The *Ritu* Study Protocol: A cluster randomized controlled trial of the impact of menstrual health programs on school attendance and wellbeing of girls in rural Bangladesh

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Background: Many girls in developing countries get their first menstrual period without knowing what it is, leaving them scared and ill-informed about practicing Menstrual Health (MH). Girls' poor ability to manage MH plays a role in the barriers to education, and general wellbeing. This paper presents the protocol for a cluster randomized controlled trial on the impact of a complex intervention facilitating MH in Bangladesh: the *Ritu* trial.

Methods/Design: We randomized 149 schools from one rural district, into three groups; i) receiving a school program (sanitation facilities, teacher trainings and MH module for school curriculum); ii) a school program and a household program (parental education and MH visual booklet); iii) a control group. The primary beneficiaries are schoolgirls in grades 6 until 8, age 11-15. The program will last for 3 years, and the primary outcomes are education outcomes, psychosocial outcomes and empowerment of adolescent girls. We will make use of administrative data, experimental data and survey data. School data of all pupils is collected throughout; additionally, a subsample of 4,172 girls partakes in surveys; and a subset of 500 parents will take Implicit Association Tests on their MH attitudes. Survey data collection took place at baseline (2017), and planned at midline (2019) and endline (2021). We will analyse both the short-term and long-term effects of both treatment arms in addition to cost-effectiveness evaluations and a process evaluation.

Discussion: This protocol describes the exact set up of the *Ritu* trial, and the innovative data collection process and sources. Even though MH programs are becoming more popular, there is very limited evidence on the measurement of key outcomes and the impact of such programs. We aim to reduce these knowledge gaps and to provide policy lessons for future implementers or policymakers.

Trial registration: Retrospectively registered in the AEA RCT Registry: "AEARCTR-0002164" on December 6, 2017

Keywords: Menstrual Health, Schools, Girls, WASH, Norms, Cost-effectiveness, Impact Evaluation Protocol, RCT

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BACKGROUND

Many girls in developing countries get their first menstrual period without knowing what it is, leaving them scared and ill-informed about practicing Menstrual Health (MH) (Chandra-Mouli and Patel, 2017). Their female family members are their primary source of information, but these members often lack proper MH knowledge themselves and live in a culture where menstruation is seen as dirty, infectious and shameful (Chandra-Mouli and Patel, 2017). Next to existing taboos surrounding menstruation, adequate MH products and water and sanitation facilities tend to be scarce (Chandra-Mouli and Patel, 2017; Sommer et al., 2015b). Menstruation can lead to serious barriers to education, health and personal development (Chandra-Mouli and Patel, 2017; Fakhri et al., 2012; Grant et al., 2013; Miiro et al., 2018; Sommer and Sahin, 2013; Sumpter and Torondel, 2013; Tegegne and Sisay, 2014). In Bangladesh, 40% of girls reportedly miss three days of school during their menstrual period (Unicomb et al., 2014). Around the time of menarche, i.e. age 12-15, gender-based gaps in schooling in low- and middle-income countries (LMIC) start to widen to the detriment of girls (Singh and Krutikova, 2017). This is troublesome, as improving girls' education is one of the most cost-effective ways of spurring development (Tembon and Fort, 2008). Girl's education is associated with long term benefits such as increased health, delayed marriage and greater wellbeing for the household (Tembon and Fort, 2008). The *Ritu* program aims to break down menstrual barriers to education and beyond, and this protocol describes how the *Ritu* trial is designed to measure its impact and cost-effectiveness.

There are only limited facilities for girls and women to manage their menstruation in LMICs. In their homes and their community, they typically lack physical provisions for dealing with MH such as lockable, single-sex, private toilets with clean water and soap for washing, a private open air space to dry wet cloths and a closed bin or incinerator for used pads (Hennegan et al., 2017; Montgomery et al., 2016; Newbury, 2015). Additionally, menstruating girls often face social exclusion, such as exclusion from touching water, cooking, attending religious ceremonies and socializing (Sumpter and Torondel, 2013). Moreover, girls report harassment by boys and teachers (Sumpter and Torondel, 2013; Tegegne and Sisay, 2014). There is some qualitative evidence that associates poor MH practices with lower academic achievement, and a range of adverse psychosocial outcomes such as feelings of shame, anxiety, and distraction (Chandra-Mouli and Patel, 2017; Crichton et al., 2013; Miiro et al., 2018; Sommer et al., 2015a; Tegegne and Sisay, 2014). Uncovering the causal link between poor MH and lower academic achievement is challenging, and no quantitative studies have proven this link so far.

Policymakers, implementers and researchers alike, have long overlooked issues related to MH. Which is surprising since MH links to at least six[1] out of the seventeen Sustainable Development Goals from the United Nations. Programs targeting MH have gained some traction over the last few years and these programs range from improving girls' knowledge, attitudes and practices to providing facilities and products needed for adequate MH. A recent systematic review by Hennegan and Montgomery (2016) concludes that there is insufficient evidence to determine the effectiveness of MH programs. A few studies have been done, but they are mostly qualitative in nature or suffer from small sample sizes and weak identification strategies. Moreover, it is unclear whether MH also directly influences health outcomes. A meta-analysis of mostly cross-sectional studies showed no association between MH and health outcomes such as bacterial vaginosis or urinary infections(Sumpter and Torondel, 2013). In India, a case-control study found , that using reusable sanitary pads increased the likelihood of having a urogenital infection (Das et al., 2015). An RCT feasibility study in Kenya found that provision of menstrual cups was associated with lower risk of sexual transmissible infections and bacterial vaginosis, but found no association with school drop-out in the one-year study (Phillips-Howard et al., 2016).

Several studies have stressed the gap in evidence for quantitative studies on the causal effect of MH interventions, and the need for more rigorous evidence especially for adolescent girls' school attainment (Phillips-howard et al., 2016; Sumpter and Torondel, 2013). We aim to contribute to the current evidence base of MH programs by conducting a large scale RCT on the impact of the MH program called '*Ritu*' – coordinated by Simavi, a Non-Governmental Organisation (NGO). The *Ritu* program is a complex program, promoting and facilitating MH both in schools and at home. Our primary outcome variables are psychosocial outcomes of girls, their school attendance and performance and changes in MH attitudes of parents. For the first two outcomes, we will use survey data, school attendance data and administrative data. For the latter, we will use an experimental approach to elicit the attitudes of parents towards menstruating girls using Implicit Association Tests (IAT). IATs have been successfully used before to capture changes in attitudes in the field, for example on attitudes towards genital cutting in Sudan and female empowerment in India (Beaman et al., 2009; Efferson et al., 2015; Vogt et al., 2017).

To the best of our knowledge, we are conducting the first large-scale RCT on an MH intervention in combination with cost-effectiveness of the program. This latter analysis is particularly relevant for policy, where limited budgets and high impact goals go hand in hand. Moreover, the *Ritu* trial also contributes to

[1] Sustainable Development Goals; 1, 3, 4, 5, 6 and 10

the current evidence base of MH programs by evaluating a complex intervention. In line with the current trend in the development aid sector, socio-ecological theories suggest that there are typically several factors leading to adverse health outcomes, and that programs should mirror this complexity (Glass and McAtee, 2006; Lieberman et al., 2013).

We aim to i) compare educational, psychosocial and empowerment outcomes of girls across our control and treatment groups, ii) explore how the school and household components of the intervention affect girls' lives, iii) explore MH attitudes among girls and parents, iv) provide insights on the best way of measuring key outcomes such as MH measures, school attendance and attitudinal data, and v) analyze the cost-effectiveness.

