer "Yes" to WPE01.
3. 1 participant in Kenya chose not to answer.
4. 3 participants in Kenya and 1 participant in Nepal chose not to answer.
5. 2 participants in Nepal chose not to answer. 407 participants in Kenya and 182 in Nepal were excluded because they did not answer "Yes" to WPE05.

Table 26: Locations Used Most Often While Working, Total and by Country[1]

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
WPE13	**Reasons for not using sanitation facility at workplace for menstruation[12]**	30		25		5	
	Not clean enough	7	23.3%	6	24.0%	1	20.0%
	Not private enough	5	16.7%	4	16.0%	1	20.0%
	No disposal bins	2	6.7%	2	8.0%	0	0.0%
	Too expensive/have to pay	4	13.3%	4	16.0%	0	0.0%
	Not functional	3	10.0%	3	12.0%	0	0.0%
	Takes too much time	2	6.7%	2	8.0%	0	0.0%
	Too far away	2	6.7%	2	8.0%	0	0.0%
	Not separate from men	3	10.0%	2	8.0%	1	20.0%
	Do not like them	4	13.3%	3	12.0%	1	20.0%
	Prefer other location	2	6.7%	1	4.0%	1	20.0%
	Too many people around	6	20.0%	6	24.0%	0	0.0%
	Space cramped	1	3.3%	1	4.0%	0	0.0%
	No water available	2	6.7%	2	8.0%	0	0.0%
	No soap available	1	3.3%	1	4.0%	0	0.0%
	Not allowed	1	3.3%	1	4.0%	0	0.0%
WPE14	**Place used to change separate from men's facilities[3]**	920		574		346	
	Yes	612	66.5%	416	72.5%	196	56.6%
WPE15	**Location locked and/or guarded[4]**	921		575		346	
	Yes, locked and guarded	185	20.1%	100	17.4%	85	24.6%
	Yes, locked	452	49.1%	302	52.5%	150	43.4%
	Yes, guarded	27	2.9%	27	4.7%	0	0.0%
	No, neither locked nor guarded	257	27.9%	146	25.4%	111	32.1%
	Strongly Agree						
WPE19	**Place used to change structurally private[5]**	651		295		356	
	Yes	629	96.6%	280	94.9%	349	98.0%
WPE20	**Place used to change clean[6]**	944		588		356	
	Yes	856	90.7%	517	87.9%	339	95.2%
WPE21	**Usually have to wait to use this location because of lines/crowding[7]**	956		598		358	
	Yes	173	18.1%	140	23.4%	33	9.2%
WPE22	**Lockable from inside[8]**	921		576		345	
	Yes	891	96.7%	548	95.1%	343	99.4%
WPE23	**Time to go to location (minutes) mean/range[9]**	2.42	0-30	3.11	0-30	1.26	0-5

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
WPE24	**Pays to use location**	923		577		346	
	Yes	115	12.5%	110	19.1%	5	1.5%
WPE26	**Had shelf and/or hook for hygienically storing belongings**[10]	920		576		344	
	Yes, shelf and hook	167	18.2%	93	16.1%	74	21.5%
	Yes, shelf	108	11.7%	82	14.2%	26	7.6%
	Yes, hook	239	26.0%	139	24.1%	100	29.1%
	No, no shelves or hook	406	44.1%	262	45.5%	144	41.9%
WPE28	**Has handwashing station**[11]	920		575		345	
	Yes	828	90.0%	507	88.2%	321	93.0%
WPE29	**Soap and/or water available at handwashing station**	828		507		321	
	Yes, soap and water	713	86.1%	407	80.3%	306	95.3%
	Yes, soap	111	13.4%	98	19.3%	13	4.0%
	Yes, water	0	0.0%	0	0.0%	0	0.0%
	No, neither soap nor water	4	0.5%	2	0.4%	2	0.6%

1. Participants were only asked if they responded "Yes" to question "Does your workplace have any designated toilets or sanitation facilities for workers to use?" (WPE01) and if they responded "Yes" to question "During this menstrual period, did you ever change your menstrual materials while working outside the home?" (MAW03)
2. Participants were only asked if they chose a response other than "facility/toilet at my workplace" to question "Where do you most often change your menstrual materials while you are working?" (WPE12) 28 participants in Kenya and 2 participants in Nepal chose not to answer. Participants could select multiple responses.
3. 3 participants in Kenya chose not to answer.
4. 2 participants in Kenya chose not to answer.
5. 1 participant in Kenya and 3 participants in Nepal chose not to answer. Kenya has 303 missing values for unknown reasons.
6. 11 participants in Kenya and 4 participants in Nepal chose not to answer.
7. 1 participant in Kenya and one participant in Nepal chose not to answer.
8. 1 participant in Kenya and one participant in Nepal chose not to answer.
9. 1 participant in Kenya was removed for the implausible value of 360 minutes.
10. 1 participant in Kenya and 2 participants in Nepal chose not to answer.
11. 2 participants in Kenya and one participant in Nepal chose not to answer.

Workplace resource availability

The majority of participants in both locations indicated that their employer does not provide any goods to assist menstruating women, either for free or at a subsidized rate (Kenya: 73%; Nepal: 60%). However, 21% of Nepali participants indicated that their employer does provide free or subsidized menstrual materials and 24% of Nepali participants indicated that their employer provides resources, like medication or heat packs, to help with menstrual pain management; in comparison, only 5% of Kenyan participants said that their employer provides menstrual materials and only 3% said that their employer provides pain management resources (Table 27).

Table 27: Workplace Resource Availability

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
The following was read to participants directly before this section: Now, I'd like to ask you a few questions about the materials you may need during your menstrual period while working at your main job outside the home.							
WPE31	**Are menstrual materials available where you work?**[1]	1061		631		430	
	Yes, for free	100	9.4%	40	6.3%	60	14.0%
	Yes, for purchase	293	27.6%	221	35.0%	72	16.7%
	Yes, from a friend	39	3.7%	7	1.1%	32	7.4%
	No	647	61.0%	367	58.2%	280	65.1%
WRK10	**Does your employer provide any goods to assist menstruating women for free or at a subsidized rate? This may include menstrual materials, pain management resources, medical care, or other goods.**[1]	954		525		429	
	Menstrual materials, such as sanitary pads	122	12.8%	31	5.9%	91	21.2%
	Resources, like medication or heat packs, to help with menstrual pain management	120	12.6%	16	3.1%	104	24.2%
	Medical care that women may need during menstruation	60	6.3%	33	6.3%	27	6.3%
	Other	11	1.2%	8	1.5%	3	0.7%
	Nothing	705	73.9%	445	84.8%	260	60.6%

1. Participants could select multiple options. 1 participant in Kenya and 2 participants in Nepal chose not to answer.
2. Participants could select multiple options. 22 participants in Kenya and 3 participants in Nepal chose not to answer. 85 participants in Kenya selected 'not applicable – respondent is an employer' and were excluded from the total.

5.2.6 PARTICIPANTS' WELL-BEING AND EMPLOYMENT OUTCOMES

Individual Well-being

Participants were asked about menstruation-related stress and tension (Table 28), with the majority of participants indicating that they rarely experience menstruation-specific stress or tension in the workplace. The majority of participants in both locations reported that they "never" experienced stress/tension when needing to access a location to change their menstrual materials/manage their menstruation (Kenya: 70%; Nepal: 83%), stress/tension when changing their materials or managing their menstruation (Kenya: 71%; Nepal: 83%), or feeling scared when changing their menstrual materials/ managing their menstruation (Kenya: 83%; Nepal: 89%) during their last menstrual period while working outside the home.

Stigma/Social Impact

Only one question related to stigma and the social impact of menstruation in the workplace was included in the survey; other stigma items were deleted during the cognitive interview phase. The vast majority of participants stated that they had "never" been teased about their period while at their job in the last three months (Kenya: 96%; Nepal: 98%) (Table 28).

Perceived Health and Well-Being

In addition to questions specific to menstruation-related stress and tension, participants were asked to rate their overall health, with most participants in both locations rating their health as good moderate (Kenya: 44%; Nepal: 44%), or very good (Kenya: 32%, Nepal: 22%) (Table 29).

Participants were also asked the four items from the PHQ4. Overall PHQ4 scores had a mean of 2.5 out of a total possible score of 12 (SD = 2.82; Range: 0-12); in Kenya, the overall mean score was 2.83 (SD = 2.90; Range: 0-12) and in Nepal, the overall mean score was 2.07 (SD = 2.65; Range: 0-12). Scores equal to or greater than three indicate poor well-being; overall, 43% of the sample had scores indicating poor well-being (48% in Kenya and 36% in Nepal). The first two items (PHQ1 and PHQ2) indicate anxiety when scores for these two items are greater than or equal to three; overall, 16% of the sample had scores indicating anxiety (20% in Kenya and 12% in Nepal). Finally, the latter two items (PHQ3 and PHQ4) indicate depression when scores for these two items are greater than or equal to three; overall, 15% of the sample had scores indicating depression (19% in Kenya and 11% in Nepal).

Participants were also asked the five items from the WHO's well-being scale, which includes five items that are each scored from 0 to 5. Total scores are produced by summing responses across the five items such that total scores can range from 0 to 25. Sixty-one percent of women in the sample (71% in Kenya and 47% in Nepal) had scores below the threshold of 13, indicating poor well-being for those individuals. Further analysis is warranted, however, to understand the extent that menstruation-related experiences may contribute to these scores.

Table 28: Menstruation Related Stress and Tension

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
Menstruation-Related Stress and Tension							
The following was read to the participants directly before this section: Next, I would like to ask you about some other experiences you may have had during your last menstrual period while working at your main job outside the home. For each statement I read, please tell me how often you felt this way. You can answer never, sometimes, often, or always.							
During my last menstrual period while working at my main job outside the home…							
MFS01	**I experienced stress or tension when I needed to access a location to change my menstrual materials/manage my menstruation.**[1]	955		597		358	
	Never	713	74.7%	416	69.7%	297	83.0%
	Sometimes	179	18.7%	130	21.8%	49	14.0%
	Often	38	4.0%	27	4.5%	11	3.1%
	Always	25	2.6%	24	4.0%	1	0.3%
MFS02	**I felt stress or tension when changing my menstrual materials/managing my menstruation.**[2]	956		598		358	
	Never	719	75.2%	423	70.7%	296	82.7%
	Sometimes	170	17.8%	120	20.1%	50	16.9%
	Often	40	4.2%	31	5.2%	9	2.5%
	Always	27	2.8%	24	4.0%	3	0.8%
MFS03	**I felt scared when changing my menstrual materials/managing my menstruation.**	958		599		359	
	Never	818	85.4%	497	83.0%	321	89.4%
	Sometimes	105	11.0%	73	12.2%	32	8.9%
	Often	22	2.3%	17	2.8%	5	1.4%
	Always	13	1.4%	12	2.0%	1	0.3%
Stigma							
ST110	**While at my job in the last three months, I had people tease me about my period.**[3]	900		534		366	
	Never	874	97.1%	515	96.4%	359	98.1%
	Sometimes	18	2.0%	12	2.2%	6	1.6%
	Often	2	0.2%	2	0.4%	0	0.0%
	Always	6	0.7%	5	0.9%	1	0.3%

1. 33 participants in Kenya and 73 participants in Nepal were excluded because they did not report changing materials while working outside the home (MAW03). 2 participants in Kenya and 1 in Nepal chose not to respond.
2. 1 participant in Kenya and 1 participant in Nepal chose not to respond.
3. 98 participants in Kenya and 66 in Nepal were excluded because they do not work with other people (WRK9).

Table 29: General Health, PHQ4 and WHO-5 Item Responses, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
General Perception of Health							
HE04	In general, would you say your health is very good, good, moderate, bad, or very bad?	1064		632		433	
	Very Good	298	28.1%	205	32.4%	93	21.6%
	Good Moderate	468	44.1%	278	44.0%	190	44.2%
	Bad	264	24.9%	132	20.9%	132	20.7%
	Very Bad	32	3.0%	17	2.7%	15	3.5%
Patient Health Questionnaire for Anxiety and Depression							
The following was read to participants directly before this section: Now I am going to ask you a few questions about problems you may have encountered. For these questions, please think about how often over the last two weeks you have been bothered by the following problems: not at all, several days, more than half the days, or nearly every day.							
	Overall Score (mean/range) [1]	2.52	0-12	2.83	0-12	2.07	0-12
	Number and Proportion with scores 3 and higher	450	43.2%	296	48.1%	154	36.2%
	Anxiety Score (mean/range) [1]	1.32	0-6	1.47	0-6	1.09	0-6
	Number and Proportion with Scores 3 and higher	170	16.3%	120	19.5%	50	11.8%
	Depression Score (mean/range) [1]	1.21	0-6	1.36	0-6	0.98	0-6
	Number and Proportion with Scores 3 and higher	159	15.3%	114	18.5%	45	10.6%
PHQ1	**Over the last 2 weeks, how often have you been bothered by feeling nervous, anxious, or on edge or tense?** [2]	1048		623		425	
	Not at all	542	51.7%	305	49.0%	237	55.8%
	Several Days	350	33.4%	237	38.0%	113	26.6%
	More than half the days	120	11.5%	53	8.5%	67	15.8%
	Nearly everyday	36	3.4%	28	4.5%	8	1.9%
PHQ2	**Over the last 2 weeks, how often have you been bothered by not being able to stop or control worrying?** [3]	1050		622		428	
	Not at all	575	54.8%	294	47.3%	281	65.7%
	Several Days	318	30.3%	212	34.1%	106	24.8%
	More than half the days	104	9.9%	70	11.3%	34	7.9%
	Nearly everyday	53	5.0%	46	7.4%	7	1.6%
PHQ3	**Over the last 2 weeks, how often have you been bothered by little interest or pleasure in doing things?** [4]	1057		628		429	
	Not at all	589	55.7%	300	47.8%	289	67.4%
	Several Days	313	29.6%	222	35.4%	91	21.2%
	More than half the days	115	10.9%	71	11.3%	44	10.3%
	Nearly everyday	40	3.8%	35	5.6%	5	1.2%

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
PHQ4	Over the last 2 weeks, how often have you been bothered by feeling down, depressed, or hopeless? [5]	1054		626		428	
	Not at all	638	60.5%	368	58.8%	270	63.1%
	Several Days	267	25.3%	166	26.5%	101	23.6%
	More than half the days	100	9.5%	51	8.1%	49	11.4%
	Nearly everyday	49	4.6%	41	6.5%	8	1.9%
WHO-5 Well Being Index Mean Scores and Ranges[6]		9.83	0-20	8.58	0-20	11.65	0-20
Number and Proportion with scores less than 13[6]		648	61.2%	444	70.7%	204	47.3%
The following was read to participants directly before this section: Now I am going to ask you about your general well-being. For the next five statements, please indicate which is the closest to how you have been feeling over the last two weeks: all of the time, most of the time, more than half the time, less than half of the time, some of the time, or at no time.							
WHO1	Over the last two weeks, I have felt cheerful and in good spirits.[7]	1060		629		431	
	At no time	17	1.6%	9	1.4%	8	1.9%
	Some of the time	264	24.9%	206	32.8%	58	13.5%
	Less than half of the time	94	8.9%	64	10.2%	30	7.0%
	More than half of the time	201	19.0%	107	17.0%	94	21.8%
	Most of the time	376	35.5%	189	30.0%	187	43.4%
	All the time	108	10.2%	54	8.6%	54	12.5%
WHO2	Over the last two weeks, I have felt calm and relaxed. [8]	1063		631		432	
	At no time	13	1.2%	5	0.8%	8	1.9%
	Some of the time	235	22.1%	183	29.0%	52	12.0%
	Less than half of the time	90	8.5%	64	10.1%	26	6.0%
	More than half of the time	216	20.3%	124	19.7%	92	21.3%
	Most of the time	407	38.3%	201	31.9%	206	47.7%
	All the time	102	9.6%	54	8.6%	48	11.1%
WHO3	Over the last two weeks, I have felt active and vigorous.[9]	1063		631		432	
	At no time	14	1.3%	6	1.0%	8	1.9%
	Some of the time	222	20.9%	176	27.9%	46	10.6%
	Less than half of the time	83	7.8%	59	9.4%	24	5.6%
	More than half of the time	219	20.6%	142	22.5%	77	17.8%
	Most of the time	405	38.1%	202	32.0%	203	47.0%
	All the time	120	11.3%	46	7.3%	74	17.1%
WHO4	Over the last two weeks, I woke up feeling fresh and rested.[10]	1063		631		432	
	At no time	16	1.5%	7	1.1%	9	2.1%
	Some of the time	253	23.8%	191	30.3%	62	14.4%
	Less than half of the time	63	5.9%	47	7.4%	16	3.7%

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	More than half of the time	227	21.4%	136	21.6%	91	21.1%
	Most of the time	375	35.3%	187	29.6%	188	43.5%
	All the time	129	12.1%	63	10.0%	66	15.3%
WHO5	Over the last two weeks, my daily life has been filled with things that interest me.[11]	1061		629		432	
	At no time	34	3.2%	18	2.9%	16	3.7%
	Some of the time	316	29.8%	234	37.2%	82	19.0%
	Less than half of the time	93	8.8%	67	10.7%	26	6.0%
	More than half of the time	182	17.2%	89	14.1%	93	21.5%
	Most of the time	355	33.5%	186	29.6%	169	39.1%
	All the time	81	7.6%	35	5.6%	46	10.6%

1. PHQ4 scores (overall, anxiety, and depression) and proportion greater than or equal to 3 are calculated out of 1041 (616 in Kenya, 425 in Nepal) because 23 (16 in Kenya, 7 in Nepal) chose not to answer to at least one of the four PHQ4 items
2. 9 participants in Kenya and 7 in Nepal chose not to answer.
3. 10 participants in Kenya and 4 in Nepal chose not to answer.
4. 4 participants in Kenya and 3 in Nepal chose not to answer.
5. 6 participants in Kenya and 4 in Nepal chose not to answer.
6. WHO-5 scores and proportion less than 13 are calculated out of a total of 1059 (628 in Kenya and 431 in Nepal) because 5 (4 in Kenya and 1 in Nepal) chose not to answer at least one of the five WHO-5 items.
7. 3 participants in Kenya and 1 in Nepal chose not to answer.
8. 1 participant in Kenya chose not to answer.
9. 1 participant in Kenya chose not to answer.
10. 1 participant in Kenya chose not to answer.
11. 3 participants in Kenya chose not to answer.

Safety

Participants were asked about safety concerns that may affect them when managing their menstruation at the workplace (Table 30). Although the majority of participants in both locations often or always felt safe in the place where they typically go to change their menstrual materials or manage their menstruation (Kenya: 79%; Nepal: 90%), a small percentage of participants in both locations did report that concerns about safety often or always prevented them from changing their menstrual materials when they wanted to (Kenya: 14%; Nepal: 2%). Five percent of Kenyan participants and just 1% of Nepali participants often or always feared that someone would make sexual comments or say obscene things to them when they went to change their menstrual materials/manage their menstruation. Four percent of Kenyan participants and one percent of Nepali participants often or always feared that someone would tease, bully, or harass them when they went to change their menstrual materials/manage their menstruation.

The average Safety factor score was 3.69 out of a total possible score of 4 (SD = 0.49; Range: 1-4). Higher scores indicate more perceived safety. In Kenya, the average Safety score was 3.60 (SD = 0.56; Range:1-4) and in Nepal the average score was 3.85 (SD = 0.32; Range: 2-4).

Additional information about the CFA results is reported in Annex E.