METHODS

Study design

We conduct a cluster randomized controlled trial among 149 schools with three conditions: i) receiving a school program (MHM-friendly sanitation facilities, teacher training and an MH module for the school curriculum); ii) the school program and a household program (parent sessions and an MH visual booklet); iii) a control group. All pupils in grades 6 to 8 are automatically enrolled in the program and we collect school attendance and performance data and survey data on a subset of girls, see Figure 1 for the flow diagram and Additional File 1 for the Theory of Change. The *Ritu* program started its implementation in April 2017. Prior to implementation, we conducted a baseline survey in 2017. Moreover, we continuously collect data on school attendance in two different ways: by primary data collection and by administrative school records. Next to the survey and school data, we also collect experimental data from a subset of parents on their attitudes towards menstruating girls. See Figure 2 for the exact timeline.

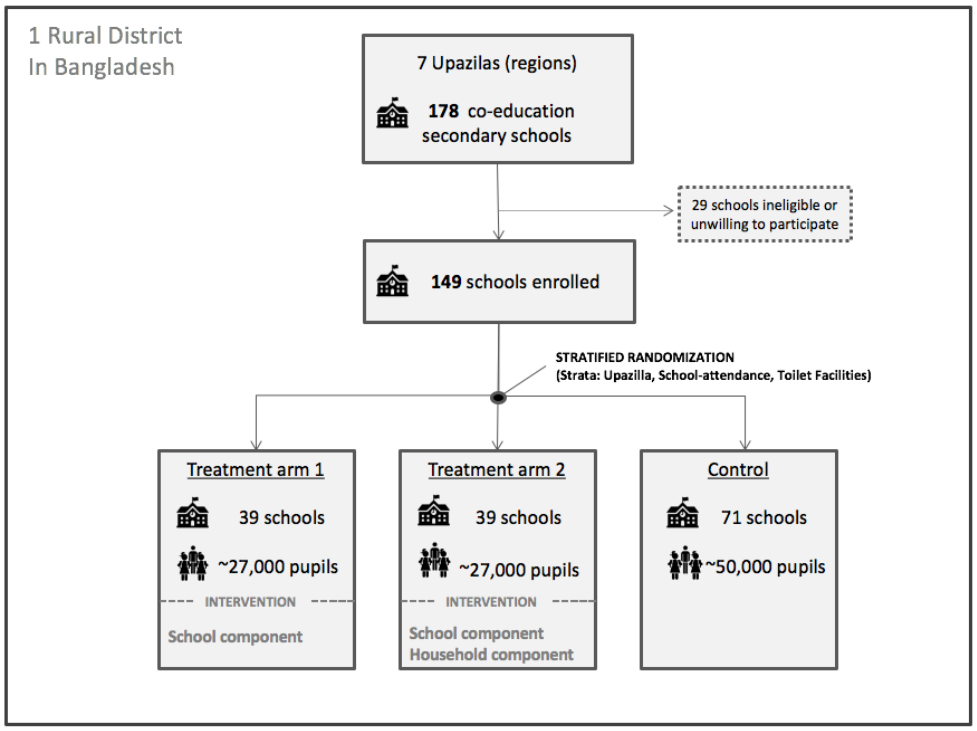

Figure 1: *Flow diagram of the Ritu trial, 149 co-education schools randomized into treatment arms 1, treatment arm 2 and control*

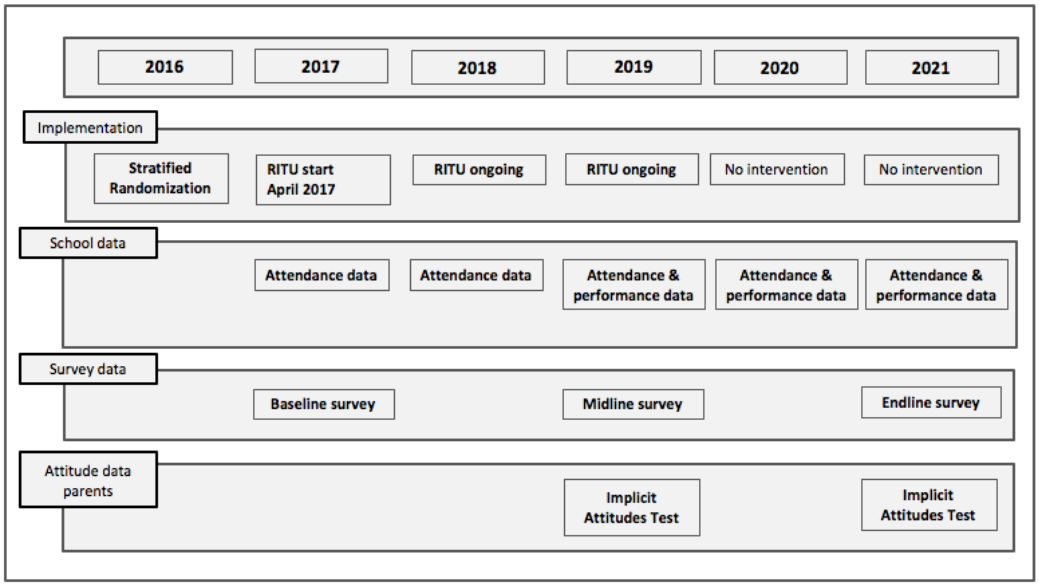

Figure 2: *Ritu* Timeline; implementation, school data collection, survey data collection and attitudinal data collection

Ethics and consent

On November 17th 2016, the *Ritu* trial received ethical approval (IRB 2016-09) from the Internal Review Board of the Erasmus Research Institute of Management, Erasmus University Rotterdam. Moreover, we received confirmation that no approval by the Medical Ethical Committee of the Netherlands was required. On September 11th 2018, the IAT experiment involving 500 parents, received ethical approval from the Ethics Review Committee Inner City Faculties Maastricht University. All participating schools gave their written consent including consent for school data collection for 5 years. In addition, the local authority (District Education Officer) granted approval to collect data at the schools. For the surveys, the Directorate of General Secondary Education in Bangladesh granted ethical approval, and all headmasters and surveyed girls gave their consent. Furthermore, all parties have been extensively informed that they can drop out at any time without any penalty. Participants' confidentially is ensured during the trial, researchers only have access to a fully anonymized dataset.

The setting

The program takes places in a vastly rural district in northern Bangladesh, with two million inhabitants (NIPORT et al., 2014). Similar to other rural regions in Bangladesh, the poverty rate lies slightly above the national rate of 67%, with an estimated 74% of households living below the international poverty line of $1.75 purchasing power parity (Schreiner, 2013). Using the World Health Association's definition of 'improved toilet facilities' – facilities that are more likely to ensure privacy and hygienic use - a study found that 36% of rural households in Bangladesh reported not having an improved toilet facility, compared to only 19% in urban households (NIPORT et al., 2014; WHO and UNICEF, 2014). In urban areas, women on average have two more years of schooling and marry one year later than women in rural areas (NIPORT et al., 2014). Throughout Bangladesh, taboos and restrictions surrounding menstruation exist and they are most persistent in rural areas. The taboos range from limiting religious activities to food restrictions and limits to movement (Newbury, 2015). Particularly in rural areas, women have in general less freedom of movement than in urban areas, an important indicator for empowerment (NIPORT et al., 2014).

Participants

Schools – All junior co-education secondary schools in the district were eligible for the program. Of those 178 schools, 12 were unwilling to participate and 19 ineligible due to other non-profit organisations working with them.

Girls – The primary beneficiaries of this intervention are girls in grades 6 to 8, typically aged 11 to 15. In Bangladesh, menarche starts around 12.8 - 13.0 years (Chowdhury et al., 2000; Hossain et al., 2011). For the trial, we will focus on girls who are in grade 6 at the start (t=0), and follow up at t=2 and t=4. We will follow these girls as we expect that the impact of the program will be the biggest amongst this age group. Firstly, because they will receive the longest length of the treatment. Secondly, because they will start the intervention at an early age, likely before their menarche, and be more open to adopt and develop MH habits proposed by the program.