Table 30: Safety Item Responses, Scale CFA Factor Loadings, Scale Scores and Fit Statistics

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)		CFA Factor Loadings (N 957)[1]
		N	%	N	%	N	%	
Safety								
The following was read to participants directly before this section: I'd like to ask you a few questions about your personal experiences around safety when using a location to change your menstrual materials while working at your main job outside the home. Please listen carefully to each of these statements and indicate how often during your last menstrual period the statement has been true for you while you were working. Response options will be: never, sometimes, often, and always.								
SAF01[2]	How often did concerns about safety prevent you from changing your materials when you wanted to? [3]	1061		631		430		0.707
	Never	812	76.5%	438	69.4%	374	87.0%	
	Sometimes	151	14.2%	102	16.2%	49	11.4%	
	Often	42	4.0%	39	6.2%	3	0.7%	
	Always	56	5.3%	52	8.2%	4	0.9%	
SAF02 [4]	How often did you feel safe in the place where you typically went to change your menstrual materials/manage your menstruation? [5]	957		598		359		-0.575
	Never	70	7.3%	40	6.7%	30	8.4%	
	Sometimes	92	9.6%	86	14.4%	6	1.7%	
	Often	138	14.4%	104	17.4%	34	9.5%	
	Always	657	68.7%	368	61.5%	289	80.5%	
SAF03 [2,4]	How often did you fear someone would make sexual comments or say obscene things to you when you went to change your menstrual materials/manage your menstruation?	958		599		359		0.978
	Never	849	88.6%	505	84.3%	344	95.8%	
	Sometimes	76	7.9%	63	10.5%	13	3.6%	
	Often	21	2.2%	20	3.3%	1	0.3%	
	Always	12	1.3%	11	1.8%	1	0.3%	
SAF05 [2,4]	How often did you fear someone would tease, bully, or harass you when you went to change your menstrual materials/manage my menstruation?	958		599		359		0.948
	Never	865	90.3%	527	88.0%	338	94.2%	
	Sometimes	69	7.2%	50	8.3%	19	5.3%	
	Often	15	1.6%	14	2.3%	1	0.3%	
	Always	9	0.9%	8	1.3%	1	0.3%	

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)		CFA Factor Loadings (N 957)[1]
		N	%	N	%	N	%	
Mean Score and Range		3.69	1 - 4	3.60	1 - 4	3.85	2 - 4	
RMSEA (90% CI)								0.063 (0.028-0.106)
CFI								0.998
TLI								0.995

1. 107 participants were excluded from CFA due to "choose not to respond" or "not applicable" responses to any item or because they reported not having ever changed their menstrual materials while working outside the home (and, therefore, had missing values for SAF02, SAF03, and SAF04)
2. Reverse coded for factor scoring
3. 1 participant in Kenya and two participants in Nepal chose not to respond.
4. 33 in Kenya and 73 in Nepal were excluded because they reported not having ever changed their menstrual materials while working outside the home (MAW03).
5. 1 participant in Kenya chose not to respond.

Ability to complete work

Participants were asked about their perceived ability to complete their work when menstruating and their responses indicate that they do not perceive menstruation as negatively impacting their ability to do their work. The majority of participants in both locations somewhat disagreed or strongly disagreed with the statement *Because of my menstruation, the stresses of my job were much harder to handle* (Kenya: 73%; Nepal: 81%) and the statement *My menstruation distracted me from my work* (Kenya: 72%; Nepal: 78%). Ninety-three percent of participants in both countries somewhat agreed or strongly agreed with the statement, *At work I was able to complete my work tasks despite my menstruation* (Table 31).

Earnings

Eight percent of Kenyan respondents and five percent of Nepali respondents reported that they had lost earnings or had their pay reduced because of decreased productivity or missed work related to menstruation (Table 31).

Table 31: Ability to Complete Work and Earnings, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
Ability to Complete Work							
The following was read to participants directly before this section: Next we would like to know how much you agree with statements about the last time you were working during your menstruation. These experiences may be affected by many environmental as well as personal factors and may change from time to time *Please think specifically about the job where you spend the most time outside the home. For each of the following statements, please choose one of the following responses to show your agreement or disagreement with this statement: strongly agree, somewhat disagree, uncertain about your agreement with the statement, somewhat agree, or strongly agree.*							
SPS1	**Because of my menstruation, the stresses of my job were much harder to handle.**[1]	1062		630		432	
	Strongly Disagree	564	53.1%	313	49.7%	251	58.1%
	Somewhat Disagree	246	23.2%	146	23.2%	100	23.1%
	Uncertain about Agreement with Statement	13	1.2%	10	1.6%	3	0.7%
	Somewhat Agree	204	19.2%	133	21.1%	71	16.4%
	Strongly Agree	35	3.3%	28	4.4%	7	1.6%
SPS3	**My menstruation distracted me from my work.**[2]	1063		631		432	
	Strongly Disagree	532	50.1%	329	52.1%	203	47.0%
	Somewhat Disagree	259	24.4%	124	19.7%	135	31.3%
	Uncertain about Agreement with Statement	9	0.9%	6	1.0%	3	0.7%
	Somewhat Agree	231	21.7%	150	23.8%	81	18.8%
	Strongly Agree	32	3.0%	22	3.5%	10	2.3%
SPS5	**At work I was able to complete my work tasks despite my menstruaton.**[3]	1063		631		432	
	Strongly Disagree	43	4.0%	26	4.1%	17	3.9%
	Somewhat Disagree	22	2.1%	14	2.2%	8	1.9%
	Uncertain about Agreement with Statement	7	0.7%	3	0.5%	4	0.9%
	Somewhat Agree	161	15.1%	123	19.5%	38	8.8%
	Strongly Agree	830	78.1%	465	73.7%	365	84.5%
Earnings		1016		589		427	
WOR20	**In the past year, have you lost earnings or had your pay reduced because of**	66	6.5%	44	7.5%	22	5.2%

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
		N	%	N	%	N	%
	decreased productivity or missed work related to menstruation?[4]						

1. 2 participants in Kenya chose not to answer
2. 1 participant in Kenya chose not to answer
3. 1 participant in Kenya chose not to answer
4. 2 participants in Kenya and 4 participants in Nepal chose not to answer

Job Satisfaction

Participants were also asked about their satisfaction related to their ability to meet their menstrual needs while at their place of work (Table 32). The majority of participants expressed overall satisfaction in this regard, with the majority of participants in both locations agreeing or strongly agreeing with the statement *I feel fairly well-satisfied with my ability to meet my menstrual needs at my current job* (Kenya: 79%; Nepal: 90%). The majority of participants had never considered leaving their current job due to challenges faced meeting their menstruation needs (Kenya: 90%; Nepal: 85%).

Table 32: Job Satisfaction Item Responses, Total and by Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
Job Satisfaction							
MJS01	**I feel fairly well satisfied with my ability to meet my menstrual needs at my current job.**[1]	1058		627		431	
	Strongly Disagree	16	1.5%	8	1.3%	8	1.9%
	Disagree	34	3.2%	28	4.5%	6	1.4%
	Neutral	125	11.8%	97	15.5%	28	6.5%
	Agree	507	47.9%	322	51.4%	185	42.9%
	Strongly Agree	376	35.5%	172	27.4%	204	47.3%
MJS03	**How often have you considered quitting your current job because of challenges you face meeting your menstruation-related needs while working?**[2]	1061		629		432	
	Never	935	88.1%	567	90.1%	368	85.2%
	Sometimes	105	9.9%	51	8.1%	54	12.5%
	Often	10	0.9%	2	0.3%	8	1.9%
	Always	11	1.0%	9	1.4%	2	0.5%

1. 5 participants in Kenya and 1 participant in Nepal chose not to answer.
2. 3 participants in Kenya chose not to answer

Absenteeism/presenteeism

Absenteeism and presenteeism are important work-related outcomes that may be influenced by menstruation. Fifteen percent of Kenyan participants and 8% of Nepali participants reported that they had missed some work in the past year because of menstruation (Table 33). The most common reasons that participants missed work due to menstruation were the same in both countries and included they were in pain or feeling unwell (Kenya: 78%; Nepal: 87%); they were fatigued (Kenya: 28%; Nepal: 37%); they did not have enough menstrual materials (Kenya: 8%; Nepal: 3%); they feared staining their clothes (Kenya: 6%; Nepal: 3%); and it was too challenging to commute during menstruation (Kenya: 5%; Nepal: 3%).

Nineteen percent of Kenyan participants and eight percent of Nepali participants avoid scheduling work during their menstruation if they can. While the majority of participants in both locations remain at work if they start to menstruate (Kenya: 90%; Nepal: 89%), some participants go home if they begin to menstruate (Kenya: 10%; Nepal: 11%). Among those who go home, most participants in both locations return to work the same day (Kenya: 58%; Nepal: 76%).

Table 33: Absenteeism/presenteeism Item response, Total and By Country

Item Code	Item	All (N 1064)		Kenya (N 632)		Nepal (N 432)	
The following was read to participants directly before this section: I would also like to ask you some questions about how your menstruation may have affected your ability to work and earn an income. Please think about the job where you spend the most time.							
Absenteeism		1060		630		433	
HPQ5	Missed an entire day of work because of (last) menstruation[1]	75	7.1%	61	9.7%	14	3.2%
HPQ7	Missed a partial day of work/some hours of work because of (last) menstruation[2]	144	13.6%	102	16.2%	42	9.7%
ABS01	Missed any work in past year because of menstruation[3]	131	12.4%	95	15.1%	36	8.4%
Reasons for missing work during menstruation[4]		171		111		60	
ABS02	It is not appropriate for women to work while menstruating	0	0.0%	0	0.0%	0	0.0%
	I did not have enough menstrual materials	11	6.4%	9	8.1%	2	3.3%
	There is not a place to change my materials at work	5	2.9%	4	3.6%	1	1.7%
	I am not able to change materials at work when I need to	5	2.9%	4	3.6%	1	1.7%
	I was in pain or felt unwell	139	81.3%	87	78.4%	52	86.7%
	It is too challenging to commute to work when menstruating	8	4.7%%	6	5.4%	2	3.3%
	I experience fatigue	53	31.0%	31	27.9%	22	36.7%
	I fear staining clothes	9	5.3%	7	6.3%	2	3.3%
	I am concerned about odor	1	0.6%	1	0.9%	0	0.0%
	I am restricted from working	0	0.0%	0	0.0%	0	0.0%
	Other	5	2.9%	5	4.5%	0	0.0%
Avoid scheduling work during menstruation		1064		632		432	
ABS03	Yes	156	14.7%	120	19.0%	36	8.3%
	No	817	76.8%	448	70.9%	369	85.4%
	Not able to make own schedule	91	8.6%	64	10.1%	27	6.3%
If menstruation begins at work, I…[5]		1061		631		430	
WOR17	Stay at work	951	89.6%	567	89.9%	384	89.3%
	Go home	110	10.4%	64	10.1%	46	10.7%
If respondent goes home if menstruation begins at work…		110		64		46	
WOR18	Returns to work same day	72	65.5%	37	57.8%	35	76.1%
	Remain at home	38	34.6%	27	42.2%	11	23.9%

1. 2 participants in Kenya chose not to answer.
2. 2 participants in Kenya chose not to answer.
3. 3 participants in Kenya and 1 in Nepal chose not to answer.
4. Participants were only asked if responded "Yes" to any of the three above absenteeism questions. Participants were able to choose multiple responses. One participant from Kenya and one participant from Nepal chose not to respond.
5. One participant from Kenya and two participants from Nepal chose not to answer.

6.0 DISCUSSION

Through a review of existing documents and tools related to menstruation and WASH monitoring as well as rigorous testing and large scale survey deployment, we identified 21 potential indicators for monitoring menstruation related to work. The 21 indicators proposed reflect each part of our guiding conceptual model, from determinants, to experiences and outcomes. Further, to arrive at a valid set of measures to assess the proposed indicators, we undertook a multi-step process to adapt or develop, and then test items to assess women's experiences of menstruation while working outside the home in two different contexts: Kathmandu, Nepal and Nairobi, Kenya. The data generated from this research, which engages two diverse populations that each include women with varied work types, is the most comprehensive assessment to date of experiences, determinants, and outcomes related to menstruation while working outside the home. The data presented herein will provide a basis for comparison with future research investigating the experiences of menstruation while working, and provides a first look at data for proposed indicators for monitoring menstruation related to work at the individual level. Below we identify strengths and next steps for the indicator list proposed, underscore the additional outputs that resulted from this research, highlight key findings, note strengths and limitations, and conclude with next steps.

Strengths of and Next Steps for the Proposed Indicators

The indicator list we produced has several strengths:

- We **leveraged previous indicator work** that had identified or proposed indicators related to menstruation, either in different contexts (e.g., schools) or among different populations (e.g., girls) in order to maintain alignment with current initiatives that have also generated broad consensus about what to monitor. Specifically, work by UNICEF, WHO/UNICEF JMP, and the Global MHH Monitoring Group (GMMG)—all of which engaged multiple stakeholders with expertise in menstruation, WASH, measurement, or all three—served as a foundation from which to develop menstruation indicators specific to working outside the home. We adapted indicators and items as relevant, adding new indicators and items to fill gaps identified through the guidance of our conceptual model.
- The indicators included are **informed by a conceptual model** that demonstrates how determinants at various levels influence menstruation experiences while working outside the home, which may in turn impact individual well-being and employment-related outcomes. Using the conceptual model, which expands upon a previous model by Iris Group and was bolstered by a rapid literature review, assures that the indicators we propose are fairly comprehensive of menstrual health and work.
- We intentionally **adapted or developed all indicators and measures for assessment at the individual level.** Other monitoring efforts include assessments of institutions (e.g., schools, healthcare facilities). However, systems for assessing workplaces are not widely established. Therefore, we modified and tested items that would typically be assessed at the institution (workplace) level to be asked of individuals. This modification will allow for information about workplaces and also facilitate uptake into existing survey systems.
- We **identified indicators that can demonstrate change over time**. As such, we explicitly did not include indicators to assess the biological level of our conceptual model. We still included these items in our survey, however, as they are informative for understanding the populations engaged.

- We **randomly sampled participants** to allow us to engage—and therefore test our items with—a diverse population. It was critical to be able to test the items with women who work in a range of job types, including formal and informal. Previous studies have sampled at workplaces (Hennegan, Bukenya, Kibira et al., 2021; Hennegan, Bukenya, Makumbi et al., 2021), which can limit responses because people engaged share common physical and social environments. Additionally, we anticipate that some of these items may be taken up by surveys like the DHS or MICS, and we wanted to mimic their process as we
- We **shifted the focus away from the 'workplace'** to not limit who we engaged. Not all women who work and menstruate have specific workplaces. Some may report to a different workplace each day or multiple times throughout a day. Therefore, we deliberately shifted working in our questions to ask women about 'working outside the home' to be more inclusive.

The indicator list we produced is an important starting point, and more work is needed before it can be considered final. This list should undergo a process of external review by experts to identify what modifications to the indicators and corresponding measures may be warranted, and to eliminate or add indicators and/or items as is deemed necessary. Further, a process of prioritization is needed. We intentionally propose a long list of indicators to cover all aspects presented in the conceptual model, but know that not all 21 indicators can be taken up for routine monitoring. A prioritization process, involving a range of stakeholders, is needed to identify which indicators are priorities for monitoring so that the corresponding measures can be promoted for adoption in large scale surveys (e.g., DHS, MICS).

Additional Outputs Emerging from the Research, Beyond the Indicators Identified

While the findings generated from this work provide important insights about the experiences of menstruation while working, this research has generated additional worthwhile outputs that will influence research and practice to improve work-related menstruation experiences. These are noted below:

- Our rapid **literature review** updates the review previously undertaken by Iris Group (USAID, 2019), providing a more current synthesis of known literature. [3]
- Based on the literature, we expanded upon the conceptual model developed by Iris Group, which depicts links between menstrual health in the workplace and women's economic empowerment and business outcomes (USAID, 2019). Our **expanded conceptual model** isolates key determinants at the workplace, individual, and biological levels that influence menstrual experiences, which in turn can influence well-being and employment outcomes at the individual level leading to changes in economic outcomes at the societal level (see Figure 1). This expanded conceptual model guided our own tool review, adaptation, and development process, and can be used to guide future research, including further analysis of the data generated by this research.
- Beyond the indicators identified and the corresponding measures tested, our intentional engagement with varied stakeholders resulted in a **comprehensive tool for assessing menstruation and work** that was well vetted by working women and partners in each location, as well as experts in menstrual health and development (UNICEF/WHO, 2018; JMP, 2018a). The final tool—or sections thereof—can be adopted for use with other populations, and our processes for seeking inputs can be leveraged to contextually refine and validate the tool and/or individual items. Deploying the final tool at scale in two locations helped to further validate the items in the tool.
- We adapted the MPNS for the workplace and developed and tested three other novel scales to assess Bodily Integrity, Self-Efficacy, and Perceived Safety related to *Changing while working*. Factor loadings for all scales demonstrate internal consistency. Relative model fit was adequate for all scales, though only the Safety scale met recommended thresholds for absolute model fit. Still, these

scales are useful evolving contributions and further analysis can be carried out to improve model fit. Individual scale items provide useful insights irrespective of use within the full scale.

- This work generated **a comprehensive dataset** about menstrual health and work at all points along our expanded framework, from determinants at multiple levels, to experiences and outcomes.

6.1 REFLECTIONS ON OVERALL SURVEY FINDINGS

A Diverse Sample

We engaged a diverse sample of participants from two countries with unique cultures and geographies. As well, our approach of selecting participants randomly at the community level further increased diversity by enabling us to include a range of participants with varied job types. Previous research identified participants through the workplace setting, which limited the variability of the types of professions represented. For example, Hennegan, Bukenya, Kibira et al. (2021) engaged people working in markets, schools, and healthcare settings specifically. Overall, 27% of our respondents worked in these fields (10.5% markets; 8.8% education, 8.2% health care) and the remaining 73% reported working in a variety of other sectors as professionals, civil servants, domestic workers, or in factories and retail, among others. Furthermore, sampling women in the community allowed for a greater representation of work environments and spaces that influence participants' experiences of menstruation while working. Comparatively, when sampling at the workplace level, all participants reference or comment on the same work environments, providing limited information on workplaces overall.

Menstruation Practices and Experiences While Working

A basic assessment of participants' practices suggests that most were well resourced and had an enabling environment to change materials while working, but not all. For example, the majority of participants in both Kenya and Nepal reported using disposable materials (Kenya: 88%; Nepal 85%) and reported changing their menstrual materials while working outside the home during their last period (Kenya: 95%; Nepal 83%). Among those who do change their menstrual materials while working, 93% of participants in Nepal most often used facilities at their workplaces while only 75% in Kenya did; 18% of Kenyan respondents reported accessing public or shared facilities and 19% indicated needing to pay to access these facilities. In both locations, the proportion changing at facilities in their workplace is higher than what was reported for women in Uganda (61%), where a substantial proportion went home to change while working (26%) (Hennegan, Bukenya, Kibira, et al., 2021). Almost no participants in Kenya or Nepal reported going home to change (1% in both locations). Moreover, participants also reported having to bring their own toilet paper (Kenya: 57%; Nepal: 16%) and bags for used materials (Kenya: 16%; Nepal 22%) to the locations where they changed, suggesting that the environments used are insufficiently resourced for personal cleaning and disposal. Suboptimal menstruation practices can have impacts on daily experiences, health, and participation in life activities. We found 20% of women in Kenya and 15% of women in Nepal to have experienced a stain or leak during their last period when working outside the home, and further analysis can be undertaken to understand if leaks were more common among those without access to resources. Research in rural India identified associations between practices, including menstrual material used and changing location, and lower reproductive tract infections (Torondel et al., 2018). Based on feedback from local ethics boards and local field teams, we did not collect data to assess associations between menstruation practices while working and symptoms of infection, though this line of research could be pursued in future studies. We do, however, have data on whether or not participants missed work or experienced leaks, challenges that have been linked to practices in qualitative studies in the school setting (Caruso et al., 2013; Haver et al., 2013; Long et al., 2013). In summary, while most women do have access to materials and facilities, not all women are well resourced or have enabling environments for managing menstruation in the workplace, which may require leaving their workplace, paying for a location to change, and transporting other goods like toilet

paper and bags for disposal in addition to menstrual materials. Further analysis of these data could assess if practices are associated with outcomes identified through qualitative research and noted in our conceptual model.

Beyond examining practices, we adapted or developed and tested three scales of work-related menstrual experience, all three of which provide novel information via scale scores and frequencies from individual items despite the need for further validation. While research and monitoring efforts have historically focused on assessing what may be objectively observable (like access to a latrine or access to menstrual materials), a growing line of research has demonstrated that simple assessments of access may be insufficient compared to more complex measures of experience, which can account for personal perceptions and socio-cultural context (Hadley & Wutich, 2009; Stevenson et al., 2012; Wolfe & Frongillo, 2001). Recent measures have been developed to understand experiences of menstruation (Hennegan, Nansubuga, Smith et al., 2020; Caruso et al., 2020), one of which—the Menstrual Practice Needs Scale or MPNS—was just recently revalidated (while the present research was ongoing) with women outside the home (Hennegan, Bukenya, Kibira, et al., 2021). The MPNS that we adapted to focus directly on experiences related to working outside the home and the Bodily Integrity and Self-Efficacy scales and associated individual items offer novel insights. **Overall, scale scores and responses to individual items show that menstruation experiences while working are better among participants in Nepal than in Kenya.**

Data from the adapted MPNS suggest that a greater proportion of participants in Nepal than in Kenya "always" had their needs met or "never" experienced concerns related to menstruation while working.

- Overall scores for material and work environment "Needs" and "Insecurity," the two hypothesized factors of the adapted MPNS, were comparable, though slightly better in Nepal than in Kenya, suggesting that participants in both locations often had their needs met and did not often feel worried or concerned about meeting their needs. However, a deeper look at the individual items illustrates that sizable proportions of participants in both locations did not *always* have their needs met or indicated that they experienced insecurity at least some of the time. More specifically, when working, greater proportions of participants in Kenya than in Nepal reported that they "always" used materials they deemed comfortable (Kenya: 67%, Nepal: 60%); though greater proportions in Nepal than Kenya reported having had enough materials to change as they wanted (Kenya: 6%, Nepal: 78%); felt satisfied with materials (Kenya: 68%, Nepal: 73%); been able to get more materials as needed (Kenya: 61%, Nepal: 81%); been able to change their menstrual materials when they needed to while working (Kenya: 59%, Nepal: 78%); or been always satisfied with the place they used to change their materials (Kenya: 57%, Nepal: 84%). Similarly, when working, greater proportions of participants in Nepal than in Kenya reported that they "never" worried about disposal (Kenya: 63%, Nepal: 77%); not being able to change when needed (Kenya: 53%, Nepal: 74%); that someone would see then while changing (Kenya: 81%, Nepal: 93%); or that someone (Kenya: 88%, Nepal: 95%) or something (Kenya: 87%, Nepal: 94%) would harm them while changing. However, greater proportions of participants in Nepal than in Kenya reported that they "never" worried that their menstrual materials would allow blood to pass through to their clothing (Kenya: 39%, Nepal: 33%) or would move around (Kenya: 51%, Nepal: 41%). Since our adapted MPNS produced factors that are different than those reported by Hennegan, Bukenya, Kibira et al. (2021), the factor scores are not comparable, but the individual items are. When comparing similar needs items from the MPNS revalidation, a greater proportion of working women in Uganda reported "always' having the above needs met than our participants in Kenya, but not as many as in Nepal. For insecurity items, the proportion of participants indicating never experiencing a worry was similar between the proportion recorded for Kenya and Nepal (Hennegan, Bukenya, Kibira, et al., 2021).

- Since we adapted the MPNS to have all participants specifically think about their last menstruation period while working, the data we collected about women's experiences with reusable materials are not comparable to the data generated by Hennegan, Bukenya, Kibira et al. (2021), which are not work-specific. Thus, our data are among the first to report on reuse experiences while working, though the sample sizes of those reporting are small given that only a small proportion in each country reported using reusable materials (Kenya: 5%; Nepal: 20%) and reported washing while working. Data generally show that a greater proportion of participants in Nepal "always" had their needs met and "never" had concerns related to reuse in Nepal compared to Kenya.

Similarly, using our novel scale and items, scores for Bodily Integrity related to menstruation while working were stronger for participants in Nepal than in Kenya.

- While a comparable—and sizable—proportion of participants in Nepal and Kenya indicated that their work responsibilities prevented them from addressing their menstruation-related needs (Kenya: 42%; Nepal: 41%), responses to the remainder of items suggest that participants in Nepal have better control of their bodies related to menstruation while working. Specifically, a greater proportion of participants in Kenya than Nepal indicated that at least some of the time they had to hurry while addressing their menstrual needs at work (Kenya: 55%; Nepal: 47%), delay changing their menstrual materials because of a lack of access to a satisfactory location (Kenya: 38%; Nepal: 25%), or that they were not always able to access their preferred menstrual material (Kenya: 38%; Nepal: 18%) or the resources they needed to clean themselves (Kenya: 44%; Nepal: 16%).

- Finally, overall scores for self-efficacy are better on average for participants in Nepal than in Kenya, and substantially greater proportions of Nepali respondents indicated they were completely confident with menstruation and work-related activities.

- Greater proportions of Nepali than Kenyan participants indicated that they were "completely confident" working during menstruation (Kenya: 6%; Nepal: 27%), able to manage menstruation when working outside the home (Kenya: 7%; Nepal: 38%), obtain materials for menstruation if it starts while working outside the home and they have none (Kenya: 9%; Nepal: 37%); change materials while working outside the home if necessary (Kenya: 11%; Nepal: 39%); find a location to change materials while working outside the home (Kenya: 14%; Nepal: 40%); and prevent blood from staining clothing while working outside the home (Nepal: 11%; Kenya: 27%). Among those using reusable materials, 27% of participants from Nepal indicated they were completely confident in their ability to wash their reusable materials while working outside the home compared to just 4% of participants from Kenya.

Key Determinants

Experiences of menstrual pain and symptoms among participants in Nepal and Kenya are ubiquitous, but also varied. Only a minority of participants in the overall sample reported experiencing no pain or symptoms (9%), 56% overall indicated experiencing two or more symptoms, and 11% overall indicated the severity of their pain to be high (8 or higher out of 10). Recent qualitative research with women who are working in Uganda reported that women's comfort and participation at work depended on their ability to manage pain (Hennegan, Kibira et al., 2020), and quantitative research found pain and discomfort to be associated with women's self-reported difficulty working in rural India (Caruso et al., 2020) and the strongest predictor of work absenteeism among women in the Netherlands (Schoep et al., 2019). Alongside existing evidence, the findings from Kenya and Nepal further support the call to increase research and practice on pain and symptoms related to menstruation (Hennegan, Kibira et al., 2020). Importantly, data from Kenya and Nepal demonstrate that future work requires nuance and not a rush to simple solutions. Specifically, while the most common menstrual symptoms reported by Kenyan and Nepali participants were physical aches, including backache, abdominal pain, and pain in the breasts,

women also reported fatigue and dizziness, gastro-intestinal disruptions like diarrhea and constipation, as well as mental distress, like depression, anxiety, and tension. As such, strategies for ameliorating symptoms include access to pain medications—which was not always available to all participants when needed—but may need to vary depending both on the symptoms with which menstruators present and what is deemed acceptable in the population. While research has been carried out to demonstrate links between pain and work presenteeism and absenteeism (Schoep et al., 2019), further research (including analysis of the data generated from this study) can be conducted to understand if pain impacts other outcomes, like overall well-being or job satisfaction, and if access to and effectiveness of pain remedies mediate the impact of pain and symptoms on varied outcomes.

We found social support at the individual level and the social environment at the workplace level to be better for participants in Nepal than in Kenya, though participants' responses regarding workplace policies or rules were quite aligned. For the majority of social environment and social support items, most participants from each country responded positively. One exception is related to women's perceptions of hiding menstruation. In Kenya, 58% of participants (compared to 9% in Nepal) agreed or strongly agreed with the statement *Where I work, women hide the fact that they are menstruating*. This finding is consistent with qualitative research with women in Uganda, which reported that there was an expectation that menstruation was not discussed (Hennegan, Kibira et al., 2020) and may help explain why far fewer participants in Kenya (77%) than Nepal (93%) agreed or strongly agreed that women help other women who are menstruating if they need it. Regarding workplace policies or rules, the majority of participants in both countries reported that when menstruating they could use toilet facilities when needed or take a break to meet their menstrual needs when needed. Still, approximately 21% in Kenya and 43% in Nepal reported needing permission to take a break to meet their needs or only being permitted to meet needs during identified breaktimes. Similarly, research has found school rules prevent girls from accessing facilities when needed (Caruso et al, 2013; Haver at al., 2013; Long et al., 2013). Further research should investigate if and how social support and social environments influence menstruation experiences, including bodily integrity, and other downstream outcomes, like leaks, stress, and work.

Workplace physical environments were reported to be enabling for a greater proportion of Nepali than Kenyan participants, which may explain why work menstruation experiences were similarly better for Nepali than Kenyan participants. A greater proportion of Nepali than Kenyan participants indicated that their workplaces provided free or subsidized access to menstrual materials and pain relief. The same proportion (77%) in each location reported their workplaces to have designated toilet facilities for workers, though a smaller proportion in Nepal (60%) than in Kenya (79%) reported these facilities to be separate for women. Access to a workplace facility for bathing and washing materials was reported by a greater proportion of women in Nepal (58%) than in Kenya (36%). When asked specifically about the locations they used most often for menstruation needs—whether it is at their workplace or not—features were largely comparable across locations, yet a greater proportion in Kenya reported needing to wait in line (Kenya: 23%; Nepal: 9%) and pay to use their location (Kenya: 19%; Nepal: 2%). Efforts to assess institutional facilities by the JMP, including for schools and healthcare facilities, record data at the facility level, not at the individual level (JMP, 2018a & 2018b). Assessing workplaces at scale may not be feasible given the diversity of workplaces that exists, and the ever-evolving number of workplaces that may exist at a given time. The sampling frame for schools and healthcare facilities, in comparison, is more stable and easier to update within a country. As such, our method of querying individuals about environments likely makes the most sense for learning about workplace environments to which individuals have access. Further, as we observe, not all participants reported using a facility at their workplace. Therefore, assessment at the individual level provides an opportunity to simultaneously assess what facilities exist at their workplace, and what the conditions are like at the facility they actually use most often.

Impacts Related to Menstruation at Work

Consistent with findings related to menstruation experiences at work and determinants, a greater proportion of participants from Nepal indicated more positive health- and employment-related outcomes than in Kenya.

- A greater proportion of Nepali respondents reported "never" to items assessing having experienced stress or tension related to changing menstrual materials.
- Regarding well-being, while the proportion of participants with scores on the WHO-5 Wellbeing Index below 13 (indicating poor well-being) was high across both settings, the proportion in Kenya was markedly higher (Kenya: 71%; Nepal: 47%). Similarly, greater proportions of participants from Kenya than Nepal had scores higher than the thresholds on the Patient Health Questionnaire, suggesting existence of distress, anxiety, and depression. We expect that the poor mental health scores in both populations are probably related to the COVID-19 pandemic, though we have no pre-COVID-19 data for comparison.
- These measures solely assess mental health and do not specifically ask about menstruation, but they can be used in future analyses to understand how work menstruation experiences and determinants relate to mental health outcomes. For example, in the revalidation of the MPNS among women in Uganda, total MPNS scores were moderately associated with well-being as assessed using the WHO-5, with stronger associations found with the material and home needs sub-scales (Hennegan, Bukenya, Kibira, et al., 2021).
- Scores and individual items related to our novel scale assessing perceived safety while changing were better for Nepali respondents. Greater proportions of Nepali participants than Kenyan participants reported "never" having concerns about safety preventing them from changing materials when needed, or fearing someone would make sexual comments or tease, bully, or harass them when changing materials. Similarly, greater proportions of Nepali than Kenyan participants reported "always" feeling safe where they typically went to change. Most of the literature on workplaces menstruation focuses on safety of physical spaces (Hennegan et al., 2019; Sommer, Chandraratna et al., 2016), and less on perceived safety, thus making these data a novel contribution.
- A greater proportion of participants from Nepal disagreed with statements about menstruation interfering with work and a comparable proportion of Nepali and Kenya participants agreed that they were able to complete work despite menstruation. Research in rural India with women found that those with higher menstruation insecurity scores also reported greater feelings of tension or difficulty doing work (Caruso, Clasen, Yount et al., 2017). Further analysis of these data could test the associations between this outcome and mental health outcomes.
- A greater proportion of Nepali respondents agreed or strongly agreed that they were satisfied with their ability to meet their menstrual needs at their current job.
- A lesser proportion of Nepali respondents missed an entire day of work during their last menstruation and a greater proportion of Kenyan respondents reported lost earnings in the past year related to menstruation.

6.2 STRENGTHS AND LIMITATIONS

As already noted, a key strength of this research is that it engaged randomly selected participants at the community level to include a range of participants with varied job types and workplace environments. Further, when considering how to monitor menstruation related to work in the future, the most feasible way of capturing data for assessing indicators will be to leverage existing platforms that collect

data at the household level; for example, through DHS or MICS platforms. Our research demonstrated that learning about the work experiences and workplaces via household surveys is possible and generates samples representing women who have varied job types.

Key limitations exist related to our eligibility criteria. We specifically sampled menstruators who identify as women and are over the age of 18. Transgender or nonbinary individuals may have menstruation needs and challenges in meeting those needs that merit deliberate research, but these populations were not targeted due to ethical considerations. In some communities, transgender or nonbinary individuals may be challenging to find, and depending on cultural context, deliberately identifying and recruiting this population presents the possibility of harm. Additionally, while girls under the age of 18 may have jobs in the formal or informal sector that require them to work while menstruating, we excluded them as a result of ethical considerations.

We may have missed some categories of working women as most data collection was done from homes during standard working hours (9:00-5:00). Our enumerator teams collected data after standard working hours and on Saturdays to try to reach these women. Because we conducted data collection in urban areas, we may have missed job types or experiences prominent among rural women. There is also the possibility of respondent fatigue as a result of the length of the survey.

Additionally, it is unclear how the COVID-19 pandemic impacted both the sample and participant responses. We collected some data on COVID-19 to provide context, which show that some respondents were indeed impacted by COVID-19, both in their work and their menstruation practices. Participants were eligible for our study if they had experienced menstruation while working in the previous three (Kenya) or six (Nepal) months. The COVID-19 pandemic may have driven some women from work involuntarily, and those individuals may represent specific sectors that may not be well represented. A high proportion of more educated participants who work in professions that may be considered 'desk jobs' may influence the comparability of data to menstruators with fewer resources or more unstable jobs, as the sample is representative of women who were able to keep working during a period of lockdowns.

In each location, key challenges were identified during the data collection process. In Kenya, the major challenges that emerged during data collection included (a) difficulties reaching participants who worked standard work hours (9-5 p.m.); and (b) the presence of gated homes or communities that were inaccessible to enumerators. In Nepal, major challenges that emerged included (a) hesitancy around participation due to COVID-19 concerns; (b) weather, especially heavy rains, that made transportation and data collection difficult; (c) festivals that interrupted the data collection schedule; and (d) difficulties reaching participants who worked standard work hours (9-5 p.m.), especially government employees

6.3 CONCLUSIONS

We assessed women's experiences of menstruation while working outside the home in Kathmandu, Nepal and Nairobi, Kenya comprehensively, testing numerous measures of work menstruation experiences, as well as determinants and related health and employment outcomes. The outputs from this research extend beyond the indicators identified, the corresponding measures tested, and the data generated, and also include an expanded conceptual model, an extensive survey tool described in Section 3 and provided in Annex D with validated measures for assessing menstruation and work along the conceptual model, and a comprehensive data set to further explore the potential relationships posited. The data itself shows that participants in Nepal fare better along all points of the conceptual model, from determinants, through work menstruation experiences, to outcomes related to health and work. Further analysis of the data would serve to verify the conceptual model and demonstrate if relationships exist and may be feasible for intervention. Finally, the prioritized indicators proposed in

Section 4 are a starting point, not an end point, and should be leveraged to initiate discussion among a varied group of global stakeholders to strengthen the list and build consensus.

ANNEX

ANNEX A: HEALTH AND SAFETY CONSIDERATIONS FOR CONDUCTING DATA COLLECTION DURING COVID-19 PANDEMIC

The ongoing Coronavirus disease 2019 (COVID-49) pandemic is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). As of March 25, 2021, 125.7 million people around the world have contracted the disease and over 2.7 million have died. As of the same date, the total number of infected cases in Nepal was 276,509, with 3,020 deaths. The total number of infected cases in Kenya was 126,170, with 2,092 deaths (Worldometer, 2021).

In this context, Athena Infonomics and Emory University have prepared a Risk Mitigation Plan to prepare for the cognitive interviews and data collection for the Advancement of Metrics for Menstrual Health and Hygiene in the Workplace Project (Table 34). This plan considers the health and safety of the research team, consultants, supervisors, and enumerators engaged in data collection. All team members engaged in Nepal and Kenya's data collection followed this process. The project budgeted for the cost of these procedures, including the personal protective equipment (PPE) kits.