Parents –The household component in treatment arm II is specifically targeted at parents of the girls. They receive personal invitations to join information sessions in their village. The parents were spread over 423 villages in total, of which 133 village were not eligible due to overlap of the treatment arms. In other words, in those villages girls from our other treatment arms are residing, which could lead to unwanted spill-over effects and underestimation of the true impact. We will examine changes in MH norms and attitudes of a subset of the eligible parents, by administering our MH IAT to 500 parents in treatment arm II and the control group.

The intervention

The intervention is led by Simavi as part of the Ritu program, and implemented by its partners BNPS, DORP and RedOrange from September 2016 until May 2019. As mentioned above, we randomized schools into different groups:

Treatment arm I: The school component

The school component consists of three segments:

1) Launch campaign at schools to familiarize students and staff with the *Ritu* program; discussion sessions, essay writing, and a screening of a MH reality tv-show.
2) MH-friendly toilet facilities are realized, with all Water, Sanitation and Hygiene (WASH) features. This is financed through a 'budget tapping process': a combination of school budget and local

government budget. Depending on the context, the funds made available can range up to 5000 USD.

3) Menstrual education modules are embedded in the school curriculum and taught twice a month. The MH module was extensively pilot tested to fit the context and the curriculum. This module aims at improving MH knowledge and practices, as well as increasing attitudes of acceptance of menstruation as a normal physiological process. Teachers and headmasters receive a 3-day training, where they receive menstrual education themselves and also focus on didactical skills. At the end, they learn how to integrate the module in their lesson plan. In-class support by a staff member of the NGO is available on demand. Moreover, every year the teaching staff will receive a 1-day refresher training.
4) Each school has its own school mobilizer, who is the main point of contact for the *Ritu* program. The mobilizer offers continuous support, both in-class and beyond.

Treatment arm II: The school component and household component

Next to the school component, households of girls in this treatment arm receive:

1) Fathers and mothers separately receive menstrual education sessions in their village. The 2-day sessions cover MH knowledge, attitudes, and practices and ways to support their daughters. It focuses especially on promoting adaptation of girl-friendly norms related to menstruation. The sessions are an adaptation on the MH module taught in schools, and have been pilot tested in April 2017 with 30 parents.
2) Parents are informed they can claim budget at the local government to improve MH-friendly toilet facilities at home, even though it is a difficult and lengthy process. For example, this may include installing a light, a lock or a bin.
3) After the parent sessions, girls receive an MH booklet from their teachers to take home. This booklet consists of visual reminders of what has been taught. The MH visual booklet aims to increase the basic MH knowledge of all household members, and increase support and dialogue. The booklet is specifically designed for illiterate people, and is very sensitive to the local context and does not contain provocative images. It was pilot-tested in the field with a group of 40 people, consisting of (grant-)parents, extended family-members, boys and girls.

Adherence

The necessary documents were developed to guide implementation and implementing partners were trained on these and involved regular update meetings to ensure adherence to the protocol and sequencingmi. Regular monitoring visits are made by Simavi local staff to ensure adherence to the protocol. In addition, the local staff of Simavi where possible ensures that no other conflicting interventions are being implemented in the study area.

Outcome measures

Primary outcomes - The primary outcomes are education outcomes, psychosocial outcomes and empowerment of the beneficiaries of the program. Data for the education outcomes consists of both performance data and school attendance data from several data sources. Psychosocial outcomes and empowerment is measured through surveys administered to a subset of girls who were in grade 6 at t=0. See table 1 for a detailed overview of all outcomes and appendix 2 for the full survey.

Mediators and process evaluation measures –We also collect data on a number of other variables, crucial to understanding the underlying mechanisms of the potential effect of the MH program. For example, menstrual health outcomes, attitudes, beliefs and support systems. See table 1 for the overview.

Power calculation & Sample size

We ran power calculations to determine the appropriate sample size per cluster (i.e. school), and separate sample size calculations for our primary outcomes using the open-source software program Optimal Design (3.01). We used information from our mapping study with 8 schools in the district. We specified the following parameters: repeated measures with 3 data collection rounds, taking the 3-level nature of the data into account (Level 1: schoolgirls; Level 2: schoolgirls clustered into time (baseline, midline, endline); Level 3: schoolgirls clustered into time are clustered into schools). We used an alpha of 0.05, and ran different scenarios based on previous literature (Hennegan and Montgomery, 2016; Wilson et al., 2014) with the following options: an expected effect size of 0.2 or 0.3 and an ICC of 0.1 or 0.3 (Wilson et al., 2012). Leading to a sample size of at least 25 girls per school, without attrition. Using a common rate of anticipated attrition of 10%, our sample size is 28 girls per school and 4172 girls in total.

	Rolling basis	Baseline (t=0) 2017	Midline (t=2) 2019	Endline (t=4) 2021
1. Primary outcomes girls				
Educational outcomes				
School attendance rates	√	√	√	√
Enrollment status	√	√	√	√
Psychosocial outcomes				
Mental Health			√	√
Happiness		√	√	√
Subjective wellbeing		√	√	√
Empowerment				
Agency		√	√	√
Gender attitudes		√	√	√
Decision making marriage			√	√
Mobility		√	√	√
Aspirations		√	√	√
2. Secondary outcomes girls				
MH Health				
MH Knowledge		√	√	√
MH Practices		√	√	√
MH Perceptions		√	√	√
MH Attitudes girls		√	√	√
MH Attitudes parents, implicit and explicit			√	√
Restrictive MH norms				
Restrictive MH Behaviour		√	√	√
Restrictive normative beliefs			√	√
Restrictive normative expectations			√	√
Physical Health during MP				
Incidence of rashes, headaches, severe pain		√	√	√
MHM support at school				
Incidence of teasing about MP		√	√	√
Frequency of toilet permission		√	√	√

Table 1 Outcome measures and time points

Randomization

We randomized schools into one of the two treatment arms or the control group, stratified by three variables. For the first, we used administrative attendance records of 2016 to create a low/high attendance variable per school. Secondly, we included a variable on the region; 7 Upazillas (local provinces) in total, accounting for small differences in governance structures and school sizes. Third, we included a variable on the quality of toilets at school (low/high), based on pupil-to-toilet ratios and the current state of the toilets at all schools. The first covariate reflects a primary outcome, and the latter two covariates are potentially important predictors of our primary outcomes. Randomization was performed with the program STATA14 in December 2016, before the start of the *Ritu* program. The randomization was performed in Bangladesh by the Principal Investigator, and directly communicated to the local implementation team who notified all schools and communities.

Process evaluation

Together with our implementing partner, we will conduct a process evaluation of the *Ritu* program. In case the intervention shows no significant improvement in the wellbeing and schooling of girls, the process evaluation will help us assess whether this is due to the intervention not being sufficient or to poor implementation (Moore et al., 2015). The results of this evaluation will inform both implementers, researchers and policy-makers considering adapting, replicating or scaling up this intervention. We will perform a process evaluation by collecting qualitative and quantitative data throughout the program. Following the process evaluation guidelines by Moore et al. (2015); we will monitor and evaluate the following elements: dose, uptake, reach and fidelity.

Cost-effectiveness analysis

We will perform separate cost-effectiveness analyses per treatment arm for select outcomes of interest by using the formula (Dhaliwal et al., 2013):

Total Impact of Program = Impact (per unit) × Sample Size × Program Duration

The outcome(s) for which we will perform this analysis will be chosen in cooperation with local policymakers. This calculation will include two types of costs: costs included in the budget of the program

and costs that were not made by this specific program but that would need to be made in other contexts, such as compensation for volunteers.

DATA COLLECTION METHODS

Overview

We use four methods for collecting quantitative data: surveys, independent school attendance data, administrative school records and experimental IAT data. Based on the power calculations above, we took a subset of 4172 girls in grade 6 (at t=0) for the surveying and for the school data we additionally took 4500 girls from both grade 7 and grade 8.