Table 34: Risk Mitigation Plan

Risk Mitigation Plan			
Category	**Action Plan**	**Primary Responsibility for Implementation**	**In Coordination with**
Stakeholder Consultations and Meetings			
Personnel (consultants) conducting stakeholder consultations	• Consultants with cold or flu-like symptoms are required to remain at home and inform Athena Infonomics. The staff should remain at home in self-quarantine for 14 days. . • Any staff with acute respiratory infection symptoms (e.g., common cold or flu-like symptoms) should follow WHO's standard recommended guidelines, obtain a COVID-19 test, and immediately seek medical attention. They will remain in quarantine until they receive a negative test result.	All of the research team and consultants	
Meetings	• Athena and Emory will conduct virtual consultations with the stakeholders to the extent possible, thereby reducing the country consultants' exposure. • Athena Infonomics will pre-approve all in-person meetings with stakeholders. • In the case of in-person meetings, consultants will wear masks and face shields at all times. • Consultants will be advised to use sanitizer frequently, especially after touching high-touch areas, and practice adequate hygiene behaviors. • Consultants are required to maintain at least six feet of distance from respondents during the meetings. • Consultants are required to avoid meeting in areas that do not allow physical distancing or are not well ventilated. • Recommended use of private transport to commute to meetings. • Consultants can assess the risk of conducting consultative meetings with stakeholders and have the option to terminate an interview.	All of the research team and consultants	
Training for Field Work			
Venue	• The team will utilize video meetings for training, planning, and discussion between US-based team members, enumerators, and country managers to reduce in-person interactions and eliminate any international travel. • Enumerators and country managers will attend in-person trainings at venues that allow the team to ensure social distancing norms. • The training venue will have proper ventilation.	All of the research team and consultants	Data collection partner(s)

Risk Mitigation Plan			
Category	**Action Plan**	**Primary Responsibility for Implementation**	**In Coordination with**
	• Hand sanitizer will be provided at the entrance of the training hall. • All the participants will be required to apply sanitizer frequently. • The training hall will be disinfected and cleaned properly before and after the training. • Guidelines concerning the number of participants will be followed. • Participants will be required to wear masks during the training. • An attendance sheet will be maintained.		
Training on safety protocols	• The data collection team will be provided information about specific referrals system for suspected COVID-19 cases and ensure that all enumerators have updated information on COVID-safety protocol and guidelines. • The team will be trained on appropriate reporting and communication channels to ensure safety and early response (if needed). Supervisors must be informed in case any enumerator develops COVID-19 symptoms or visits a household or respondent who may have shown symptoms or respondent has/ develops any COVID-19 symptoms as stipulated by the WHO. • Emory and Athena teams will Inform the enumerators and supervisors of the general safety practices and protocols to be followed during data collection including: – Conduct temperature check every morning. In case of a high temperature or any other mild symptoms such as tiredness, dry cough (common symptoms), shortness of breath, aches and pains, sore throat, or runny nose (other symptoms), inform the supervisors. Any person with these symptoms should not engage in data collection, self-quarantine for 14 days and get a Covid-19 test. – Maintain social distancing of at least 6 feet, whenever feasible. – Keep from touching face (specifically eyes, mouth, and nose). – Always wear a mask in common areas, while in proximity to others. – Wash hands with soap and water frequently for at least 20 seconds. – Use hand sanitizer when soap and water are not available.	All of the research team and consultants	Data collection partner(s)

Risk Mitigation Plan			
Category	**Action Plan**	**Primary Responsibility for Implementation**	**In Coordination with**
	– Cover your mouth and nose with a tissue when you cough or sneeze, or use the inside of your elbow. Throw used tissues in the trash and immediately wash your hands. – If cough/fever develops, return home and self-isolate. – Do not have any physical contact with other people. That includes, no greetings such as handshakes. – Sanitize all data collection items prior to and after each interview (pens, phone, tablets, notebooks, ID cards, etc.).		
Data Collection and Field Work			
Survey sample	• The location (sub-counties/municipalities) for the study will be purposively sampled. Care will be taken to exclude "containment zones" or areas with a high number of COVID-19 cases from the sample selection. • The team will adhere to any restrictions put in place by the governments of Nepal and Kenya.	All of the research team and consultants	Data collection partner(s)
Personnel (enumerators and supervisors) for data collection	• Each enumerator/supervisor should be asymptomatic for at least two weeks before the start of the fieldwork and will not participate should they feel ill or have reasonable cause to believe they have been exposed to COVID-19. • In the case of an immediate family member of the enumerator/ supervisor testing positive, self-isolation is recommended. • Personnel are to follow any additional local public health requirements and policies regarding COVID-19.	All of the research team and consultants	Data collection partner(s)
Safety gear	The enumerators and supervisors will be provided with the following safety equipment: • A new dedicated N95 masks, disposable gloves, hand soap, alcohol-based sanitizers, single-use tissues, disinfectant, bottled water, and any locally required PPE as needed. • Thermal thermometers to conduct daily temperature checks. • Zip-locked bags in which to place enumerator phones/devices.	All of the research team and consultants	Data collection partner(s)
Travel for fieldwork	• This project does not require local staff to travel outside of the Kathmandu Valley in Nepal or Nairobi in Kenya.	All of the research team and consultants	Data collection partner(s)

Risk Mitigation Plan			
Category	**Action Plan**	**Primary Responsibility for Implementation**	**In Coordination with**
	• Private transportation for the enumerators (the enumerators can use their motorcycle or field vehicle and can be compensated for fuel if required) will be organized by the data collection partners. • All common areas of cars used will be wiped clean with a disinfectant before and after completion of fieldwork for the day by the data collection partners. • Stops to make purchases in the field will be kept to a minimum to reduce contact with the public. • Enumerators and supervisors will be advised to opt for only well-cooked food and eat with clean hands. • Although not expected to be necessary, lodging of enumerators will account for social distancing (i.e., a single room will be provided for each enumerator).		
Cognitive interviews (CIs)	• In the event of any delays, it is an option to conduct CIs in only one study location. • Alternatively, a group of female enumerators can serve as the respondent group for CIs, reducing the time for recruitment of participants and the risk of transmission or infections. (Note: The sample for the CIs will likely be more educated than the average respondent if this alternative is used.) • If possible, interviews can be conducted outside of participants' homes if suitably private locations (such as courtyards or gardens) can be utilized.	All of the research team and consultants	Data collection partner(s)
Measures during data collection	• The data collection partners will obtain required clearance from relevant authorities, especially if movement restrictions in place. • Supervisors will conduct daily temperature checks of the enumerators and maintain a log. If the enumerators report a temperature greater than 100.4°F, they will be advised to self-isolate and return home. • Supervisors to remind the teams of the general guidance and protocols. • All team members are required to follow the necessary safety guidelines and protocols. • Data collection partners will clean and disinfect frequently touched surfaces and equipment.	All of the research team and consultants	Data collection partner(s)

Risk Mitigation Plan			
Category	**Action Plan**	**Primary Responsibility for Implementation**	**In Coordination with**
	• The following measures will be implemented by enumerators during the interactions with the survey participants: – Maintain at least six feet of distance from the respondents. – Ask mandatory COVID-19 screening questions related to symptoms and exposures. – Require masks use by the survey respondents. – When possible, shift data collection conversations outdoors or to well-ventilated spaces. – Where necessary, opt out of interviews with the elderly and/or coughing and/or immune compromised.		

ANNEX B: REPORTING NOTES AND ADDITIONAL INFORMATION ON LIST OF POTENTIAL INDICATORS

Table 35: Notes on Data for Potential Indicators

Domain	Proposed Indicator	Measures
Determinants: Workplace Level		
Social Environment	Proportion of women who agree or strongly agree that women where they work hide the fact that they are menstruating	Item: (WSE09) Where I work, women hide the fact that they are menstruating. Responses: Strongly disagree; Disagree; Agree; Strongly agree; Don't know Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Agree' being a combination of 'Agree' and 'Strongly agree' 'Disagree' being a combination of 'Disagree' and 'Strongly Disagree' Excluding those who answered 'Don't know' Numbers reported here use this dichotomized reporting. Notes on Denominator: Calculated for 852 respondents (492 in Kenya and 360 in Nepal) because 164 (98 in Kenya and 66 in Nepal) reported not working with any other people and were, therefore, not asked WSE09. Additionally, 48 (42 in Kenya and 6 in Nepal) answered either 'choose not to respond', 'not applicable' or 'don't know' to WSE09.
Institutional Policies	Proportion of women who report being able to take a break to meet their menstrual needs whenever they need to while working outside the home	Item: (WSE02) If I am menstruating at work and I need to take a break to meet my menstrual needs (such as changing materials, bathing, or washing materials or clothing) I am allowed to go: Responses: Not at all; Only during specific breaks or when I can get someone to cover my post; Only after asking permission or informing someone; Whenever I need to Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Able to take breaks whenever they need to' being 'Whenever I need to' 'Not able to take breaks whenever they need to' being a combination of all other responses Numbers reported here use this dichotomized reporting. Notes on Denominator: Calculated for 1058 respondents (627 in Kenya and 431 in Nepal) because 6 (5 in Kenya and 1 in Nepal) chose not to respond to WSE02
Physical Environment:	Proportion of women whose	Item: (WPE31) Are menstrual materials available where you work?

Domain	Proposed Indicator	Measures
Material Access	workplaces provide menstrual materials to employees, whether for free or at a cost	Responses: Yes, for free; Yes for purchase; Yes from a friend; No. Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Yes, workplace provision' being a combination of 'Yes for Free' and Yes for purchase'. 'No workplace provision' being a combination 'Yes from a friend' and 'no'. Numbers reported here use this dichotomized reporting. Notes on Denominator: Calculated for 1061 respondents (631 in Kenya and 430 in Nepal) because 3 (1 in Kenya and 2 in Nepal) were excluded for choosing not to respond to WPE31
Physical Environment: WASH	Proportion of women reporting that they have access to sanitation facilities that are single-sex at their workplace	Item: (WPE02a) Does the place where you work have separate toilets or sanitation facilities for women only? Responses: Yes; No Reporting Notes: 'Proportion of women reporting that they have access to sanitation facilities that are single-sex at their workplace.' need to have reported: 'Yes' to WPE02a Notes on the denominator: Calculated for 819 respondents (486 in Kenya and 333 in Nepal) because 244 (145 in Kenya and 99 in Nepal) have missing values for WPE02a because they did not answer 'Yes' to the question 'Does your workplace have any designated toilets or sanitation facilities for workers to use?'; additionally, 1 respondent in Kenya was excluded for answering 'choose not to respond' to WPE02a
Physical Environment: WASH	Proportion of women who reported changing their menstrual materials ***at their workplace*** in a space that was clean, private, and safe during their last	**Multiple items required** Item 1: (WPE19) Is the place you most often use to change your menstrual materials while you are working structurally private (such as walls, doors, and roof are made of nontransparent materials with no gaps or spaces? Item 1 Responses: Yes; No ----- Item 2: (WPE20) Is the place you most often use to change your menstrual materials while you are working clean? Item 2 Responses: Yes; No ----- Item 3: (SAF02) How often did you feel safe in the place where you typically went to change your menstrual materials/manage your menstruation? Item 3 Responses: Never; Sometimes; Often; Always ----- Item 4: (WPE12) Where do you most often change your menstrual materials while you are working?

Domain	Proposed Indicator	Measures
	menstrual period	Item 4 Responses: Facility/toilet at my workplace; A public/shared toilet outside my workplace; Facility/toilet at another place of business; Toilet at my home; Toilet at someone else's home; Use the outdoors/in the bush or a field (do not use a facility); Private room at my workplace (without toilet/latrine); Other --- Reporting Notes: 'Proportion of women who changed their menstrual materials while working in a space that was clean, private, and safe during their last menstrual period' need to have reported: 'Yes' to WPE19, 'Yes' to WPE20, 'Always' to SAF02 and 'Facility/toilet at my workplace' to WPE12. Numbers reported here use this reporting. Notes on Denominator: Calculated for 643 respondents (289 in Kenya and 354 in Nepal) because 106 (33 in Kenya and 73 in Nepal) have missing values for WPE19, WPE20, and SAF02 because they did not answer 'Yes' to the question "During this menstrual period, did you ever change your menstrual materials while working outside the home?"; additionally, 303 (only in Kenya) had missing values for WPE19 for unknown reasons; additionally, 13 (7 in Kenya and 6 in Nepal) chose not to answer at least one of the questions
Physical Environment: WASH	Proportion of women who changed their menstrual materials ***while working*** outside the home in a space that was clean, private, and safe during their last menstrual period.	Multiple items required Item 1: (WPE19) Is the place you most often use to change your menstrual materials while you are working structurally private (such as walls, doors, and roof are made of nontransparent materials with no gaps or spaces? Item 1 Responses: Yes; No --- Item 2: (WPE20) Is the place you most often use to change your menstrual materials while you are working clean? Item 2 Responses: Yes; No --- Item 3: (SAF02) How often did you feel safe in the place where you typically went to change your menstrual materials/manage your menstruation? Item 3 Responses: Never; Sometimes; Often; Always --- Reporting Notes: 'Proportion of women who changed their menstrual materials while working in a space that was clean, private, and safe during their last menstrual period' need to have reported: 'Yes' to WPE19, 'Yes' to WPE20, and 'Always' to SAF02. Numbers reported here use this reporting. Notes on Denominator: Calculated for 643 respondents (289 in Kenya and 354 in Nepal) because 106 (33 in Kenya and 73 in Nepal) have missing values for WPE19, WPE20, and SAF02 because they did not answer 'Yes' to the question "During

Domain	Proposed Indicator	Measures
		this menstrual period, did you ever change your menstrual materials while working outside the home?"; additionally, 303 (only in Kenya) had missing values for WPE19 for unknown reasons; additionally, 13 (7 in Kenya and 6 in Nepal) chose not to answer at least one of the questions
Physical Environment: WASH	Proportion of women who changed their menstrual materials ***while working*** outside the home in a space that was clean, private, safe, lockable, and available when needed during their last menstrual period	Multiple items required Item 1: (WPE19) Is the place you most often use to change your menstrual materials while you are working structurally private (such as walls, doors, and roof are made of nontransparent materials with no gaps or spaces? Item 1 Responses: Yes; No --- Item 2: (WPE20) Is the place you most often use to change your menstrual materials while you are working clean? Item 2 Responses: Yes; No --- Item 3: (SAF02) How often did you feel safe in the place where you typically went to change your menstrual materials/manage your menstruation? Item 3 Responses: Never; Sometimes; Often; Always --- Item 4: (WPE21) Do you usually have to wait to use this location because of lines or crowding? Item 4 Responses: Yes; No --- Item 5: (WPE22) Is the place you most often use to change your menstrual materials while at you are working lockable from the inside? Item 5 Responses: Yes; No --- Reporting Notes: 'Proportion of women who changed their menstrual materials while working in a space that was clean, private, and safe during their last menstrual period' need to have reported: 'Yes' to WPE19, 'Yes' to WPE20, 'Always' to SAF02, 'Yes' to WPE21 and 'Yes' to WPE22. Numbers reported here use this reporting. Notes on Denominator: Calculated for 616 respondents (274 in Kenya and 342 in Nepal) because 106 (33 in Kenya and 73 in Nepal) have missing values for WPE19, WPE20, and SAF02 because they did not answer 'Yes' to the question "During this menstrual period, did you ever change your menstrual materials while working outside the home?"; additionally, 303 (only in Kenya) had missing values for WPE19 for unknown reasons; additionally, 29 (16 in Kenya and 13 in Nepal) have missing values for WPE22 because they did not answer 'Facility/toilet at my workplace', 'A public/shared toilet outside my workplace', 'Facility/toilet at another place of business', or 'Private room at my workplace (without toilet/latrine)' to the

Domain	Proposed Indicator	Measures
		question "Where do you most often change your menstrual materials while you are working?"; additionally, 10 (6 in Kenya and 4 in Nepal) chose not to answer at least one of the questions.
Physical Environment: WASH	Proportion of women reporting that there is water and soap available in a private place to manage menstruation at their workplace	"**Multiple items required** Item 1: (WPE05) Does the place where you work have any private facilities for women to bathe/wash themselves or wash reusable menstrual materials (such as a tap and basin inside a lockable toilet stall)? Item 1 Responses: Yes; No; Don't Know ----- Item 2: (WPE06) Is there water and soap available in this place? Item 2 Responses: Yes, water and soap; Yes, water only; Yes, soap only; No, neither water nor soap ----- Reporting Notes: 'Proportion of women reporting that there is water and soap available in a private place to manage menstruation' need to have reported: 'Yes' to WPE05, and 'Yes, water and soap' to WPE06. Numbers reported here use this reporting. Notes on the denominator: Calculated for 1051 respondents (626 in Kenya and 425 in Nepal) because 13 (6 in Kenya and 7 in Nepal) were excluded for answering 'choose not to respond' or 'don't know' to either WPE05 or WPE06
Determinants: Individual Level		
Knowledge	Proportion of women who reported that they can usually predict when their menstruation will start	Item: (GM02) Can you usually predict when your menstrual period will start? If so, how? Responses: No, I don't know when it will start; Yes, I keep a calendar/track; Yes, my body tells me (e.g., sore breasts, cramping); Yes, I am on oral contraceptives so I know when my period will begin; Yes, other Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Yes' being a combination of 'Yes, I keep a calendar/track'; 'Yes, my body tells me (e.g., sore breasts, cramping)'; 'Yes, I am on oral contraceptives so I know when my period will begin'; and 'Yes, other' 'No' being 'No, I don't know when it will start' Numbers reported here use this dichotomized reporting. Notes on Denominator: Calculated for 1064 respondents (632 in Kenya and 432 in Nepal) because all provided answered to GM02
Materials	Proportion of women who	**Item:** (MPN2) Thinking about your last menstrual period you had while working at your main job outside the home,

Domain	Proposed Indicator	Measures
	reported always having enough menstrual materials during their last menstrual period while working outside the home	Did you have enough of your menstrual materials to change them as often as you wanted to? **Responses:** Never; Less than half the time; More than half the time; Always **Reporting Notes:** Data can be reported by response options or dichotomized as follows: "Always having enough" being "Always" "Not always having enough" being the combination of all other responses. Numbers reported here use this dichotomized reporting. **Notes on Denominator:** Calculated for all 1064 respondents (632 in Kenya and 432 in Nepal) because all provided answers to MPN2
Pain Management	Proportion of women who report always being able to get pain remedies when needed during their last menstrual period while working outside the home	Item: (PAN04) During your last menstrual period, were you able to get menstrual pain remedies you needed? Responses: Never; Sometimes; Often; Always; Choose not to use remedies; N/A, did not experience pain Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Always able to' being 'Always' 'Not always able to' being the combination of all other responses, excluding 'Choose not to use remedies' and 'N/A, did not experience pain' Numbers reported here use this dichotomized reporting. Notes on Denominator: Calculated for all 600 respondents (373 in Kenya and 227 in Nepal) because 241 (117 in Kenya and 124 in Nepal) chose not to use remedies, 222 (142 in Kenya and 80 in Nepal) did not experience pain, and 1 in Nepal chose not to respond to PAN04.
Social Support	Proportion of women who report that they would feel comfortable seeking help for menstrual problems from	Item: (MAW20a) If you had a concern about your menstrual period, would you feel comfortable seeking help from a health care provider? Responses: Yes; No Reporting Notes: 'Proportion of women who report that they would feel comfortable seeking help for menstrual problems from a health care provider.' need to have reported: 'Yes' to MAW20a,

Domain	Proposed Indicator	Measures
	a health care provider	Notes on the denominator: Calculated for 1059 respondents (630 in Kenya and 429 in Nepal) because 5 respondents (2 in Kenya and 3 in Nepal) were excluded for answering 'choose not to respond' to MAW20a
Work Menstruation Experiences		
Menstrual Practices While Working	Proportion of women who changed their menstrual materials during their last menstrual period while working outside the home [among those who needed to change them]	**Item:** (MAW03) During this menstrual period, did you ever change your menstrual materials while working outside the home? **Responses:** Yes; No, I went home to change; No, I did not need to change my materials **Reporting Notes:** Data can be reported by response options or dichotomized as follows: "Proportion of women changing at work when needed" reporting "Yes." "Proportion of women not changing at work when needed" reporting "No, I went home to change." Those reporting "No, I did not need to change my materials" being excluded. Numbers reported here use this dichotomized reporting. **Notes on the denominator:** Calculated for 1,013 respondents (622 in Kenya and 391 in Nepal) because 51 (10 in Kenya and 41 in Nepal) were excluded for answering "No, I did not need to change my materials," "No, other," or "Choose not to respond" to MAW03.
Pain Remediation	Proportion of women who reported that they are able to reduce their menstrual (abdominal/back/ cramping) pain when they needed to while working outside the home	"**Multiple items required** Item 1: (PAN04) During your last menstrual period, were you able to get menstrual pain remedies you needed? Item 1 Responses: Yes; No ----- Item 2: (MAW20) To what extent did those measures reduce your pain? Item 2 Responses: not at all; slightly; quite a bit; completely ----- Reporting Notes: 'proportion of women who report that they are able to reduce their menstrual (abdominal/back/ cramping) pain when they needed to while at work' need to have reported: 'Yes' to PAN04, and 'slightly', 'quite a bit' OR 'completely' to MAW20. Numbers reported here use this reporting. Notes on the denominator: Calculated for 531 respondents (323 in Kenya and 208 in Nepal) because 464 (259 in Kenya and 205 in Nepal) were excluded because they chose either "Choose not to use remedies," "N/A; did not experience pain/need pain remedies" or "Choose not to answer" to PAN04; additionally, 60 (42 in Kenya and 18 in Nepal) had missing values for MAW20 because they answered either "Did nothing despite experiencing pain" or "not applicable, I did not experience pain

Domain	Proposed Indicator	Measures
		or discomfort" to the question "During your last menstrual period while you were working, what measures did you take to reduce pain or discomfort you experienced?"; additionally, 9 (8 in Kenya and 1 in Nepal) chose not to answer MAW20
Bodily Integrity	Proportion of women who reported that their work responsibilities prevented them from addressing their menstruation-related needs at least some of the time during their last menstrual period	Item: (BI01) My responsibilities at work prevented me from addressing my menstruation-related needs Responses: Never stops me; Sometimes stops me; Often stops me; Always stops me Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Prevented from addressing needs' is a combination of 'Sometimes stops me'; 'Often stops me'; and 'Always stops me' 'Not prevented from addressing needs' is 'Never stops me' Numbers reported here use this dichotomized reporting. Notes on the denominator: Calculated for 1060 respondents (628 in Kenya and 432 in Nepal) because 4 respondents in Kenya was excluded for answering 'choose not to respond' to BI01
Self-Efficacy: Working	Proportion of women who reported not feeling completely confident working during their menstruation	Item: (SE10) How confident do you feel working during your menstruation? Responses: Not at all confident; Slightly confident; Very confident; Completely confident Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Not feeling completely confident' is a combination of 'Not at all confident'; 'Slightly confident'; and 'Very confident' 'Feeling completely confident' is 'Completely confident' Notes on the denominator: Calculated for 1063 respondents (631 in Kenya and 432 in Nepal) because 1 respondents in Kenya was excluded for answering 'choose not to respond' to SE10
Self-Efficacy: Managing	Proportion of women who reported not feeling completely confident in	Item: (SE01) Managing menstruation at work can involve changing, washing, disposing of materials, and other behaviors. How confident do you feel in your ability to manage your menstruation when working outside the home? Responses: Not at all confident; Slightly confident; Very confident; Completely confident Reporting Notes: Data can be reported by response options or dichotomized as follows:

Domain	Proposed Indicator	Measures
	their ability to manage menstruation when working outside the home	'Not feeling completely confident' is a combination of 'Not at all confident'; 'Slightly confident'; and 'Very confident' 'Feeling completely confident' is 'Completely confident' Notes on the denominator: Calculated for 1060 respondents (631 in Kenya and 429 in Nepal) because 4 (1 in Kenya and 3 in Nepal) was excluded for answering 'choose not to respond' or 'not applicable' to SE01
Outcomes		
Individual well-being: *Stress*	During their last menstrual period while working… Proportion of women who reported experiencing stress at least sometimes when they last needed to access a location to change their menstrual materials	Item: (MFS01) During my last menstrual period while working at my main job outside the home, I experienced stress or tension when I needed to access a location to change my menstrual materials/manage my menstruation. Responses: Never; Sometimes; Often; Always Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Experienced stress at least sometimes' is a combination of 'Sometimes'; 'Often'; and 'Always' 'Never experienced stress' is 'Never' Notes on the denominator: Calculated for 955 respondents (597 in Kenya and 358 in Nepal) because 106 (33 in Kenya and 73 in Nepal) were excluded because they did not report changing menstrual materials while working outside the home; additionally, 3 (2 in Kenya and 1 in Nepal) chose not to respond to MFS01
Individual well-being: *Safety*	During their last menstrual period while working… Proportion of women who reported that concerns about safety at least some of the time	Item: (SAF01) How often did concerns about safety prevent you from changing your materials when you wanted to? Responses: Never; Sometimes; Often; Always Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Concerned about safety at least sometimes' is a combination of 'Sometimes'; 'Often'; and 'Always' 'Never concerned about safety' is 'Never' Notes on the denominator: Calculated for 1061 respondents (631 in Kenya and 430 in Nepal) because 3 (1 in Kenya and 2 in Nepal) chose not to respond to SAF01

Domain	Proposed Indicator	Measures
	prevented them from changing their materials when they needed to	
Work Engagement: Job Satisfaction	Proportion of women who are satisfied with their ability to meet their menstrual needs at their current job	Item: (MJS01) I feel fairly well satisfied with my ability to meet my menstrual needs at my current job. Responses: Strongly Disagree; Disagree; Neutral; Agree; Strongly Agree Reporting Notes: Data can be reported by response options or dichotomized as follows: 'Satisfied' is a combination of 'Agree'; and 'Strongly Agree' 'Not satisfied' is a combination of all other responses Notes on the denominator: Calculated for 1058 respondents (627 in Kenya and 431 in Nepal) because 6 (5 in Kenya and 1 in Nepal) chose not to respond to MJS01
Work Engagement: Lost earnings	Proportion of women who reported lost earnings or decreased pay in the past year due to their menstruation	Item: (WOR20) In the past year, have you lost earnings or had your pay reduced because of decreased productivity or missed work related to menstruation? Responses: Yes; No Reporting Notes: 'Proportion of women who reported lost earnings or decreased pay in the past year due to their menstruation' need to have reported: 'Yes' to WOR20, Notes on the denominator: Calculated for 1016 respondents (589 in Kenya and 427 in Nepal) because 7 respondents (2 in Kenya and 5 in Nepal) were excluded for answering 'choose not to respond' to WOR20 and 41 respondents in Kenya had missing values for WOR20 for unknown reasons

ANNEX C: TABLE OF DELETED ITEMS FROM SURVEY REFINEMENT ACTIVITIES AND REASONS FOR DELETION

Table 36: Deleted Items

Item No.	Section	Item	Reason for Deletion
S020	Screening	This study focuses on the menstruation-related experiences of women in the workplace. I have a few questions to determine if you are eligible:	Unnecessary.
n/a	n/a	The next questions ask about difficulties you may have doing certain activities because of a health problem.	Outside the scope.
WAG01	Determinant	Do you have difficulty seeing, even if wearing glasses? Would you say…	Outside the scope.
WAG02	Determinant	Do you have difficulty hearing, even if using a hearing aid(s)? Would you say…	Outside the scope.
WAG03	Determinant	Do you have difficulty walking or climbing steps? Would you say…	Outside the scope.
WAG04	Determinant	Do you have difficulty remembering or concentrating? Would you say…	Outside the scope.
WAG05	Determinant	Do you have difficulty with self-care, such as washing all over or dressing? Would you say…	Outside the scope.
WAG06	Determinant	Using your usual language, do you have difficulty communicating, for example understanding or being understood? Would you say…	Outside the scope.
n/a	n/a	Now I'd like to ask you some more questions about your work.	Unnecessary.
HPQ1	Outcome	About how many hours altogether do you typically work in a 7-day week when you are ***not*** menstruating?	Decision to reduce items about work-related items.
HPQ2	Outcome	How many hours are you expected (by your employer, by family, other) to work in a typical 7-day week?	Decision to reduce items about work-related items.
WRK5	Determinant	Do you do this work for a member of your family, for someone else, or are you self-employed?	Determined to be unclear during cognitive interviews.
WRK8	Determinant	Where do you live in relation to the place where you work?	Determined to be unclear during cognitive interviews.
WRK10	Determinant	Does your employer provide goods or facilities for free or at a subsidized rate? This may include housing, transportation, food, clothing, or other goods.	Used other questions to assess in-kind payment.
WRK11	Determinant	In a typical week, how many days do you work at this job?	Decision to reduce items about work-related items.
WRK12	Determinant	On a typical work day, how many hours do you work at this job?	Decision to reduce items about work-related items.
PAY5	Determinant	For your main job, were you most recently paid in kind, such as with goods or food?	Combined with other item related to payment in cash.
PAY6	Determinant	Approximately how much are those goods/items worth if you had to purchase them for yourself?	Deleted after pilot testing; item was unclear, and responses were inconsistent.

Item No.	Section	Item	Reason for Deletion
D18	Determinant	When you want or need to buy things like food or clothing for yourself or your family, which of the following answers best describes your situation?	Outside the scope.
D19	Determinant	Who usually decides how the money you earn will be used: you, a family member, or you and a family member jointly?	Outside the scope.
FC02	Determinant	Who usually makes decisions about making major household purchases: you, a family member, or you and a family member jointly?	Outside the scope.
FC03	Determinant	Who usually makes decisions about health care for yourself: you, a family member, or you and a family member jointly?	Outside the scope.
SE02	Work Menstruation Experience	If you had a problem related to menstruation while at your workplace, how confident are you that you could solve it?	Unclear during cognitive interviews.
SE06	Work Menstruation Experience	How confident are you that you can dispose of your menstrual materials while you are at your workplace?	Somewhat unclear/irrelevant during cognitive interviews.
SE09	Work Menstruation Experience	How confident are you that you can reduce abdominal pain during your period while you are at your workplace?	Decision to focus on items related to needs and practices for pain management.
BI04	Work Menstruation Experience	When last menstruating at my workplace, I felt satisfied with the menstrual materials I used most often to manage my menstruation.	Redundant with MPNS.
BI05	Work Menstruation Experience	When last menstruating at my workplace, I felt satisfied with the location I used most often to change my menstrual materials/manage my menstruation.	Redundant with MPNS.
BI07	Work Menstruation Experience	When last menstruating at my workplace, I had to delay changing my menstrual materials when I was on the way to or from my workplace because I did not have access to a satisfactory location.	Less relevant to focus of study; during cognitive interviews, this did not seem to be relevant to many women as women do not typically change materials while commuting.
MPN15	Work Menstruation Experience	Were you concerned that others would see your used menstrual materials in the place you disposed of them?	Not very clear or relevant to respondents during cognitive interviews.
MPN41	Work Menstruation Experience	Were you able to rest or take a break to manage menstruation-related symptoms such as pain or discomfort?	Did not seem relevant to respondents during cognitive interviews.
n/a	n/a	I just have a few more questions that ask about your experience of washing and drying your reusable menstrual materials at work. Again, we are focusing on your experiences during your last menstrual period while at your workplace main job outside the home.	Unnecessary.
GM01	Determinant	How old were you when you had your first menstrual period?	Not especially relevant for adult women.
GM02	Determinant	Did anyone tell you about menstruation before you started menstruating?	Not especially relevant for adult women.
PAN01	Determinant	During my last menstrual period, I experienced:	Redundant with other pain-related items.

Item No.	Section	Item	Reason for Deletion
MEN01	Work Menstruation Experience	During your last menstrual period, what were all the materials you used to catch/ absorb your menstrual blood when you were ***not at your workplace?***	Outside the scope (focusing on work experiences).
MEN02	Work Menstruation Experience	During your last menstrual period, what did you use **most often** to collect or absorb your menstrual blood when ***not*** at your workplace?	Outside the scope (focusing on work experiences).
MEN03	Work Menstruation Experience	Which materials did you use in combination with one another to collect or absorb your menstrual blood when ***not*** at your workplace?	Outside the scope (focusing on work experiences).
MEN08	Work Menstruation Experience	During your last menstrual period, how many times did you change your menstrual material on the heaviest day(s) of your period?	Outside the scope (focusing on work experiences).
MAW10	Work Menstruation Experience	**During your last menstrual period**, did you wash any of your menstrual materials while at your workplace?	Redundant with MPNS items.
MAW15	Work Menstruation Experience	During your last menstrual period, did you wash your hands **before** changing your menstrual materials while at your workplace?	Found to be sensitive during cognitive interviews.
MAW16	Work Menstruation Experience	During your last menstrual period, did you wash your hands **after** changing your menstrual materials while at your workplace?	Found to be somewhat sensitive during cognitive interviews and not directly relevant to focus of survey.
MEN18	Work Menstruation Experience	How often did you wash your genitals during your last menstrual period?	Found to be sensitive during enumerator training; uncommon practice for workplace.
MAW18	Work Menstruation Experience	During your last menstrual period, were you able to wash or change clothing that became soiled or stained because of your period while at your workplace?	Found to be uncommon practice in the workplace.
SAF04	Outcome	How often did you fear someone would harm you when you went to change your menstrual materials/manage my menstruation?	Redundant with MPNS.
WPE03	Determinant	How many toilets are available for only women in your workplace?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE04	Determinant	How many toilets are available that are shared by men and women in your workplace?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE05	Determinant	Who has access to these facilities?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE06	Determinant	Are these sanitation facilities locked and/or guarded?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE07	Determinant	Do people have to ask for a key or ask someone to unlock the sanitation facility in order to use it?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE08	Determinant	Are the sanitation facilities for workers at your workplace structurally private (i.e., walls, doors, and roof are made of nontransparent materials with no gaps or spaces)?	Decision to focus on facilities used by participants rather than general workplace facilities.

Item No.	Section	Item	Reason for Deletion
WPE09	Determinant	Are the sanitation facilities for workers at your workplace clean?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE10	Determinant	Do people at your workplace usually have to wait to use the sanitation facilities because of lines or crowding?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE11	Determinant	Do the sanitation facilities at your workplace have water for washing hands or one's body?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE12	Determinant	Do the sanitation facilities at your workplace have soap for washing hands or one's body?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE13	Determinant	Do the individual toilet compartments at your workplace have doors?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE14	Determinant	Are the individual toilet compartments at your workplace lockable from the inside?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE15	Determinant	Do the sanitation facilities at your workplace have containers for disposing used menstrual materials?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE16	Determinant	Do you have to pay to use the sanitation facilities at your workplace?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE17	Determinant	Does the sanitation location at your workplace have a shelf or hook for hygienically storing belongings during use?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE18	Determinant	Does the sanitation location at your workplace have a mirror that women can use to check for menstrual stains?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE19	Determinant	Does the sanitation location at your workplace have a handwashing station?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE20	Determinant	Are there both soap and water available at these handwashing facilities?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE21	Determinant	Does the place where you work have water and soap available in a private space for women to manage menstruation?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE24	Determinant	Does the place where you work have any private facilities for women to wash reusable menstrual materials?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE25	Determinant	Is there water and soap available in this place?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE26	Determinant	Is there soap available in this place?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE2709	Determinant	Does the place where you work have a private place for women to dry reusable menstrual materials?	Decision to focus on facilities used by participants rather than general workplace facilities.
WPE28	Determinant	Do you typically use the sanitation facilities at your workplace for urination?	Combined with other question about urination location.

Item No.	Section	Item	Reason for Deletion
WPE30	Determinant	Do you typically use the sanitation facilities at your workplace for defecation?	Combined with other question about defecation location.
WPE32	Determinant	Do you typically use the sanitation facilities at your workplace to change your menstrual materials?	Combined with other question about location used to change materials.
WPE36	Determinant	Do you have to ask for a key or ask someone to unlock the facility in order to use it?	Omitted to reduce length; overly detailed.
WPE37	Determinant	Do you feel safe/comfortable asking for the key or for someone to unlock the facility?	Omitted to reduce length; overly detailed.
WPE38	Determinant	How does the presence of guards at the facility make you feel when going to use the facility?	Omitted to reduce length; overly detailed.
WPE45	Determinant	Does the place you most often use to change your menstrual materials while at your workplace have a container for disposing used menstrual materials?	Redundant with other items about disposal practices.
WPE47	Determinant	Does the place you most often use to change your menstrual materials while at your workplace have a mirror that women can use to check for menstrual stains?	Not always clear during cognitive interviews (women reported that there were mirrors, but they were not a proper height/size to check for stains).
WPE52	Determinant	Is there a shop near within 5 minutes walking distance of where you work where you can buy menstrual materials?	Determined to be unnecessary to the central focus of the study; not all women buy materials; many women buy materials outside of work hours.
WPE53	Determinant	**[If YES]** If I am menstruating while at work and need to purchase materials, I can go to the shop:	Determined to be unnecessary to the central focus of the study; not all women buy materials; many women buy materials outside of work hours.
WPE54	Determinant	**[if 02, 03, or 04]** Are there guards at your workplace who you must pass by when leaving to purchase supplies?	Reducing overly detailed items.
WPE55	Determinant	**[if 01]** How safe/comfortable do you feel passing by these guards?	Reducing overly detailed items.
WPE56	Work Menstruation Experience	When you are at your workplace, can you usually acquire menstrual materials if needed?	Redundant with MPNS items.
WPE577	Determinant	Are pain medications available at the place where you work to help women manage menstrual pain?	Found to be uncommon during cognitive interviews.
WPE58	Determinant	Are other resources available at the place where you work to help women manage menstrual pain (for example, heat packs, hot water bottles, ice packs)?	Found to be uncommon during cognitive interviews.
WSE03	Determinant	If I am menstruating at work and need to take a break to rest, I am allowed to:	Redundant with WSE02.
WSE04	Determinant	If I am menstruating at work and I need to leave my place of work to get menstrual supplies or pain management resources, I am allowed to go:	Not particularly relevant during cognitive interviews.

Item No.	Section	Item	Reason for Deletion
WSE05	Determinant	If I am menstruating at work and I need to take a break to rest or lie down, I am allowed to do so:	Not particularly relevant during cognitive interviews.
WSE08	Determinant	At my workplace, women do not talk openly about menstruation-related issues.	Somewhat unclear during cognitive interviews.
WSE10	Determinant	At my workplace, women hide if they need rest or assistance while menstruating.	Not very relevant during cognitive interviews.
WSE12	Determinant	The women at my place of work believe that women should not work while they are menstruating.	Found to be sensitive during cognitive interviews.
WSE13	Determinant	Where I work, women express menstruation-related concerns to their male supervisors or coworkers.	Found to be sensitive during cognitive interviews.
WSE13	Determinant	Women at my workplace consider the sanitation facilities to be unsafe.	Redundant with other safety items.
WSE14	Determinant	Women in my workplace face the risk of being physically harmed by others when going to change their menstrual materials.	Redundant with other safety items.
WSE15	Determinant	Women in my workplace face the risk of someone making sexual comments or saying obscene things to them when they go to change their menstrual materials.	Redundant with other safety items.
WSE16	Determinant	Women in my workplace face the risk of sexual assault when going to change their menstrual materials.	Redundant with other safety items.
WSE17	Determinant	Women in my workplace face the risk of being teased, bullied, or harassed at work because of menstruation.	Redundant with other safety items.
WSE18	Determinant	If I speak up about menstruation-related concerns or problems at my workplace, I may be scolded or punished.	Found to be sensitive during cognitive interviews.
WSE19	Determinant	During my last menstrual period while at my workplace, I worried about needing other's support to get the menstrual materials I needed.	Found irrelevant to some during cognitive interviews.
WSE21	Determinant	I know someone at my workplace who can give me information about or support related to menstruation-related challenges.	Found irrelevant to some during cognitive interviews.
STI01	Outcome	Telling people where I work that I am menstruating is risky.	Found to be offensive during cognitive interviews.
STI02	Outcome	I work hard to keep my menstruation a secret while at work.	Found to be offensive during cognitive interviews.
STI03	Outcome	I am very careful who I tell at work that I am menstruating.	Found to be offensive during cognitive interviews.
STI04	Outcome	People who are menstruating are treated like outcasts where I work.	Found to be offensive during cognitive interviews.
STI05	Outcome	Most people where I work believe a person who is menstruating is dirty.	Found to be offensive during cognitive interviews.
STI06	Outcome	Most people where I work are uncomfortable around someone who is menstruating.	Found to be offensive during cognitive interviews.
STI07	Outcome	I feel that I am not as good a person as others when I am menstruating	Found to be offensive during cognitive interviews.