Data collection:

- Girls in grade 6 at t=0: Survey data from t=0, t=2 and t=4
- Pupils in grade 6 at t=0: School attendance and performance data of pupils for 3 years (t=0 until t=3)
- Pupils in grade 7 at t=0: School attendance and performance data of pupils until they will leave the junior high school at the end of grade 8 (t=2)
- Parents of girls in treatment 2 and control group: For a subset of parents, we will collect experimental data on MH attitudes measured with IATs at midline (t=2) and endline (t=4)

Survey data:

The baseline survey took place in February and March 2017, and we will survey the same girls at midline (2019) and endline (2021). The surveying was executed by the independent survey firm 'Capacity Building Service Group' (CBSG). The whole team from CBSG was blinded to the treatment conditions. Only female enumerators were allowed on this project, as the survey contains sensitive gender-related topics. In every school, a random selection of 28 girls from grade 6 were asked to partake in the survey, only one girl refused and was replaced. This selection was done during a game in class, where every girl blindly picked a marble out of an opaque bag filled with 28 green marbles (survey), 2 red ones (replacement) and the rest black. Headmasters signed informed consent, and girls were privately briefed and after their consent, the surveying was conducted in a private setting. The enumerators were extensively trained by our team to adhere to the script and to make the girls feel comfortable during the 60-minute survey. The survey was

first designed in English, then translated into the local language Bengali and back-translated into English for cross-checking. The surveys were administered on Android tablets with the use of some props such as little dolls, and data was safely stored on a local server on a daily basis. The total enumeration team consisted out of a project manager, a field manager, an ICT manager, 6 field supervisors and 30 enumerators.

School data:

We collect school data in two different ways: independent data collection and administrative school records. The latter contains information on daily attendance rates of all pupils; however, these records are highly prone to corruption due to financial incentives for school staff and parents. For example, girls receive stipends if their recorded annual attendance is 75% or higher[2]. Administrative school records however, do contain valuable information on year-round attendance rates, even though they might be inaccurate. Therefore, we collect administrative school records once a year, focusing on aggregate monthly attendance rates per grade and individual attendance rates of our subset of surveyed girls. Moreover, we will obtain data on school performance from the national exam scores of grade 8. In junior secondary schools, pupils have school exams in grade 6 and 7, but only have national exams in grade 8. School exams differ per school, while national exams are the same for all schools and therefore offer a good comparison of school performance between our treatment arms.

As school attendance is one of our primary outcome variables, we cannot solely rely on administrative records and are collecting our own school attendance data, one day per month. This is done by local independent data collectors supervised by our implementing partner and with approval from local authorities. The data collection process is designed to be as little disruptive as possible: we merely want to measure attendance without influencing it. Once a month, data collectors visit the schools on a surprise day and count all pupils present that day. We register the aggregate attendance rate per grade per school, as well as of the same subset of grade 6 girls and additionally grade 7 and 8 girls. We will triangulate the administrative monthly attendance rates with our own collected data.

[2] In Bangladesh, the Female Secondary School Stipend Project was launched nationally in 1994 and pays tuition-fees and provides monthly stipends for unmarried rural girls up to grade 10 who attend recognized institutions, remain unmarried, maintain at least 75% attendance, and secure at least 45% marks in the annual examinations (a pass requires 35%). Amongst others, this FSP tends to lead to corrupted documents.

Attitude data:

Parents play a crucial role in girls' ability to confidently manage their MH, from providing sanitary pads to supporting them to take part in daily life when they have their period (Chandra-Mouli and Patel, 2017). In treatment arm II, the *Ritu* program specifically targets these support systems of the girls. We will measure attitudes of parents towards girls who are on their period and will use the Implicit Attitudes Test and survey questions to examine whether the *Ritu* program had an effect on these attitudes. We will extensively pilot test and validate the MH IAT, to make sure the IAT measures the strength of MH associations amongst the participants. We plan to use a lab-in-the-field structure and administer the IATs on tablets for a subset of parents. The IAT is adjusted for low levels of literacy and computer experience of the participants (NIPORT et al., 2014).

DATA ANALYSIS PLAN

The data will be checked for outliers, normality and missing data prior to analysis. We will use a difference-in-difference analysis where we will compare the differences in mean outcome levels of our variables of interest over time and between treatments arms. Specifically, we will compare treatment 1 vs control, treatment 2 vs control and treatment 1 vs treatment 2. For the individual level analysis, we expect the levels of auto-correlation to be high within classrooms and villages and therefore prefer a difference-in-difference analysis. For example, we will test for difference in school attendance levels on both the school level as well as individual level tests where we take personal covariates into account such as age of menarche.

We will regress all primary and secondary outcomes on dummies representing the treatment status of the schools. We add two types of control variables; baseline values of primary outcomes and other controls. For example, we control for the baseline value of empowerment levels and psychosocial wellbeing at t=0. We will also add controls on individual characteristics (eg. socioeconomic status, number of female household members, distance to school, age at menarche, grade) and school characteristics (eg. school size, toilet facilities at baseline). These control covariates are expected to have an effect on the dependent outcome variable but are unaffected by the treatment. Additionally, we may adjust our choice of controls by regression our primary outcomes on a base set of controls as well as a set of alternative controls. We will then select the set of control with the highest adjusted R-squared, thus explaining most of the variation in the outcome variable.

We conclude if the difference in our outcomes of interest is statistically significant at a 95% confidence level ($p<0.05$). All analyses will be performed using STATA. We will conduct intention-to-treat analyses to provide more unbiased comparisons between the treatment arms. This is especially relevant for analysing the potential effect of rolling out an MH program, where full adherence cannot be guaranteed. We will also perform secondary heterogeneity analyses to explore the disentangle specific mechanisms through which the program may affect outcomes and has impact on sub-group. We will for example examine the difference of the program impact between girls who had their menarche before the *Ritu* program started, and girls who had their menarche after the program started.

DISCUSSION

With this trial, we aim to add to the literature on menstrual health experience of adolescent girls and its effect on education and general wellbeing. We aim to uncover the specific pathways through which the *Ritu* MH intervention leads to change. The school level program improves the WASH infrastructure at school, raises awareness and increases the level of knowledge and understanding of menstrual experiences. It is designed to target the whole support system at school, from headmasters and teachers to boys in class. Girls are expected to come to school more often, adequately manage their MH and feel more comfortable and confident during their menstruation. The household program targets the support system at home, by raising menstrual awareness and understanding of parents. It is expected to improve the communication surrounding menstruation, and to reduce the restrictions on the behaviour and freedom of movement of their menstruating daughters. We will analyse the cost-effectiveness of each treatment arm; linking program costs to primary outcome values and comparing the results to other interventions targeting the wellbeing of adolescent girls.

Spill over effects potentially challenge the generalizability of our trial. Spill over effects are an issue for most interventions regarding information dissemination and social change; one cannot fully control for information dissemination between treatment and control groups. However, we have introduced 'buffer zones' of five kilometres between treatment and control villages, to mitigate unwanted spill-over effects as much as possible.

Next to measuring the impact of the *Ritu* program, our trial adds to the evidence base of three key outcomes; self-reported MH measures, implicit and explicit MH attitudes, and school attendance. First, as to this date, there is no consensus on what the best way is to measure MH knowledge, attitudes and practices. Therefore, we employed an extensive survey testing several MH modules, designed with the help

and advice from experts in the field. Second, the Implicit Attitude Test is one of the most rigorous methods of eliciting attitudinal data (Greenwald et al., 2009). We are the first to apply the IAT method on parental attitudes towards MH, and compare it to survey data on explicit MH attitudes, this will offer new insights in the measurement of implicit and explicit attitudes and the effectiveness of MH interventions. Third, measuring school attendance has been identified as a research priority (Phillips-howard et al., 2016), and we are using multiple attendance data collection methods, which allows for comparison to inform future interventions involving school attendance.

Even though MH programs are becoming more popular, there is very limited evidence on such programs. There are several gaps in the MH evidence base that we aim to fill, and we aim to provide vital policy lessons for future implementers and policymakers. We plan to disseminate our findings through publications and presentations to the Government of Bangladesh, (inter)national researchers and implementers no later than 3 years after the final data collection.

Trial status

Recruitment closed. Trial on-going.

LIST OF ABBREVIATIONS

CBSG	Capacity Building Group Services
EKN	Embassy of the Kingdom of the Netherlands
IAT	Implicit Attitude Test
IRB	Internal Review Board
LMIC	Low and Middle-Income Countries
MHM	Menstrual Hygiene Management
MH	Menstrual Health
NGO	Non-Governmental Organisation
PPI	Progress out of Poverty Index
RCT	Randomized Controlled Trial
WASH	Water Sanitation and Health

Availability of data and materials

The data that support the findings of this trial are available from Simavi but restrictions apply to the availability of these data, which were used under license for the current study, and are not publicly available. Data are however available from the authors upon reasonable request and with permission of Simavi.

Competing interests

The authors declare that they have no competing interests.

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Author's contribution

All authors participated in the conception of the trial. LS is principal investigator for the *Ritu* trial, performed the randomization and co-ordinates trial implementation at field level. HA is grant holder and leads the implementation of the *Ritu* programme. VS performed the power calculation and led the cost-effectiveness design. LS and VS conceptualized and wrote the manuscript. All authors contributed to refinement of the manuscript and approved the final manuscript.

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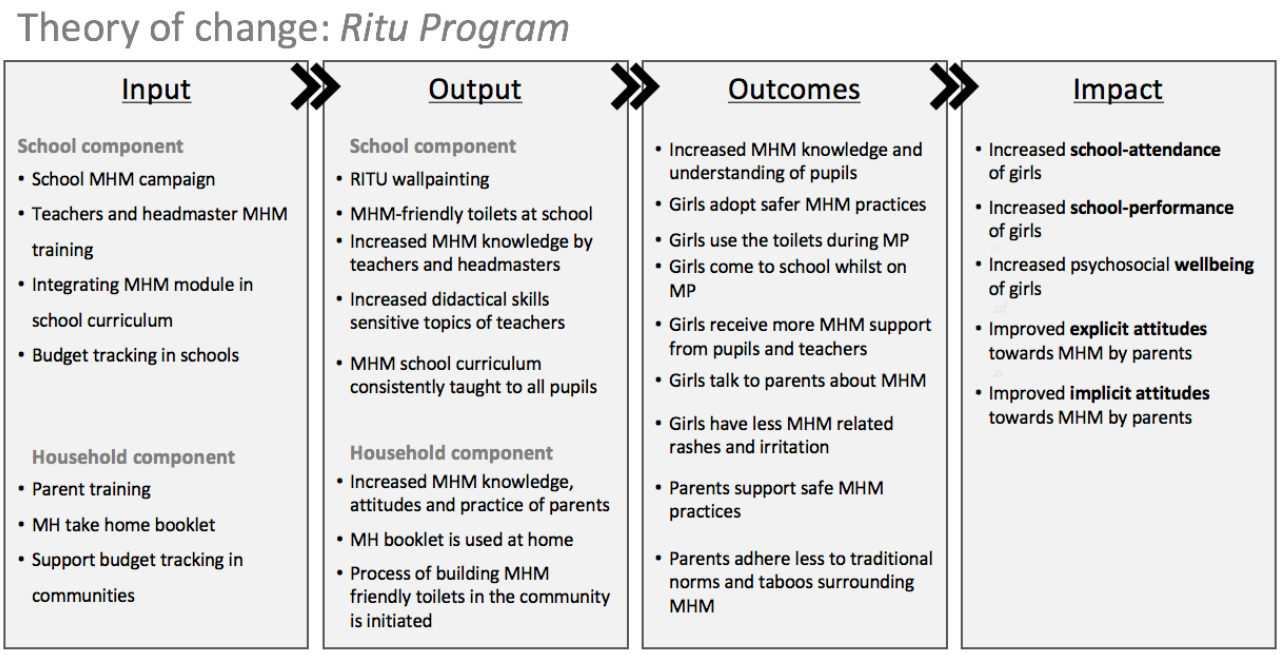
APPENDIX 1 – Theory of Change: *Ritu*



APPENDIX 2 – Baseline *Ritu* Survey

A	Demographics			
A.1	What is your name?			
A.2	How old are you ? Completed years. If the girl does not know or is unsure about age ask: What is your birth year? Or estimate: Compared to your classmates are you a bit older or younger?			
A.3	What is the name of your school ? (Add list of possible school)			
A.4	Which class in school are you in?			
A.5	In which village do you live?			
A.6	Have you lived in your whole life mentioned in village []?	1 Yes 2 No		
A.7	How long does it take to go from home to school by foot? (One way journey from house to school)	1= 5-10 minutes 2= 11-30 minutes 3= 31-60 minutes 4= > 60 minutes		
Note1: Now we would like some information about the people who usually live in your household				
A.8	Can you tell me how many members are you in your household, including you? "Explain definition of a household: A household means a group of persons, related or unrelated, living together and taking food from the same pot.	.....		
A.9	Household Roster			
	Can you tell me their names?			
Sl	Name	Age* (0-100)	Gender (1=Male, 2= Female)	Relations (1- 14)
	A9.1	A9.2	A9.3	A9.4
1.				

2.				
3.				
B. Household Information				
B1.1	Taking all things together, how would you say things are these days, would you say you are? enumerator show smileys on tablet		1= Very unhappy 2= A little unhappy 3= Neutral 4= A little happy 5= Very happy	
B2	How many of your household members are 12-years-old or younger? Including yourself		A= 3 or more B= 2 C= 1 D= None [Skip to B4]	
B3	Do all children in your household aged 6-to-12 currently go to school or an educational institution?		A= No B= No one 6-to-12 C= Yes	
B4	In the past year, did any household member ever do work for which he/she was paid on a daily basis? Probe : ask this question for specific household members starting with the head of household. Paid on a daily basis means that the person was paid (either in kind or in cash) at the end of that day of work, and not at a later point in time.		A= Yes B= No	
B5	How many rooms does your house(hold) have? (excluding rooms used for business) Include any rooms used for any type of household work, such as living rooms, storerooms, reading rooms, kitchen if it has walls etc.		A= One B= Two C= Three or more	
B6	Think about the walls of the main room, what main construction material is that made of? If main room is unclear explain that this is the room where most activities take place, e.g. living room or sleeping quarter of household head. If answer is two construction materials: Ask which material is used most. If equal, select the cheapest material.		A= Hemp/Hay/Bamboo, or other B= Mud (unburnt) brick or CI (tin) Sheet/wood C= Brick/cement	

B7	Does your household own any televisions?	A= No B= Yes
B8	How many fans does your household own?	A= None B= One C= Two or more
B9	Does anyone in your household own a mobile phone? If yes, how many phones in total?	A= None B= One C= Two or more
B10	Does your household own any bicycles, motorcycle/scooters, or motor cars etc.?	A= No B= Yes
B12	Does your household have a private toilet? A private toilet is defined as a toilet where only the household has access to, and no outsiders	1 = Yes 2 = No
B13	When you're at home, do you use a toilet that is shared with other households? *It is impossible if they say 'NO' to this question, please probe to get the right answer	1 = Yes 2 = No
B14	I will now ask you some things about the toilet, does the toilet have:	
B14.1	A lock	1= Yes 2= No 3= Sometimes
B14.2	Soap	1= Yes 2= No 3= Sometimes
B14.3	A bin	1= Yes 2= No 3= Sometimes
B14.4	Water inside	1= Yes, most of the time running water 2= Yes, but most of the time not running water 3= No
B14.5	Water nearby	1 = Yes 2 = No 3 = Sometimes