Item No.	Section	Item	Reason for Deletion
STI08	Outcome	Having menstruation makes me feel unclean.	Found to be offensive during cognitive interviews.
STI09	Outcome	Having menstruation in my body feels disgusting.	Found to be offensive during cognitive interviews.
n/a	n/a	Overall would you say that:	Found irrelevant to some during cognitive interviews.
STI11	Outcome	My relationships with those I work with	Found irrelevant to some during cognitive interviews.
n/a	n/a	I'd like to ask a few questions about your knowledge of menstruation in general. For each of these questions, please answer to the best of your ability or tell me if you do not know the answer.	Outside the scope.
KNO01	Determinant	From one menstrual period to the next, are there certain days when a woman is more likely to become pregnant?	Outside the scope.
KNO02	Determinant	Is this time just before her period begins, during her period, right after her period has ended, or halfway between two periods?	Outside the scope.
KNO03	Determinant	After the birth of a child, a woman can become pregnant before her menstrual period has returned.	Outside the scope.
HEA05	Outcome	Did you have any of the following symptoms in the past 3 months? [note UTI symptoms: 01, 02, 03, 04, 05; RTI symptoms: 06, 07, 08]	Flagged by IRBs for deletion; found to be sensitive during cognitive interviews; outside the scope.
HEA06	Outcome	Did you discuss your symptoms with a health care provider when they occurred?	Found to be sensitive during cognitive interviews; outside the scope.
HEA07	Outcome	How often do you experience a general feeling of tension at the beginning of your menstrual period onset of menstruation?	Redundant with other health/well-being items.
SPS2	Outcome	Despite having my menstruation, I was able to finish hard tasks in my work.	Not clear during cognitive interviews.
SPS4	Outcome	I felt hopeless about doing certain work tasks, due to my menstruation.	Not clear during cognitive interviews.
SPS6	Outcome	Despite having my menstruation, I have enough energy to complete all my work	Not clear during cognitive interviews.
n/a	n/a	Next I would like to ask you about your performance at your job. Again, please think about the job where you spend the most time.	Not clear during cognitive interviews.
HPQ3	Outcome	On a scale from 0 to 10 where 0 is the worst job performance anyone could have at your job and 10 is the performance of a top worker, how would you rate your usual job performance?	Not clear during cognitive interviews.
HPQ4	Outcome	On a scale from 0 to 10 where 0 is the worst job performance anyone could have at your job and 10 is the performance of a top worker, how would you rate your overall job performance on the days you worked during	Not clear during cognitive interviews.

Item No.	Section	Item	Reason for Deletion
		your last menstrual period? (response options: numeric 0-10)	
MAW13	Outcome	During your last menstrual period while at your workplace, how often did you have difficulty doing your regular work?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
MAW14	Outcome	During your last menstrual period while at your workplace, how often did you miss out on work activities you needed to do because of time spent taking care of your menstruation-related needs?	Not clear during cognitive interviews.
MAW15	Outcome	When at your workplace during your menstruation, how often did you experience disruptions to your work because of menstruation?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
HPQ6	Outcome	During your last menstrual period, for how many days did you miss an **entire** work day because of your menstrual period?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
HPQ8	Outcome	During your last menstrual period, how many days did you miss **part** of a work day because of your menstrual period?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
HPQ9	Outcome	During your last menstrual period when you missed part of a workday, on average how many hours of work did you miss per day?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
HPQ10	Outcome	During your last period, on how many days did you … come in early, go home late, or work on your day off to compensate for time missed because of your menstruation?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
WOR19	Outcome	During your last menstrual period, did you not participate any of the following activities due to your period?	Outside the scope; not related to work.
WOR21	Outcome	In the past year, have you lost earnings or had your pay reduced because of decreased productivity related to menstruation?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech; combined with other item.
WOR22	Outcome	If I did not experience menstruation, I believe I would be able to earn more.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
n/a	n/a	I would like to ask you a few questions about opportunities for advancement or promotion at your workplace. Again, I would like you to think of the job where you spend the most time.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
WOR23	Outcome	Are there opportunities for advancement at your workplace?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
WOR24	Outcome	I feel that my advancement opportunities are limited because I am a woman.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
WOR25	Outcome	If I did not menstruate, I believe that I would have more opportunities for advancement	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.

Item No.	Section	Item	Reason for Deletion
AJS01	Outcome	I find real enjoyment in my job.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
AJS02	Outcome	I like my job better than the average person.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
AJS03	Outcome	Most days I am enthusiastic about my job.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
AJS04	Outcome	I feel fairly well satisfied with my job.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
MJS02	Outcome	I would like to find a job where I am better able to meet my menstrual needs while working.	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.
MJS04	Outcome	How often have you considered quitting your current job because of unsatisfactory conditions you have experienced when meeting your menstrual needs?	Decision to limit work-related outcomes through conversations with Iris Group/Tetra Tech.

ANNEX D: TABLE OF ADAPTED ITEMS FROM SURVEY REFINEMENT ACTIVITIES

Table 37: Adapted Items

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
S016	For the work you do outside the home, are you paid in cash or in kind, such as with goods like food, housing, or supplies, or are you not paid at all?	As you know, some women take up jobs for which they are paid in cash or kind (such as with goods like food, housing, or supplies). Others sell things, have a small business, or work on the family farm or in the family business. Aside from your own housework, have you done any work in the last three months?	01 = Cash only 02 = Cash and in kind 03 = In kind only 04 = Not paid	01 = Yes 02 = No	Made more straightforward; added note based on enumerator feedback from Kenya.
S017	You said that you have had a menstrual period during the past 3 months and that you have worked outside the home in the past 3 months. Have you experienced menstruation while at the place where you work outside the home during the past 3 months?	You said that you have had a menstrual period during the past 3 months and that you have worked outside the home in the past 3 months. Have you experienced menstruation while working outside the home during the past 3 months?	01 = Yes 02 = No, I do not work while menstruating. 03 = No, I work from home while menstruating. 04 = No, I experienced menstruation during breaks from work (such as weekends or holidays). 05 = No, I was not employed while menstruating in the past 3 months. 06 = No, other	No change	Modified to be more encompassing of women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
Transition before D01	To begin, I'd like to ask you some general questions about you and your job. First, I'd like to ask some general background questions about you.	To begin, I'd like to ask you some general questions about you and your job.	n/a	n/a	Shortened.
WRK3	Do you usually work throughout the year, or do you work seasonally, or only once in a while?	At your main job, do you usually work throughout the year, or do you work seasonally, or only once in a while?	01 = Throughout the year 02 = Seasonally/part of the year 03 = Once in a while	No change	Added introductory phrase to clarify.
WRK4	What is your main occupation for this job?	No change	01 = Agriculture/ farming/forestry/ fishing 02 = Education/ teaching/tutoring 03 = Manufacturing/ textiles/factory work 04 = Selling goods in a marketplace, street, or other informal setting 05 = Retail (e.g., working in a shop or store) 06 = Casual or informal labor (non-agriculture) 07 = Food or lodging (e.g., restaurant, hotel)	01 = Farming/ agriculture/forestry/ fishing 02 = Teaching/ education/tutoring 03 = Factory/ manufacturing/textiles 04 = Selling goods in a marketplace, street, or other informal setting 05 = Working in a shop or store (retail) 06 = Day labor/casual or informal labor (non-farming) 07 = Food or lodging (e.g., restaurant, hotel)	Simplified because response options were found to be unclear during cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			08 = Domestic work (e.g., cleaning homes) 09 = Transportation or storage 10 = Financial services (e.g., banking) 11 = IT and communications 12 = Water, energy, waste 13 = Mining and quarrying 14 = Construction 15 = Public administration and defense 10 = Professional, scientific, or technical (e.g., engineering) 11 = Clerical (e.g., secretarial work)	08 = Domestic work (e.g., cleaning homes) 09 = Health care worker 10 = Civil servant/ government employee 11 = Professional/ office work (e.g., financial services, IT, research) 88 = Other, specify: _____	
D25a	n/a	Approximately how many people work at your workplace?	n/a	Numeric	Added to facilitate assessment of formal vs. informal work.
D25b	n/a	Do you normally work at a fixed location?	n/a	01 = Yes 02 = No	Added to facilitate assessment of formal vs. informal work.
PAY2	If you need to miss a few hours, or a day of work due to illness or other constraints, what happens to your pay?	No change	01 = I have "sick days" (no loss of pay).	01 = I have "sick days" (no loss of pay).	Added "no impact" option based on feedback during training.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			02 = I have to "make up" the hours. 03 = Lose pay for unworked days/hours. 04 = Lose pay for unsold goods. 05 = Another family member or co-worker will cover for me so pay is not lost. 99 = No response	02 = I have to "make up" the hours. 03 = Lose pay for unworked days/hours. 04 = Lose pay for unsold goods. 05 = Another family member or co-worker will cover for me so pay is not lost. 06 = There is no impact. 99 = No response	
PAY3	For your main job, were you most recently paid in cash (such as salaries, wages, commissions, bonuses, or tips)? AND For your main job, were you most recently paid in kind, such as with goods or food?	For your main job, were you most recently paid in cash (such as salaries, wages, commissions, bonuses, or tips) or in kind (such as with goods or food)?	01 = Yes 02 = No	SELECT ALL THAT APPLY 01 = In cash 02 = In kind	Combined two questions and changed response options to fit the new question.
PAY4	Approximately how much money do you make? *Enumerator Notes:* Specify gross or net If she cannot provide an average for a day/week/month, a range (e.g., a "good" week and a	How much money do you typically take home ? You can tell us about a typical day, week, or year.	_____ per day (Rs/Ksh) _____ per week (Rs/Ksh) _____ per month (Rs/Ksh) 66 = No response	No change	Revised to be clearer based on feedback during cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
	"poor" week is acceptable).				
PAY6	Approximately how much are those goods/items worth if you had to purchase them for yourself?	Approximately how much are the goods/items you receive as payment worth if you had to purchase them for yourself?	Numeric (Rs/Ksh)	No change	
D34a	n/a	Does your employment include any benefits, such as affiliation with a social security scheme or pension fund, paid annual leave, or paid sick leave?	n/a	01 = Yes 02 = No	Added to facilitate assessment of formal vs. informal work.
SE10		How confident do you feel working during your menstruation?	01 = Not at all confident 02 = Slightly confident 03 = Very confident 04 = Completely confident	No change	
SE01		Managing menstruation at work can involve changing, washing, disposing of materials, and other behaviors. How confident do you feel in your ability to manage your menstruation when working outside the home?	01 = Not at all confident 02 = Slightly confident 03 = Very confident 04 = Completely confident	No change	Modified to be more encompassing of women working in the informal sector.
SE03		If your period starts while working outside the home but you have not brought your own menstrual material (such as: pad,	01 = Not at all confident 02 = Slightly confident	No change	Modified to be more encompassing of women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
		cloth, tissue, cotton, etc.), how confident are you that you are able to obtain materials to manage your menstruation?	03 = Very confident 04 = Completely confident		
SE04		How confident are you that you can change your menstrual material (such as: pad, cloth, tissue, cotton, etc.) while working outside the home if it becomes necessary?	01 = Not at all confident 02 = Slightly confident 03 = Very confident 04 = Completely confident	No change	Modified to be more encompassing of women working in the informal sector.
SE05		How confident are you in your ability to find a location where you can change your menstrual materials while you are working outside the home?	01 = Not at all confident 02 = Slightly confident 03 = Very confident 04 = Completely confident	No change	Modified to be more encompassing of women working in the informal sector.
SE08		How confident are you that you are able to prevent blood staining your clothing even while working long hours outside the home during your period?	01 = Not at all confident 02 = Slightly confident 03 = Very confident 04 = Completely confident 77 = N/A; do not work long hours	No change	Modified to be more encompassing of women working in the informal sector.
Introductory language before BI01	I have a few more questions to ask you about your experiences related to menstruation at your workplace. For these	I have a few more questions to ask you about your experiences related to menstruation at your workplace. I am	n/a	n/a	Added additional language for clarity.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
	questions you can answer: "never, sometimes, often, or always."	going to read a series of statements and ask you to tell me how often you have had each experience. For each of these statements you can answer: "never, sometimes, often, or always." Please focus on the last time you were menstruating while working at your main job, at your workplace. Some jobs are not in just one location. If you work in many locations, please think of the location where you spend the most time.			
BI01	My responsibilities at my workplace prevent me from addressing my menstruation-related needs.	My responsibilities at work prevented me from addressing my menstruation-related needs.	01 = Never 02 = Sometimes 03 = Often 04 = Always	No change	Rephrased to be more applicable to women working in the informal sector.
BI02	When you were last menstruating at your workplace, did you have to rush when changing your menstrual materials/addressing your menstrual needs?	I had to hurry when changing my menstrual materials/addressing my menstrual needs.	01 = Never 02 = Sometimes 03 = Often 04 = Always 77 = Not applicable	No change	Rephrased to be more applicable to women working in the informal sector; rephrased as statement for consistency; changed from "rush" to "hurry" based on feedback from cognitive interviews.
BI03	When last menstruating at my workplace, I was able to use the menstrual materials I prefer.	I was able to use the menstrual materials I prefer.	01 = Never 02 = Sometimes 03 = Often 04 = Always	No change	Removed repetitive introductory language.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
BI06	When last menstruating at my workplace, I had to delay changing my menstrual material because I did not have access to a satisfactory location.	I had to delay changing my menstrual material because I did not have access to a satisfactory location.	01 = Never 02 = Sometimes 03 = Often 04 = Always	No change	Removed repetitive introductory language.
BI08	When last menstruating at my workplace, I was able to access the resources I needed, like water or soap, to clean myself during menstruation.	I was able to access the resources I needed, like water or soap, to clean myself during menstruation.	01 = Never 02 = Sometimes 03 = Often 04 = Always 77 = Not applicable	No change	Removed repetitive introductory language.
Introductory language before MPN1	Next, I am going to ask you some questions about your experiences when you were last menstruating at your workplace. For each of these questions, please answer "never; less than half the time; more than half the time; or always." Please think about the last menstrual period while at your workplace.	Now I am going to ask you about your experience of managing your period. Women have different preferences and concerns about caring for their body during menstruation. I am going to read a series of questions about different experiences that might apply to you. I will ask how often this applied to you during your last menstrual period. For each question, I'll ask if this applied to you: never (none of the time), less than half the time, more than half the time, or always during your last period. Please think about your last	n/a	n/a	Added language for greater clarity; added language to indicate that MPN questions referred to last menstrual period.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
		menstrual period you had while working at your main job outside the home.			
MPN1	When you were last menstruating at your workplace, were the materials you used to absorb or catch menstrual blood comfortable?	Were the materials you used to absorb or catch menstrual blood comfortable?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Do not attend work when menstruating	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	Removed repetitive introductory phrase; removed "n/a" option because of earlier skip logic.
MPN2	When you were last menstruating at your workplace, did you have enough of your menstrual materials to change them as often as you wanted to?	Did you have enough of your menstrual materials to change them as often as you wanted to?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.
MPN3	When you were last menstruating at your workplace, were you satisfied with the cleanliness of your menstrual materials?	Were you satisfied with your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase; removed reference to "cleanliness" based on cognitive interviews.
MPN4	When you were last menstruating at your workplace, could you get more of your menstrual materials when you needed to?	Could you get more of your menstrual materials when you needed to (for example, if you needed to purchase materials, retrieve materials from home, or ask someone for materials)?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
MPN5	When you were last menstruating at your workplace, were you worried that your menstrual materials would allow blood to pass through to your outer garments?	Were you worried that your menstrual materials would allow blood to pass through to your outer garments?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.
MPN6	When you were last menstruating at your workplace, were you worried that your menstrual materials would move from place while you were wearing them?	Were you worried that your menstrual materials would move from place while you were wearing them?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.
MPN7	When you were last menstruating at your workplace, were you worried about how you would get more of your menstrual material if you ran out?	Were you worried about how you would get more of your menstrual material if you ran out?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.
Introductory language before MPN8	n/a	As a reminder, please focus on the last time you had your menstrual period while at your main job outside the home.	n/a	n/a	Added language as a reminder to focus on last menstrual period.
MPN8	When you were last menstruating at your workplace, did you feel comfortable carrying spare menstrual materials with you to work?	Did you feel comfortable carrying spare menstrual materials with you to work?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	Removed repetitive introductory phrase; added "n/a" option.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
				77 = n/a; did not carry materials with me to work	
MPN9	When you were last menstruating at your workplace, did you feel comfortable carrying spare menstrual materials to the place where you changed them?	Did you feel comfortable carrying spare menstrual materials to the place where you changed them?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.
MPN10	When you were last menstruating at your workplace, did you have a place to store extra menstrual materials?	Did you have a place to store extra menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.
Introductory language before MPN11	Still thinking about the last menstrual period you experienced while at your workplace …	Still thinking about the last menstrual period you experienced while doing your main job outside the home…	n/a	n/a	Added language to clarify.
MPN11	When you were last menstruating at your workplace, were you able to wash your hands when you wanted to?	Were you able to wash your hands when you wanted to?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.
MPN12	When you were last menstruating at your workplace, were you able to dispose of your used	Were you able to dispose of your used menstrual materials when you wanted to?	01 = Never 02 = Less than half the time	No change	Removed repetitive introductory phrase.

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	materials in the way that you wanted to?		03 = More than half the time 04 = Always 77 = Did not dispose of any materials at work		
MPN14	When you were last menstruating at your workplace, were you worried about where to dispose of your used menstrual materials?	Were you worried about where to dispose of your used menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not dispose of any materials at work	No change	Removed repetitive introductory phrase.
MPN16	When you were last menstruating at your workplace, were you able to change your menstrual materials when you wanted to?	Were you able to change your menstrual materials when you wanted to?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.
MPN17	When you were last menstruating at your workplace, were you satisfied with the place you used to change your menstrual materials?	Were you satisfied with the place you used to change your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
MPN18	When you were last menstruating at your workplace, did you have a clean place to change your menstrual materials?	Did you have a clean place to change your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.
MPN40	When you were last menstruating at your workplace, was the place you used to change your menstrual materials sufficiently lit?	Was there enough light in the place you used to change your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Revised to be clearer based on feedback during cognitive interviews; removed repetitive introductory phrase.
Transition language before MPN19	n/a	As a reminder, please focus on the last time you had your menstrual period while at your workplace.	n/a	n/a	Added language as a reminder to focus on last menstrual period.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
MPN19	When you were last menstruating at your workplace, were you worried that you would not be able to change your menstrual materials when you needed to?	Were you worried that you would not be able to change your menstrual materials when you needed to?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.
MPN20	When you were last menstruating at your workplace, were you worried that someone would see you while you were changing your menstrual materials?	Were you worried that someone would see you while you were changing your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.
MPN21	When you were last menstruating at your workplace, were you worried that someone would harm you while you were changing your menstrual materials?	Were you worried that someone would harm you while you were changing your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.
MPN22	When you were last menstruating at your workplace, were you worried that something else would harm you while you were changing your menstrual materials	Were you worried that something else would harm you while you were changing your menstrual materials (e.g., animals, insects, unsafe structure)?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory phrase.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
	(e.g., animals, insects, unsafe structure)?		77 = Did not change materials at work		
MPN14	When you were last menstruating at your workplace, were you worried that you would not be able to reduce menstruation-related symptoms, pain, or discomfort?	Were you worried that you would not be able to reduce menstruation-related symptoms such as pain or discomfort?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase; clarified question based on feedback during training.
MPN24	When you were last menstruating at your workplace, were you able to access items like pain relief to manage menstruation-related symptoms, pain, or discomfort?	Were you able to access items like pain relief to manage menstruation-related symptoms such as pain or discomfort?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase; clarified question based on feedback during training
MPN31a	n/a	Do you ever use reusable menstrual materials while working?	n/a	01 = Yes 02 = No	Added question to facilitate skip logic for subsequent items.
Transition language before MPN31	n/a	Still thinking about the last menstrual period you experienced while at your workplace main job outside the home …	n/a	n/a	Added transition language to remind respondents to reflect on last menstrual period.
MPN31	When you were last menstruating at your workplace, were you able to wash your menstrual	Were you able to wash your menstrual materials if you needed to?	01 = Never 02 = Less than half the time 03 = More than half the time	No change	Removed repetitive introductory phrase.