B14.6	What is the source of the water? [allow for multiple answers]	1 = Tubewell 2 = Pond 3 = Canals 4 = (Dug) well 5 = Ditch 6 = Lake/wetland 7 = Other (Specify) _____
B14.7	Light	1= Yes most of the time only during the day 2 = Yes most of the time day and night 3= No
B14.8	What is the source of the light? [Allow multiple answer]	1 = Daylight 2 = Electric light 3 = Other (specify) ----------
B14.9	Is the toilet clean? (Explain that a toilet is considered clean when there is no feaces on the slab, the toilet is not blocked (most of the time), and there is no bad odour (most of the time)	1 = Yes 2 = No 3 = Most of the time
C.	Future and Educational Goals	
Note 2: I will now ask you a few question about your opinion, please feel free to answer whatever you like. There are no right or wrong answers and, as always, your answers are completely confidential and anonymous. It is okay if you cannot answer every question or if you sometimes don't know what to answer, you can just tell me that.		
C1	What are your three main goals/wishes in life? [Allow for 3 open answers]	1. _____ 2. _____ 3. _____
C2	In general, why do you think some girls stop coming to school? [Allow for multiple answers]	1=Fail exam 2= Commute/distance 3= Cannot afford 4= Need to work 5= Marriage 6= Pregnancy 7= Not encouraged by guardian 8= No interest in school herself 9= Other (specify)

C3	Let's imagine for a second that you have the opportunity to study as far as you want, until what level would you like to study?	1=Class six 2=Class seven 3=Class eight 4=Class nine 5=SSC or equivalent 6= HSC or equivalent 7= BA passed 8=Honors 9= MA passed 10=Hafezi/religious education 11=forever 12 = Other namely _____
C4	Do you think education will increase your opportunities in life a lot, a little, or not at all?	1= A lot 2= A little 3= Not at all
D	Empowerment	
Note 3: I would like to ask you now about the possibility of changing aspects of your life. This can be achieved either by your own individual actions or through the actions of a group. Again, there are no right or wrong answers.		
D1	Would you like to change anything in your life at this point in time?	1= Yes 2= No [skip D3]
D2	Which three things would you most like to change? [Three options] If girls do not mention a change, ask: what would make your life better at this point in time?	1. _____ 2. _____ 3. _____
D3	Imagine a ten step ladder like this one [enumerator show ladder], where on the bottom, the first step, stand children who have no choices or freedom to express their opinions and needs, and on the highest step, the tenth step, stand children with the most ability to express their opinions and follow their dreams.	
D3.1	On which step of the ladder are you today? Range [1-10]	

D3.2	On which step of the ladder are most of your classmates/friends today? Range [1-10]	
D3.3	On which step of the ladder will you be in five years time? Range [1-10]	
D4	I will now ask you how often you feel a certain feeling. For each of the following feelings please show me how common the feeling is for you? [enumerator lay down the four answer category cards A in front of the girl]. We will use these cards to indicate your answers. Please point at the card that states your answer. Read out the answers options and make sure the girl understand she has to point or touch the answer category card	
D4.1	Embarrassment	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never
D4.3	Self-consciousness	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never
D4.4	Feeling humiliated	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never
D4.5	Feeling stupid	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never
D4.6	Feeling helpless	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never
D4.7	Feeling laughable	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never
D5	To what extent do you feel that people treat you with respect?	1= Yes, almost always 2= Yes, often 3= Yes, occasionally

		4= No, rarely or never
D6	To what extent do you feel that people treat you unfairly?	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never
D7	"I will now ask you how true the following statements are for you? For each of the following statements please show me how common it is for you?. We will use these cards to indicate your answers. Please point at the card that states your answer." [enumerator lay down the four answer category cards B in front of the girl]	
D7.1	I feel free to decide for myself how to lead my life.	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D7.2	I generally feel free to express my ideas and opinions at home	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D7.3	I generally feel free to express my ideas and opinions amongst friends	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D7.4	I generally feel free to speak up in class or raise my hand	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D7.5	I easily connect with new people	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D7.6	I consider myself close to the people I regularly interact with.	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D7.7	People in my life care about me	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true

D8	To what extent do you agree with the following statements? [enumerator continue to use answer category cards B] Read out the answers options and make sure the girl understand she has to point or touch the answer category card	
D8.1	A girl should not expect to inherit her father's property.	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.2	It's more important for boys to get an education than it is for girls	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.3	Girls should have just the same chance to work outside the home as boys	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.4	Boys should have more free time than girls.	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.5	At home boys should always eat first.	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.6	The higher the earnings of the boy the more he deserves to get dowry	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.7	A girl who disagrees with her brother in public is impolite	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.8	Girls should be sent to school only if they are not needed to help at home.	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true
D8.9	Giving dowry to a girl is more important than investing in her education.	1= Not at all true 2= Somewhat true 3= Fairly true 4= Completely true

Note 4: Thank you. We are done with the cards. [enumerator pick up answer category cards]. Now I am going to ask you how often you go to certain places. For each place I will ask you if you go there alone, if not with whom and whether if you need to go alone, you would be allowed to if you asked					
D9	In the last month , how often did you go to or visit the following places				
	Place	Frequency (0-100) if answer is 0 skip to next place	Did you go there alone? (1= Yes 2= No 3= Sometimes)	Who usually accompanied you? [more answers possible] (1=brother, 2=sister, 3=father, 4=mother, 5=grandparents, 6=friends, 7= wife of brother, 8=other specify)	If you need to go there alone, do you get permission from your family/guardian? (1= Yes 2= No 3= Sometimes)
		D9.a	D9.b	D9.c	D9.d
D9.1	Market				
D9.2	School				
D9.5	Relatives outside your village				
D9.6	Friends in your village				
D9.7	Friends outside of the village				
D9.8	A fair or public celebration				
D9.9	A religious place (eg. shrine, church, mosque, temple)				
E: Menstruation and reproductive health – knowledge					
Note 5: Thank you so much for answering the questions so far, we are already half way. Now I would like to talk with you about things related to the female body. This may not be something you often talk about. There are no right or wrong answers and, as always, your answers are completely confidential and anonymous.					

E1	Who first told you about Menstrual Periods?	1= Male Teacher 2= Female Teacher 3= Mother 4= Father 5= Grandfather 6= Grandmother 7= Sister 8= Wife of brother 9= Brother 10= Friends TV 12= Radio/other media 13= No one, I don't know what it is 14= schoolbook 15= Other (Specify) _____
E2	Why do some girls miss school when they have their Menstrual Periods?	1= I do not know any girls who miss school when they have their periods 2= Feel too weak 3= Pain 4= Other kids make fun of them 5= No toilet to use at school when menstruating 6= No separate latrine for girls 7= There is no place to change materials 8= Toilet at school is unclean 9= Do not have materials to control the flow of menstrual blood 10= Parents do no allow girls to go to school 11= Teachers do not allow girls to go to school 12= Other (Specify)……
Note 6: I am going to read you some sentences between two girls: Sadia and Mim. They are discussing and you have to tell me if you think Sadia or Mim is correct. You have to pay attention to tell me who is correct and who is making a mistake. Or tell me if you don't know what to answer. [enumerator show dolls and tell who is Sadia and who is Mim] enumerator show dolls		