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	materials if you needed to?		04 = Always 77 = Do not wash materials at work		
MPN29	When you were last menstruating at your workplace, did you have enough water to soak or wash your menstrual materials?	Did you have enough water to soak or wash your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Do not wash materials at work	No change	Removed repetitive introductory phrase.
MPN30	When you were last menstruating at your workplace, did you have access to a basin or bucket to soak or wash your menstrual materials whenever you needed it?	Did you have access to a basin or bucket to soak or wash your menstrual materials whenever you needed it?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not change materials at work	No change	Removed repetitive introductory phrase.
MPN32	When you were last menstruating at your workplace, did you have enough soap to wash your menstrual materials?	Did you have enough soap to wash your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Do not dry materials at work	No change	Removed repetitive introductory phrase.
MPN33	When you were last menstruating at your workplace, were you able to dry your menstrual	Were you able to dry your menstrual materials if you needed to?	01 = Never 02 = Less than half the time 03 = More than half the time	01 = Never 02 = Less than half the time 03 = More than half the time	Removed repetitive introductory phrase; added "n/a" option

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
	materials if you needed to?		04 = Always	04 = Always 77 = Do not dry materials at work	
MPN35	When you were last menstruating at your workplace, were you worried that your menstrual materials would not be dry when you needed them?	Were you worried that your menstrual materials would not be dry when you needed them?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Do not dry materials at work	Removed repetitive introductory phrase; added "n/a" option.
MPN36	When you were last menstruating at your workplace, were you worried that others would see your menstrual materials while they were drying?	Were you worried that others would see your menstrual materials while they were drying?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	0 1 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Do not dry materials at work	Removed repetitive introductory phrase; added "n/a" option.
MPN34	When you were last menstruating at your workplace, were you worried that someone would see you while you were washing your menstrual materials?	Were you worried that someone would see you while you were washing your menstrual materials?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Do not wash materials at work	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Do not wash materials at work	Removed repetitive introductory phrase; added "n/a" option.
MPN37	When you were last menstruating at your workplace, did you have a place to store used materials that you wanted	Did you have a place to store used materials that you wanted to bring home [to wash]?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always	No change	Removed repetitive introductory language; removed "to dispose" phrase as this was not clear in cognitive interviews/did not appear to be relevant.

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	to bring home [to wash or dispose]?		77 = Did not bring materials home to wash		
MPN44	When you were last menstruating at your workplace, did you feel comfortable storing used materials that you wanted to bring home [to wash or dispose]?	Did you feel comfortable storing used materials that you wanted to bring home [to wash]?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not bring materials home to wash	No change	Removed repetitive introductory language; removed "to dispose" phrase as this was not clear in cognitive interviews/did not appear to be relevant.
MPN38	When you were last menstruating at your workplace, did you feel comfortable carrying used menstrual materials home to dispose or wash?	Did you feel comfortable carrying used menstrual materials home to wash?	01 = Never 02 = Less than half the time 03 = More than half the time 04 = Always 77 = Did not bring materials home to wash	No change	Removed repetitive introductory language; removed "to dispose" phrase as this was not clear in cognitive interviews/did not appear to be relevant.
SE07	How confident are you in your ability to wash your reusable menstrual materials while at your workplace?	How confident are you in your ability to wash your reusable menstrual materials while working outside the home?	01 = Not at all confident 02 = Slightly confident 03 = Very confident 04 = Completely confident	01 = Not at all confident 02 = Slightly confident 03 = Very confident 04 = Completely confident 77 = n/a; do not wash materials at work	Added "n/a" response option; revised order to facilitate skip logic; rephrase to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
MAW11	During your last menstrual period, where did you most often wash your menstrual materials while at your workplace?	During your last menstrual period, where did you most often wash your menstrual materials while working outside the home?	01 = Sink, basin, bucket, or other place to wash in a private area at workplace 02 = Sink, basin, bucket, or other place to wash in a public area at workplace 01 = Sink, basin, bucket, or other place to wash in a private area outside workplace 02 = Sink, basin, bucket, or other place to wash in a public area outside workplace 04 = In a well, spring, or waterway outside workplace 88 = Other	No change	Rephrase to be more applicable to women working in the informal sector.
MAW12	During your last menstrual period, did you use soap or detergent to wash or soak your menstrual materials while at your workplace?	During your last menstrual period, did you use soap or detergent to wash or soak your menstrual materials while working outside the home?	01 = Never 02 = Sometimes 03 = Often 04 = Always	No change	Rephrased to be more applicable to women working in the informal sector.
MAW13	During your last menstrual period, where did you most often dry your menstrual materials	During your last menstrual period, where did you most often dry your menstrual materials	01 = In a private place inside my workplace	No change	Rephrased to be more applicable to women working in the informal sector.

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	after washing them at your workplace?	after washing them while working outside the home?	02 = In a public place inside my workplace 05 = Take home to dry/do not dry while at my job 77 = Not applicable 88 = Other		
MAW14	During your last period, were your menstrual materials that you washed and reused at your workplace completely dry before you used them?	During your last period, were your menstrual materials that you washed and reused while working outside the home completely dry before you used them?	01 = Yes 02 = No 03 = I don't remember.	01 = Yes 02 = No 03 = I don't remember. 77 = Not applicable	Rephrased to be more applicable to women working in the informal sector; added "n/a" response option.
MAW08	During your last menstrual period, how many times did you change your menstrual material on the heaviest day(s) of your period while at your workplace?	During your last menstrual period, how many times did you change your menstrual material on the heaviest day(s) of your period while working outside the home?	Numeric	Numeric 77 = Not applicable, did not change at my workplace.	Rephrased to be more applicable to women working in the informal sector; added "n/a" response option.
MAW09	During your last menstrual period, where did you most often dispose of your used menstrual materials while at your workplace?	During your last menstrual period, where did you most often dispose of your used menstrual materials while working outside the home?	01 = Transported home to dispose or reuse 02 = Put in latrine or toilet at workplace 03 = Put in a rubbish bin inside toilet stall at workplace 04 = Put in a rubbish bin outside	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			toilet stall at workplace 05 = Put in a community rubbish bin outside of workplace 07 = Threw or buried somewhere outside 77 = Did not change/dispose of materials while at my workplace. 88 = Other		
GM05	Are you or your partner currently doing something or using any method to delay or avoid getting pregnant?	No change	01 = Yes 02 = No	01 = Yes 02 = No 03 = No partner/sex	Revised to include "no partner/sex" option; also revised to include skip logic in Nepal so that unmarried women were not asked this item as enumerators reported that it was highly sensitive.
GM08	During your last menstrual period, where did you acquire the menstrual materials you used?	No change	SELECT ALL THAT APPLY 01 = Shop, street vendor or pharmacy 02 = Health facility 03 = Family member 04 = Friend 05 = Someone I work with 06 = From my workplace	SELECT ALL THAT APPLY 01 = Shop, supermarket, street vendor or pharmacy 02 = Health facility 03 = Family member 04 = Friend 05 = Someone I work with 06 = From my workplace	Added "supermarket" response option based on Kenya cognitive interviews; added 07 (reused something I already had) response option.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			77 = Not applicable/do not use any materials 88 = Other 99= Don't know	07 = Reused something I already had 77 = Not applicable/ do not use any materials 88 = Other 99 = Don't know	
GM09	During your last menstrual period, did you have money to purchase the quantity of menstrual products you wanted?	During your last menstrual period, were you able to obtain the quantity of menstrual products you wanted?	01 = Yes 02 = No 77 = Not applicable/do not purchase produces	01 = Yes 02 = No 77 = Not applicable/ do not purchase products	Rephrased to "obtain" to reflect the fact that some women do not purchase materials.
Transition language before GM10	n/a	Next, I would like to ask you to think specifically about the last time you experienced your menstrual period while working. Again, please think about your main job.	n/a	n/a	Added transition language.
GM10	During your last menstrual period, did you have to choose between paying for menstruation-related needs and other needs of your household?	No change	01 = Yes 02 = No	01 = Yes 02 = No 77 = Not applicable/ do not have ability to make purchases	Added "n/a" response option.
MAW01	How long ago were you last menstruating while working at your workplace? Again, please think about the job outside of your home where you spend the most time.	How long ago were you last menstruating while working outside the home? Again, please think about the job outside of your home where you spend the most time.	_____ _____ days _____ _____ weeks _____ _____ months _____ _____ years 66 = Choose not to answer	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
MAW02	During this menstrual period, on how many days were you bleeding while working at your workplace?	During this menstrual period, on how many days were you bleeding while working outside the home?	__ days	No change	Rephrased to be more applicable to women working in the informal sector.
MAW03	During this menstrual period, did you ever change your menstrual materials while working at your workplace?	During this menstrual period, did you ever change your menstrual materials while working outside the home?	01 = Yes 02 = No, I went home to change 03 = No, I did not need to change my materials 04 = No, other	No change	Rephrased to be more applicable to women working in the informal sector.
MAW04	During your last menstrual period, what were all the materials you used to catch/ absorb your menstrual blood when you were at your workplace?	During your last menstrual period, what were all the materials you used to catch/ absorb your menstrual blood when you were working outside the home? *Enumerator note:* Do not read response options aloud.	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	SELECT ALL THAT APPLY 01 = Cloth 02 = Reusable sanitary pads 03 = Single-use/disposable sanitary pads/ pantyliners 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	Rephrased to be more applicable to women working in the informal sector; added enumerator note to instruct enumerators not to read response options aloud based on enumerator feedback; added "pantyliners" to response option 03 based on cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			12 = No materials used 77 = Not applicable/ did not work at my workplace during my last menstruation 88 = Other	11 = Underwear alone 12 = No materials used 77 = Not applicable/ did not work at my workplace during my last menstruation 88 = Other	
MAW05	During your last menstrual period, what did you use most often to collect or absorb your menstrual blood when at your workplace?	During your last menstrual period, what did you use most often to collect or absorb your menstrual blood when you were working outside the home? *Enumerator note:* Do not read response options aloud.	SELECT ONE ONLY 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	SELECT ONE ONLY 01 = Cloth 02 = Reusable sanitary pads 03 = Single-use/disposable sanitary pads/ pantyliners 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	Rephrased to be more applicable to women working in the informal sector; added enumerator note to instruct enumerators not to read response options aloud based on enumerator feedback; added "pantyliners" to response option 03 based on cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			12 = More than one material at the same time 13 = No materials used 88 = Other	12 = More than one material at the same time 13 = No materials used 88 = Other	
MAW06	Which materials did you use in combination with one another to collect or absorb your menstrual blood when at your workplace?	Which materials did you use in combination with one another to collect or absorb your menstrual blood when you were working outside the home? *Enumerator note:* Do not read response options aloud.	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 12 = No materials used 88 = Other	SELECT ALL THAT APPLY 01 = Cloth 02 = Reusable sanitary pads 03 = Single-use/disposable sanitary pads/ pantyliners 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 12 = No materials used 88 = Other	Rephrased to be more applicable to women working in the informal sector; added enumerator note to instruct enumerators not to read response options aloud based on enumerator feedback; added "pantyliners" to response option 03 based on cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
MAW07	What are your main reasons for using this material to collect or absorb your menstrual material blood while at your workplace?	What are your main reasons for using this material to collect or absorb your menstrual material blood while working outside the home? *Enumerator note:* Do not read response options aloud.	SELECT ALL THAT APPLY 01 = It is comfortable. 02 = It is easy to use. 03 = It prevents leaks. 04 = It is inexpensive. 05 = It does not need to be changed often. 06 = It is disposable. 07 = It is my only option. 88 = Other 99 = I don't know.	SELECT ALL THAT APPLY 01= It is comfortable. 02 = It is easy to use. 03 = It prevents leaks. 04 = It is inexpensive/ affordable. 05 = It does not need to be changed often. 06 = It is disposable. 07 = It is easily available. 08 = It is safe/clean/ hygienic. 09 = It is my only option. 88 = Other 99 = I don't know.	Rephrased to be more applicable to women working in the informal sector; added enumerator note to instruct enumerators not to read response options aloud based on enumerator feedback; added additional response options based on cognitive interviews.
MAW16	During your last menstrual period, what measures did you take to prevent blood leaking or staining your clothing while at your workplace?	During your last menstrual period, what measures did you take to prevent blood leaking or staining your clothing while working outside the home?	SELECT ALL THAT APPLY 01 = Changed my absorbent materials frequently 02 = Wore extra layers of clothing 03 = Wore dark colored or thick clothing	SELECT ALL THAT APPLY 01 = Changed my absorbent materials frequently 02 = Wore extra layers of clothing 03 = Wore dark colored or thick clothing	Rephrased to be more applicable to women working in the informal sector; added "none" response option based on cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			04 = Used more than one type of menstrual material 05 = Avoided sitting down 06 = Avoided moving around 88 = Other	04 = Used more than one type of menstrual material 05 = Avoided sitting down 06 = Avoided moving around 07 = None 88 = Other	
MAW17	During your last menstrual period, did you experience any leaks or stains on your clothing while at your workplace?	During your last menstrual period, did you experience any leaks or stains on your clothing while working outside the home?	01 = Yes 02 = No	No change	Rephrased to be more applicable to women working in the informal sector.
MAW19	During your last menstrual period, what measures did you take to reduce pain or discomfort you experienced while at your workplace?	During your last menstrual period while you were working, what measures did you take to reduce pain or discomfort you experienced?	SELECT ALL THAT APPLY 01 = Took medication/pain relievers 02 = Used a heat pack or hot water bottle 03 = Used an ice pack 04 = Used traditional remedies/herbs 05 = Rested/took a break 06 = Did stretches/ exercises 07 = Hot tea/liquids 08 = Changed diet	SELECT ALL THAT APPLY 01 = Took medication/pain relievers 02 = Used a heat pack or hot water bottle 03 = Used an ice pack 04 = Used traditional remedies/herbs 05 = Rested/took a break 06 = Did stretches/ exercises 07 = Hot tea/liquids 08 = Changed diet	Rephrased to be more applicable to women working in the informal sector; added "or discomfort" to 77 response option to be comprehensive.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			09 = Did nothing despite experiencing pain 77 = Not applicable; I did not experience pain. 88 = Other	09 = Did nothing despite experiencing pain 77 = Not applicable; I did not experience pain or discomfort. 88 = Other	
MAW20a	Did you discuss your symptoms with a health care provider when they occurred?	If you had a concern about your menstrual period, would you feel comfortable seeking help from a health care provider?	01 = Yes 02 = No	No change	Revised to capture comfort in discussing symptoms with healthcare provider.
Transition language before MFS01	Next I would like to ask you about some other experiences you may have had during your last menstrual period at your workplace. For each statement I read, please tell me how often you felt this way. You can answer: "never, sometimes, often, or always."	Next I would like to ask you about some other experiences you may have had during your last menstrual period while working at your main job outside the home. For each statement I read, please tell me how often you felt this way. You can answer: "never, sometimes, often, or always."	n/a	n/a	Rephrased to be more applicable to women working in the informal sector.
MFS01	During my last menstrual period while at my workplace, I experienced stress or tension when I needed to access a location to change my menstrual materials/manage my menstruation.	During my last menstrual period while working at my main job outside the home, I experienced stress or tension when I needed to access a location to change my menstrual	01 = Never 02 = Sometimes 03 = Often 04 = Always	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
		materials/manage my menstruation.			
MFS02	During my last menstrual period while at my workplace, I felt stress or tension when changing my menstrual materials/managing my menstruation.	During my last menstrual period while working at my main job outside the home, I felt stress or tension when changing my menstrual materials/managing my menstruation.	01 = Never 02 = Sometimes 03 = Often 04 = Always	No change	Rephrased to be more applicable to women working in the informal sector.
MFS03	During my last menstrual period while at my workplace I felt scared when changing my menstrual materials/managing my menstruation.	During my last menstrual period while working at my main job outside the home I felt scared when changing my menstrual materials/managing my menstruation.	01 = Never 02 = Sometimes 03 = Often 04 = Always	No change	Rephrased to be more applicable to women working in the informal sector.
Transition language before SAF01		I'd like to ask you a few questions about your personal experiences around safety when using a location to change your menstrual materials while working at your main job outside the home. Please listen carefully to each of these statements and indicate how often during your last menstrual period the statement has been true for you while you were working. Response options will be "never, sometimes, often, always."	n/a	n/a	Added transition language based on feedback during cognitive interviews