E3	Sadia: Menstruation can happen as soon as you turn 13 years old. Mim: Menstruation usually starts between 10 and 15 years of age.	1 = Sadia is correct 2 = Mim is correct	
E4	Sadia: Menstruation happens every monthn on the same date. Mim: Menstruation happens every 25 to 35 days, depending on the woman	1 = Sadia is correct 2 = Mim is correct	
E5	Sadia: Having menstruated means a girl has already had sexual relations with a man. Mim: A girl can start menstruating before having sexual relations with a man. Explanation of sexual relation: an intimate physical relationship between a man and a woman	1 = Sadia is correct 2 = Mim is correct	
E5_a	Sadia: Menstruation is a sign that a girl can get pregnant if she has sexual relations with a man. Mim: Menstruation is not related to getting pregnant Explanation of sexual relation: an intimate physical relationship between a man and a woman	1 = Sadia is correct 2 = Mim is correct	
E6	Sadia: MP pain is dangerous. Mim: MP pain is normal.	1 = Sadia is correct 2 = Mim is correct	
F: Menstruation and reproductive health - practices			
Note 7: I want to ask you some personal questions, remember that this interview is completely anonymous we are just trying to understand what life is like for girls like you. Have you started your MP? Enumerator make sure to be delicate			
F1	Have you started your MP?	1= Yes 2= No (Go to G1 and skip from G3 to H1)	
F2_1	How old were you when you first started your MP? If girl is unsure about year, probe: past 3 months, past 6 months, past year, more than a year ago	…….Year, ……Month	

	If girl is unsure about month, probe: past 3 months, past 6 months, do you remember which season			
F3	When you had your first MP, did you know what it was?	1= Yes 2= No		
F4	Which materials do you use to catch your MP in general? Please rank up to three material you use, where number one is the one you use the most.	Materials	Rank	Code*
		1= cloth	1	
		2= toilet paper	2	
		3= only underwear	3	
		4= sanitary pad 5= cotton 6= Other (Specify)___		
F5	Which material do you use most often to catch your MP at home?	1= cloth 2= toilet paper 3= only underwear 4= sanitary pad 5= cotton 6= Other (Specify)___		
F6	Which material do you use most often to catch your MP at school?	1= cloth 2= toilet paper 3= only underwear 4= sanitary pad 5= cotton 6= Other (Specify)___		
F7	Who usually provides you with the material you use to catch your MP?	1= Obtain it myself 2=Mother 3= Father 4=Sister/Sister in law 5=Other family member 6=Male teacher 7=Female teacher 8= Friends 9= other (Speicfy) _____		
F8	Where do you or where does this person usually get the material you use to catch your MP?	1= Local shop 2 = School 3= From non-profit organisation/NGO		

		4= From Government organisation/health worker 5 = Pharmacy 6= Used cloths/fabrics 7= Other (Speicfy) _____
F9	Are you able to go to school for a full day without changing your [F6_name]	1= Yes 2= Yes, on some days 3= No, on any day I need to change it at least once 4= I don't go to school when I have my MP
F10	When you are on your period, how frequently on one day do you change your [F6_name] when you are at school?	1= 1 time a day 2= 2 times a day 3= 3 times a day 4= 4 times a day 5= Over 5 times a day 6= Never change material
F11	What do you most often do with [F6_name] when you are at school and you need to change it? Do not read answer categories in first instance, let girls respond openly.	1= Throw in latrine 2= Throw in bush 3= Keep it to wash and reuse 4= Dispose at home 5= Dispose at community rubbish heap 6= Bury 7= Throw in nearest bin 8= Other (Specify) _____
F11a	How do you carry it home? Allow for open answer	
F12	What do you most often do with your [F5_name] when you are at home and you need to change it? Do not read answer categories in first instance, let girls respond openly.	1= Throw in latrine 2= Throw in bush 3= Keep it to wash and reuse 4= Dispose at home 5= Dispose at community rubbish heap 6= Bury 7= Throw in nearest bin 8= Other (Specify) _____

Note 8: I have a few questions about what you did during your last menstruation. Remember there are no right or wrong answers here. I am just trying to understand what life is like for girls like you.		
F13	During your last menstruation, did you wash the material you use to catch your MP?	1= Yes 2= No
F14	Why did you not wash the material you use to catch your MP during your last menstruation?	1= Had trouble getting water 2= Could not afford soap 3= Could afford soap but didn't have any 4= Did not have enough time 5= Did not have enough privacy 6= It was disgusting 7= Material doesnt need washing (eg. sanitary pads) 8 = other, specify_____
F15	How often did you wash the material you used to catch your MP on average?	1= One time during my whole MP 2= Less than once a day 3= once a day 4= twice a day 5= more than two times a day
F16	When washing the material you used to catch your MP, did you use soap?	1= Every time I use soap 2= Sometimes I use soap 3= I never use soap 4= Other, specify _____
F17	Why didn't you use soap?	1= Often don't have soap 2= Don't need soap to get it clean 3= Don't care to use soap 4= Other (specify) _____
F18	F18. When washing the material used to catch your MP, what was the temperature of the water you used?	1= Hot water 2= Normal water
F19	When washing the items used to catch your MP, was the water used clean or dirty?	1= Clean 2= Dirty
F20	How did you dry the material?	1= Dry the material outside in the sun 2= Dry the material outside but not in the sun

				3= Dry the material in my room or another private place inside. 4= Dry the material under my bed, in a drawer or another hidden place. 5= Dry the material under another piece of cloth 6= Others Specify…….	
F21	How often do you use material to catch your MP that is still damp or wet from washing?			1= Usually 2= Sometimes 3= Never	
F22	Why did you not try to dry the material you used to catch your MP?			1= Did not have enough time 2= Decided not to use it again 3= Did not have enough privacy 4= It was disgusting 5= Other(specify) _____	
F24	Have you ever experienced any of the following during your MP?			Yes	No
		F24_1	Skin irritations in the pubic area		
		F24_2	Rashes in the pubic area		
		F24_3	Pain		
		F24_4	Odour		
		F24_5	Fear of panty soiling		
		F24_6	Outside garment soiling		
		F24_7	irritability/moodiness/angry		
		F24_8	Depression/sadness		
		F24_9	Fear that sanitary protection would fall out of underwear		
		F24_10	Embarrassment of sanitary washing		
		F24_11	Embarrassment of sanitary pad drying		
		F24_12	headache		
F24a	If you experience cramps during your MP, on a scale from 1 to 10 how severe do you feel they are?				

Note 9: I have a few questions about how you feel during your menstruation in general. [enumerator lay down answer category cards A]. We will use these cards to indicate your answers. Please tap the card that states your answer.		
F25	How often do you worry about odor during your MP? Read out the answers options and make sure the girl understand she has to point or touch the answer category card	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= No, rarely or never [SKIP TO NOTE10]
F26	In which situations do you worry about odor during your MP?	1= At home 2= At school 3= In the village (street, bus, market) 4= When there are men around 5= Visiting friends or family 6= religious places 7= fairs/public celebrations 8= Other (specify) _____
Note 10 [enumerator continue with answer category cards A]. Please answer the following questions on a scale from 1-4 by pointing out the card that states your answer. Read out the answers options and make sure the girl understand she has to point or touch the answer category card		
F27	During your MP, do you feel embarassed?	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= Yes, rarely or never
F28	Do the boys you know tease girls about their MP?	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= Yes, rarely or never
F29	Have you ever been teased about your MP?	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= Yes, rarely or never
F30	During your MP, do you feel more insecure than usual?	1= Yes, almost always 2= Yes, often 3= Yes, occasionally 4= Yes, rarely or never
F31	Once you started your MP/menarche, do you ever worry about getting pregnant?	1= Yes, almost always 2= Yes, often 3= Yes, occasionally

		4= Yes, rarely or never
Note11_1. Thank you. We are now done with the cards [enumerator pick up answer category cards].		
F31a	How confident do you feel to manage your MP at home? Manage describes collecting, washing, drying and changing materials you use to catch your MP	1= Very confident 2= A little confident 3= Confident 4= A little unconfident 5= Very unconfident
F31b	How confident do you feel to manage your MP at school? Manage describes collecting, washing, drying and changing materials you use to catch your MP	1= Very confident 2= A little confident 3= Confident 4= A little unconfident 5= Very unconfident
Note11_2. Since you started your MP, does your family expect any of the following changes from you?		
F32	Leaving school	1= Yes 2= No
F33	Miss/not attend school during menstruation?	1= Yes 2= No
F34	Getting married soon	1= Yes 2= No
G	School Attendance and performance	
G1	When you think about a typical month of school, how many days of school do you miss on average? Enumerator only count days that she MISSED (so do not count Fridays because on Friday school is not in session) make sure she understands the question, if needed explain that there are typically 25 school days in a month. And that a typical month means an average month (so maybe not last month because she may have started school late due to registration issues)	..... [Range 0 to 25] [if 0, skip to question G6]
G2	What reasons caused you to miss school? (Do not read answer options. Let girls respond openly. Check all that apply) [allow for multiple answer]	1= Illness (other than having MP) 2= MP 3= Toilet facilities at school are bad 4= Household work 5= Agriculture/ Business

		6= Bad weather 7= School was too far away 8= No uniform 9= No school supplies 10= Caring for smaller children 11 = Caring for elderly or sick household or family members 12= Problems with children at school teasing/bullying 13= Problems with teachers at school 14= Other (Specify) _____
G3	Did you miss any days of school last time you menstruated?	1= Yes 2= No
G4	How many days of school did you miss last time you menstruated?	..... (Range 1-10)
G5	When you missed school due to MP, what were the reasons? do not read answers, let girls respond openly	1= Cramps/bad physical feelings 2= Fear of leaking 3= Don't have sanitary material (pads, cloth) 4= Not allowed to leave the house/go to school 5= No sanitary facilities at school 6= No support/understanding at school 7= Teacher told me to go home 8= It is normal not to go to school during menstruation 9= Other (Specify) _____
Note-g: Now I would like to ask you about any activities, social situations and foods that you rather avoid while you are on your MP (note : if they never do the activity then the answer is not applicable from reserve code)		
G6	What activities or situations do you rather avoid while you are on your MP?	1= Yes 2= No

G6.1	Do you avoid serving food and beverages to guests while you are on your MP ?	1= Yes 2= No
G6.2	Do you avoid serving food and beverages to men while you are on your MP?	1= Yes 2= No
G6.3	Do you avoid going outside while you are on your MP?	1= Yes 2= No
G6.4	Do you avoid being around men/boys while you are on your MP?	1= Yes 2= No
G6.5	Do you avoid fetching water while you are on your MP?	1= Yes 2= No
G6.6	Do you avoid cooking while you are on your MP?	1= Yes 2= No
G6.7	Do you avoid being in a religious space while you are on your MP?	1= Yes 2= No
G6.8	Do you avoid physical sports/exercise while you are on your MP?	1= Yes 2= No
G6.9	Do you avoid religious activities (praying, touch religious books) while you are on your MP?	1= Yes 2= No
G6.10	Do you avoid playing with other children while you are on your MP?	1= Yes 2= No
G6.11	Do you avoid working in the field/garden while you are on your MP?	1= Yes 2= No
G6.12	Do you avoid going to school while you are on your MP?	1= Yes 2= No
G6.13	Do you avoid doing homework while you are on your MP?	1= Yes 2= No
G6.14	Do you avoid sitting in a place where a men/boy just sat while you are on your MP?	1= Yes 2= No
G6.15	Do you avoid bathing in pond while you are on your MP?	1= Yes 2= No
G7	Do you avoid eating white foods (banana, egg, milk) while you are on your MP?	1= Yes 2= No 3 = Sometimes
G8	Do you avoid eating proteins (meat, fish) while you are on your MP?	1= Yes 2= No 3 = sometimes
G9	Do you avoid eating sour food (fruits, olive, tamarind) while you are on your MP?	1= Yes 2= No 3 = sometimes
G10	Do you avoid eating any other foods while you are on your MP? If yes, please name them	1. _____

		2. _____ 3. _____
H	MHM & Networks	
H1	Do you feel comfortable talking about MP in general?	1= Yes 2= No
Note12. In the last 3 months, how often did you:		
H2	Talk with your parent/guardian other elder members of the household, neighbors about topics related to Menstrual Period	1= Never 2= Once or twice 3 = Three or more times
H3	Talk with your sibling(s) about topics related to Menstrual Period	1= Never 2= Once or twice 3 = Three or more times
H4	Talk with your friends about topics related to Menstrual Period	1= Never 2= Once or twice 3 = Three or more times
H5	Talk with your teacher about topics related to Menstrual Period	1= Never 2= Once or twice 3 = Three or more times
H6	If you would have a question about your Menstrual period, which teacher would you ask?	1. _____ 2. _____ 3. _____ (Subject Name)
I	Wash and MHM at school	
Note 13. Now I will ask you questions about your school. There are no right or wrong answers, you may say anything you like.		
I1	Do you like going to school? Do not read answer options. Let girls respond openly. Probe how much she likes or dislikes school to match specific category)	1= Dislike very much 2= Dislike a little 3= Neutral 4= Like a little 5= Like very much
I2	How many toilets are there at your school that you can use?	..... Range [0-10] *[if 0, Skip to J 1]

I3	Do you feel comfortable using the toilet at school?	1= Yes, always 2= Yes, often 3= Yes, occasionally 4= No, not at all
I4.1	Do you need permission to use the toilet during class?	1= Yes, always 2= Yes, often 3= Yes, occasionally 4= No, never [Skip to I 5]
I4.2	Do you get permission from teachers to go to the toilet when you ask?	1= Yes, teachers always give permission to go to toilet 2= No, teachers sometimes do not give permission to go to toilet 3= No, teachers never give permission to go to toilet 4= Other (Specify) _____
I5	Did other students ever peep into the toilet while you were using it?	1= Yes 2= No
I6.1	Do you use toilet at school when you are on your MP?	1=yes 2= no
I6.2	Do you change your pads/cloths at school toilet?	1= Yes 2= No
I7	Do you feel comfortable using the toilet at school when you are on your MP?	1= Yes 2= No
I8	During your MP, do you feel less confident than usual?	1= Yes, always 2= Yes, often 3= Yes, occasionally 4= No, not at all
I9	Can you access sanitary products at school if you get your MP at school and do not have anything with you?	1= Yes always 2= Sometimes 3= Never
I10	Do you feel that the boys in your class understand what MHM is?	1= Yes 2= No
I11	Does the toilet that you use at school have:	
I11.1	A lock	1= Yes 2= No 3= Sometimes

I11.2	Soap	1= Yes 2= No 3= Sometimes
I11.3	A bin	1= Yes 2= No 3= Sometimes
I11.4	Water inside	1= Yes, most of the time running water [Skip to I11.7] 2= Yes, but most of the time not running water [Skip to I11.6] 3= No
I11.5	Water nearby	1 = Yes 2 = No 3= Sometimes
I11.6	What is the source of the water? [Allow multiple answer]	1= Tube well 2= Pond 3= Canals 4= Dug well 5= Ditch 6= Lake/wetland 7= Other
I11.7	Light	1= Yes most of the time only during the day 2 = Yes most of the time day and night 3= No [Skip to I11.8]
I11.7.a	What is the source of the light? [Allow multiple answer]	1 = Daylight 2 = Electric light 3 = Other (specify) ----------
I11.8	Is the toilet clean? Explain that a toilet is considered clean when there is no feaces on the slab, the toilet is not blocked (most of the time), and there is no bad odour (most of the time)	1 = Yes 2 = No 3 = Most of the time
I11.9	Is the toilet girls-only?	1= Yes 2= No