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
Transition language before WPE01	Now I am going to ask you some general questions about the facilities available at your workplace. I would like to know about these facilities, even if you do not typically use the facilities. Please answer to the best of your ability but it is alright if you do not know the answer.	Now I am going to ask you some general questions about the facilities available at your workplace. As before, please think of the job where you spend most of your time if you have more than one job. If you work takes place in multiple locations, please think of the place where you would spend most of your time. I would like to know about these facilities, even if you do not typically use the facilities. Please answer to the best of your ability but it is alright if you do not know the answer.	n/a	n/a	Added text to transition statement to promote clarity based on feedback during cognitive interviews.
WPE01	Does your workplace have any designated sanitation facilities for workers to use?	Does your workplace have any designated toilets or sanitation facilities for workers to use?	01 = Yes 02 = No 99 = Don't know	No change	Added "toilets or" for clarity based on feedback during cognitive interviews.
WPE02	What type of sanitation facilities are available for workers at your workplace?	What type of toilets or sanitation facilities are available for workers at your workplace?	SELECT ALL THAT APPLY 01 = Pit latrine 02 = An improved pit latrine 03 = A flush toilet 04 = A pour-flush toilet 05 = A composting toilet	SELECT ALL THAT APPLY 01 = Flush/pour-flush toilet 02 = Dry toilet 03 = Bucket/flying toilet 04 = No facility/bush/ field	Added "toilets or" for clarity based on feedback during cognitive interviews; revised toilet types to be more clear based on feedback during cognitive interviews and enumerator training.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			99 = I don't know	05 = Hanging toilet 88 = Other 99 = Don't know	
WPE02a	n/a	Does the place where you work have separate toilets or sanitation facilities for women only?	n/a	01 = Yes 02 = No	Added to provide data on sex-separated facilities in the workplace
WPE05	Does the place where you work have any private facilities for women to bathe/wash themselves (such as a tap and basin inside a lockable toilet stall)? AND Does the place where you work have any private facilities for women to wash reusable menstrual materials?	Does the place where you work have any private facilities for women to bathe/wash themselves or wash reusable menstrual materials (such as a tap and basin inside a lockable toilet stall)?	01 = Yes 02 = No 99 = I don't know	No change	Combined two related items based on feedback during cognitive interviews.
Transition language before WPE10	Now I'd like to ask you a bit about the facilities that you most often use when you are at your workplace.	Now I'd like to ask you a bit about the facilities that you personally most often use when you are working outside the home. Please think of the job where you spend most of your time if you have more than one job.	n/a	n/a	Added language to specify that respondents should focus on their main jobs.
WPE10	Where is the sanitation facility that you most often use for urination while at you are at your workplace?	Where is the sanitation facility that you most often use for urination while you are working?	01 = At my workplace 02 = A public/shared toilet outside my workplace	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			03 = At another place of business 04 = At my home 05 = At someone else's home 06 = Use the outdoors/in the bush or a field (do not use a facility) 77 = Do not use toilet facilities while working 88 = Other		
WPE11	Where is the sanitation facility that you most often use for defecation while at you are at your workplace?	Where is the sanitation facility that you most often use for defecation while you are working?	01 = At my workplace 02 = A public/shared toilet outside my workplace 03 = At another place of business 04 = At my home 05 = At someone else's home 06 = Use the outdoors/in the bush or a field (do not use a facility) 77 = Do not use toilet facilities while working 88 = Other	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
WPE12	Where do you most often change your menstrual materials while at your workplace?	Where do you most often change your menstrual materials while you are working?	01 = Facility/toilet at my workplace 02 = A public/shared toilet outside my workplace 03 = Facility/toilet at another place of business 04 = Toilet at my home 05 = Toilet at someone else's home 06 = Use the outdoors/in the bush or a field (do not use a facility) 07 = Private room at my workplace (without toilet/ latrine) 88 = Other	No change	Rephrased to be more applicable to women working in the informal sector.
WPE13	n/a	Why do you not use the sanitation facility at your workplace?	n/a	SELECT ALL THAT APPLY 01 = Not clean enough 02 = Not private enough 03 = No disposal bins 04 = Too expensive/ have to pay	Added by Emory after cognitive interviews

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
				05 = Not functional 06 = Takes too much time 07 = Too far away 08 = Not separate from men 09 = Do not like them 10 = Prefer other location 11 = Too many people around 12 = Space cramped 13 = No water available 14= No soap available 15 = Not allowed	
WPE14	Is the place you most often use to change your menstrual materials while at your workplace separate from men's facilities?	Is the place you most often use to change your menstrual materials while you are working separate from men's facilities?	01 = Yes 02 = No	No change	Rephrased to be more applicable to women working in the informal sector.
WPE19	Is the place you most often use to change your menstrual materials while at your workplace structurally private (i.e., walls, doors, and roof are made of nontransparent materials with no gaps or spaces)?	Is the place you most often use to change your menstrual materials while you are working structurally private (such as walls, doors, and roof are made of nontransparent materials with no gaps or spaces)?	01 = Yes 02 = No	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
WPE20	Is the place you most often use to change your menstrual materials while at your workplace clean?	Is the place you most often use to change your menstrual materials while you are working clean?	01 = Yes 02 = No	No change	Rephrased to be more applicable to women working in the informal sector.
WPE21	Do people usually have to wait to use this location because of lines or crowding?	Do you usually have to wait to use this location because of lines or crowding?	01 = Yes 02 = No	No change	Rephrased to be more relevant to facilities personally used.
WPE22	Is the place you most often use to change your menstrual materials while at your workplace lockable from the inside?	Is the place you most often use to change your menstrual materials while you are working lockable from the inside?	01 = Yes 02 = No	No change	Rephrased to be more applicable to women working in the informal sector.
WPE23	How long does it take you to go to the place where you change your menstrual materials and return to where you do your work activities? Consider: Time to pack up/secure workspace, time to get key and walk to place, time to collect menstrual materials, cleaning up, washing hands, and walking back.	How long does it take you to go to the place where you change your menstrual materials?	Numeric	No change	Rephrased post-cognitive interviews to focus on time it takes to reach location rather than time it takes to change materials based on feedback during cognitive interviews.
WPE24	Do you have to pay to use the place you most often use to change your menstrual materials while at your workplace?	Do you have to pay to use the place you most often use to change your menstrual materials while you are working?	01 = Yes 02 = No	No change	Rephrased to be more applicable to women working in the informal sector.
WPE26	Does the place you most often use to change your menstrual materials while at your workplace have a	Does the place you most often use to change your menstrual materials while you are working have a	01 = Yes, has a shelf and hook 02 = Yes, has a shelf	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
	shelf or hook for hygienically storing belongings during use?	shelf or hook for hygienically storing belongings during use?	03 = Yes, has a hook 04 = No, no shelves or hooks		
WPE28	Does the place you most often use to change your menstrual materials while at your workplace have a handwashing station?	Does the place you most often use to change your menstrual materials while you are working have a handwashing station?	01 = Yes 02 = No	No change	Rephrased to be more applicable to women working in the informal sector.
WPE30	Do you usually take anything other than menstrual materials with you to the place where you change your menstrual materials while at your workplace?	Do you usually take anything other than menstrual materials with you to the place where you change your menstrual materials while you are working?	SELECT ALL THAT APPLY 01 = Own toilet paper 02 = Own cleaning supplies 03 = Own water for cleansing 04 = Own soap 05 = Bag for used menstrual materials 06 = Menstrual materials 07 = Nothing	SELECT ALL THAT APPLY 01 = Own toilet paper 02 = Own cleaning supplies 03 = Own water for cleansing 04 = Own soap 05 = Bag for used menstrual materials 06 = Only menstrual materials 07 = Nothing	Rephrased to be more applicable to women working in the informal sector; added 06 (only menstrual materials) response option to be clearer.
Transition language before WPE31	Next I'd like to ask you a few questions about the materials you may need during your menstrual period while at your workplace.	Next I'd like to ask you a few questions about the materials you may need during your menstrual period while working your main job outside the home.	n/a	n/a	Rephrased to be more applicable to women working in the informal sector.
WPE31	Are menstrual materials available where you work?	No change	01 = Yes for free 02 = Yes for purchase	SELECT ALL THAT APPLY 01 = Yes for free	Changed to select all that apply based on feedback during cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			03 = Yes from a friend 04 = No	02 = Yes for purchase 03 = Yes from a friend 04 = No	
WSE01	If I am menstruating at work and I need to use the toilet facilities, I am allowed to go:	No change	01 = Not at all 02 = Only during specific breaks or when I can get someone to cover my post 03 = Only after asking permission 04 = Whenever I need to	01 = Not at all 02 = Only during specific breaks or when I can get someone to cover my post 03 = Only after asking permission or informing someone 04 = Whenever I need to	Revised response option 03 based on feedback during cognitive interviews.
WSE02	If I am menstruating at work and I need to take a break to meet my menstrual needs (such as changing materials, bathing, or washing materials or clothing) I am allowed to go:	No change	01 = Not at all 02 = Only during specific breaks or when I can get someone to cover my post 03 = Only after asking permission 04 = Whenever I need to	01 = Not at all 02 = Only during specific breaks or when I can get someone to cover my post 03 = Only after asking permission or informing someone 04 = Whenever I need to	Revised response option 03 based on feedback during cognitive interviews.
WSE06	If I am menstruating at work and I need to take a leave (such as taking a partial or full day off	If I am menstruating at work and I need to take a break to rest, I am allowed to do so:	01 = Not at all 02 = Only during specific breaks or when I can get	01 = Not at all 02 = Only during specific breaks or when I can get	Rephrased to focus on "breaks" rather than "leave" based on feedback during cognitive interviews.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
	work), I am allowed to do so:		someone to cover my post 03 = Only after asking permission 04 = Whenever I need to	someone to cover my post 03 = Only after asking permission or informing someone 04 = Whenever I need to	
WSE07	During my menstrual period, I am not allowed to do certain types of work activities at my job.	During my menstrual period, I am restricted from doing certain tasks at my job.	01 = Strongly disagree 02 = Disagree 03 = Agree 04 = Strongly agree	No change	Rephrased for clarity based on cognitive interviews.
WSE09	At my workplace, women hide the fact that they are menstruating.	Where I work, women hide the fact that they are menstruating.	01 = Strongly disagree 02 = Disagree 03 = Agree 04 = Strongly agree 99 = Don't know	No change	Rephrased to be more applicable to women working in the informal sector.
WSE10	At my workplace, people help women who are menstruating if they need it, such as sharing menstrual materials if needed.	Where I work, people help women who are menstruating if they need it, such as sharing menstrual materials if needed.	01 = Strongly disagree 02 = Disagree 03 = Agree 04 = Strongly agree 99 = Don't know	No change	Rephrased to be more applicable to women working in the informal sector.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
WSE11	The men at my place of work believe that women should not work while they are menstruating. AND The women at my place of work believe that women should not work while they are menstruating.	People where I work believe that women should not work while they are menstruating.	01 = Strongly disagree 02 = Disagree 03 = Agree 04 = Strongly agree 99 = Don't know	No change	Revised from "men" and "women" as separate items to ask about "people" generally and make it applicable to more respondents.
WSE18	At my workplace, I may be scolded or punished for taking too much time when I go to change my menstrual materials/ manage my menstruation.	No change	01 = Strongly disagree 02 = Disagree 03 = Agree 04 = Strongly agree	01 = Strongly disagree 02 = Disagree 03 = Agree 04 = Strongly agree 77 = n/a; do not change materials at work	Added "n/a" response option.
KNO04	n/a	Before you had your first menstrual period, did you know about menstruation?	n/a	01 = Yes 02 = No 03 = Don't remember	Added to align with global indicators.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
Transition language before SPS1	Next we would like you to describe your work experiences in the past month. These experiences may be affected by many environmental as well as personal factors and may change from time to time. Please think specifically about the job where you spend the most time. For each of the following statements, please choose one of the following responses to show your agreement or disagreement with this statement in describing your work experiences in the past month: strongly disagree, somewhat disagree, uncertain about your agreement with the statement, somewhat agree, or strongly agree.	Next we would like to know how much you agree with statements about the last time you were working during your menstruation. These experiences may be affected by many environmental as well as personal factors and may change from time to time. Please think specifically about the job where you spend the most time outside the home. For each of the following statements, please choose one of the following responses to show your agreement or disagreement with this statement: strongly disagree, somewhat disagree, uncertain about your agreement with the statement, somewhat agree, or strongly agree.	n/a	n/a	Rephrased to be more applicable to women working in the informal sector.
Transition language before HPQ5	n/a	Please think about the last time you had your menstrual period while working.	n/a	n/a	Added to provide timeframe to question
ABS01	Do you usually miss any work due to your menstrual period?	In the past year, did you miss any work due to your menstrual period?	01 = Yes 02 = No	No change	Revised to focus about actual experiences in the past year.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
ABS03	Do you avoid scheduling work (if possible) during your menstrual period?	No change	01 = Yes 02 = No	01 = Yes 02 = No 77 = Not applicable; not able to make my own schedule	Added "n/a" response option.
WOR20	In the past year, have you lost earnings or had your pay reduced because of missed work related to menstruation? AND In the past year, have you lost earnings or had your pay reduced because of decreased productivity related to menstruation?	In the past year, have you lost earnings or had your pay reduced because of decreased productivity or missed work related to menstruation?	01 = Yes 02 = No	No change	Combined two similar items.
Transition language before D02	n/a	Thinking specifically about the job where you spend the most time, do you agree with the following?	n/a	n/a	Added based on moving demographics items to end of survey.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
COV01	In the past 3 months, have you experienced any of the following…?	In the past 6 months, have you experienced any of the following…?	SELECT ALL THAT APPLY 01 = Difficulties purchasing menstrual materials due to mobility restrictions imposed by government 02 = Difficulties purchasing menstrual materials due to shops or markets being closed 03 = Difficulties purchasing menstrual materials due to shortages in the shops or markets 04 = Difficulties purchasing menstrual materials because the price of these materials was too high 05 = Difficulties purchasing menstrual materials because the household income has dropped	No change	Expanded to encompass more of the pandemic/ lockdown period and enable comparability in both locations.
COV02	In the past 3 months, have you experienced	In the past 6 months, have you experienced	01 = Yes 02 = No	No change	Expanded to encompass more of the pandemic/

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
	difficulties accessing the type of menstrual materials you prefer?	difficulties accessing the type of menstrual materials you prefer?			lockdown period and enable comparability in both locations.
COV03	In the past 3 months, have you experienced any of the following …?	In the past 6 months, have you experienced any of the following …?	SELECT ALL THAT APPLY 01 = Difficulties going to or from your workplace due to mobility restrictions imposed by government 02 = Difficulties in accessing your preferred mode of transportation to go to or from your workplace 03 = Difficulties in accessing any mode of transportation to go to or from your workplace 04 = Difficulties going to or from your workplace because of transportation shortages 05 = Difficulties going to or from your workplace because the price of transportation was too high	No change	Expanded to encompass more of the pandemic/ lockdown period and enable comparability in both locations.

Item No.	Original Item	Revised Item	Original Response Options	Revised Response Options	Reason for Modification
			06 = Difficulties going to or from your workplace because the household income has dropped		
COV04	In the past 3 months, have you experienced any of the following…?	In the past 6 months, have you experienced any of the following…?	SELECT ALL THAT APPLY 01 = Difficulties accessing the place you typically change your menstrual materials while at your workplace due to coronavirus-related restrictions 02 = Longer wait times to access the place where you change your menstrual materials while at your workplace due to limited capacity 03 = felt uncomfortable in the place where I change my menstrual materials because of coronavirus-related concerns	No change	Expanded to encompass more of the pandemic/ lockdown period and enable comparability in both locations.

ANNEX E: ADDITIONAL INFORMATION ON SCALE CFA APPROACH FINDINGS

CFA FOR THE MENSTRUAL PRACTICE NEEDS SCALE

The MPNS was developed and validated with schoolgirls in Soroti, Uganda (Hennegan, Nansubuga, Smith et al., 2020), and then revalidated among women working in Mukono District, Uganda (Hennegan, Bukenya, Kibira et al., 2021). For the revalidation among women, Hennegan, Bukenya & Kibira identified a four-factor solution with the data from women that was a better fit than the solution identified for schoolgirls. The four factors identified included factors for: material and home environment needs, material and home environment insecurity, work practice needs, and disposal needs. For the purpose of this study, which has a singular focus on menstruation in the workplace, we omitted items specific to the home. Further, cognitive interviews demonstrated that MPN15 (*Were you concerned that others would see your used menstrual materials in the place you disposed of them?*) was not well understood and was, therefore, dropped.

We hypothesized a solution consisting of two factors: "Material and work environment needs" and "Material and work environment insecurity" with 16 items. When hypothesizing the factor structure for this work, our decisions were based on items that we retained and omitted, as well as decisions made by Hennegan, Bukenya, Kibira et al. (2021) during their revalidation. Our omission of MPN15 left only two remaining items under the "Disposal needs" factor; to avoid issues with model identification, we reassigned these items to "Material and work environment needs" and "Material and work environment insecurity," as appropriate. Hennegan, Bukenya, Kibira et al. excluded items from the original MPNS due to low factor loading (MPN8. *Did you feel comfortable carrying spare menstrual materials with you to work?* and MPN30. *Did you have access to a basin or bucket to soak or wash your menstrual materials whenever you needed it?*), issues with cross-loading (MPN7. *Were you worried about how you would get more of your menstrual material if you ran out?* and MPN11. *Were you able to wash your hands when you wanted to?*), or high correlation with other items (MPN18. *Did you have a clean place to change your menstrual materials?*). These items were excluded from our analysis *a priori*. All remaining items, therefore, seemed most appropriate in either a factor on insecurity (all items asked about worry) or needs (items asked about satisfaction, access, comfort, etc.). Unlike the revalidation by Hennegan, Bukenya, Kibira et al. (2021), which analyzed data among women who disposed or reused their menstrual materials separately, we included all participants.

Factor loadings for both factors indicated strong item-factor relationships; therefore, none of the items were omitted during the CFA. Factor 1, material and work environment needs, consisted of nine items dealing with the ability to dispose or change menstrual materials when needed, satisfaction with menstrual materials and place used to change menstrual materials, access to sufficient quantities of menstrual materials, access to storage for spare menstrual materials, and feeling comfortable carrying menstrual materials to location for changing. Factor loadings for material and work environment needs ranged from 0.608 to 0.875. The CFA demonstrated adequate relative model fit (CFI = 0.877; TLI = 0.857) and poor absolute model fit (RMSEA = 0.128, 90% CI = 0.123-0.134). Factor 2, material and work environment insecurity, consisted of seven items dealing with worry about the performance of menstrual materials, worry about where to dispose of them, worry about ability to change when needed, worry about being seen when changing, and worry about being harmed when changing. Factors loading for material and work environment insecurity ranged from 0.594 to 0.915. The CFA demonstrated adequate relative model fit (CFI = 0.877; TLI = 0.857) though poor absolute model fit (RMSEA = 0.128, 90% CI = 0.123-0.134).

There were also 10 MPNS items (7 from the original MPNS and 3 new items that we added) that were only asked of women who reported using reusable menstrual materials. Hennegan, Bukenya, Kibira et al. conducted a separate CFA for only these reuse items. However, there were very few women in our sample (N=25) for whom these 10 items were applicable. Best practice is for CFA sample size to include

10 respondents per item or at least 200-300 observations (Boateng et al., 2018). Therefore, we were unable to conduct CFA on this set of items.

We report on all MPNS items descriptively, regardless of their inclusion in the scale.

CFA FOR BODILY INTEGRITY, SAFETY, AND SELF-EFFICACY SCALES

Three additional and separate CFAs were conducted to confirm one-factor solutions for the 5-item Bodily Integrity scale, the 4-item Safety scale, and the 6-item Self-Efficacy scale.

The one-factor CFA for Bodily Integrity demonstrated adequate relative model fit (CFI = 0.923; TLI = 0.847) and poor absolute model fit (RMSEA = 0.167, 90% CI = 0.145-0.191). Factor loadings ranged from absolute value of 0.490 to 0.839, which indicate strong item-factor relationships. For this reason, none of the items were omitted during the CFA.

While the survey included seven total Self-Efficacy items, one of the items (SE07. *How confident are you in your ability to wash your reusable menstrual materials while working outside the home?*) was only asked to women who reported having ever reused menstrual materials. For this reason, SE07 was omitted from the CFA for Self-efficacy. The one-factor CFA for Self-efficacy demonstrated good relative model fit (CFI = 0.988; TLI = 0.98) and poor absolute model fit (RMSEA = 0.148, 90% CI = 0.131-0.165). Factor loadings ranged from 0.687 to 0.912, which indicates strong item-factor relationships. For this reason, none of the items were omitted during the CFA.

Three of the four Safety items were only asked of women who answered yes to the question *During this menstrual period, did you ever change your menstrual materials while working outside the home?* Therefore, the CFA for Safety excludes all women who answered no to this item. The one-factor CFA for Safety demonstrated good relative model fit (CFI = 0.998; TLI = 0.995) and adequate absolute model fit (RMSEA = 0.063, 90% CI = 0.028-0.106). Factor loadings ranged from absolute value of 0.575 to 0.978, which indicates strong item-factor relationships. For this reason, none of the items were omitted during the CFA.

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