

Appendix 1: Content validity of items in the questionnaire

Item [<i>dimension of interest</i>]	Literature Review			Ratings of 'essential'	I-CVI	Evaluation
	Study	Association with MHM (or P value)	Sample size			
1 a. Did you know about menstruation before your first period (Yes / No)? [<i>MHM knowledge at menarche</i>]				12	1.00	****
1 b. If yes, who first told you about menstruation (mother, aunt, other)? [<i>Sources of MHM knowledge</i>]				11	0.92	****
3. Do you always have enough water for your personal needs (Yes / No)? [<i>Access to water</i>]				12	1.00	****
4. Do you always have enough soap for your personal needs (Yes / No)? [<i>Access to soap</i>]				10	0.83	****

5. Who of the following do you live with (father, mother, aunt, other)? [<i>Sources of MHM knowledge</i>]				10	0.83	****
6. What is your religion (Catholic, Protestant, Muslim, Other)? [<i>Religious beliefs</i>]	Oche et al., 2012	0.0001	122	7	0.58	***
What is your tribe (_____)? [<i>Ethnicity</i>]	Kishion et al., 2017	0.037	133	6	0.5	***
8. Do you think someone can do something bad to you (like witchcraft) if they find the material you used for menstruation (Y / N)? [<i>Belief in myths related to MHM</i>]				9	0.75	***
9. What do you usually use to catch the blood during menstruation (____)? [<i>Access to clean absorbents</i>]	Sommer and Sahin, 2013	Part of the Concept definition of MHM	Not applicable	10	0.83	****
10. How many times do change during a day when you are menstruating (____)? [<i>Frequency of changing absorbents</i>]				11	0.92	****

11. Do you think it is bad to use the same material for catching blood from morning to evening (Yes / No)? <i>[Knowledge about menstrual hygiene]</i>				10	0.83	****
12. Do you always have enough material to trap the blood during menstruation (Yes / No)? <i>[Access to clean absorbents]</i>	Sommer and Sahin, 2013	Part of the Concept definition of MHM	Not applicable	11	0.92	****
13. Do you always have a private place to change the material when you need to (Yes / No)? <i>[Access to privacy]</i>	Sommer and Sahin, 2013	Part of the Concept definition of MHM	Not applicable	10	0.83	****
14a. Do you wash the material you use to catch the blood (Yes / No)? <i>[Hygiene practices during menstruation]</i>				11	0.92	****
14b. If yes, (i) how often do you use soap to wash the material (Always, Sometimes, Never)? <i>[Hygiene practices during menstruation]</i>				10	0.83	****

14c. If yes (II) where do you usually dry the material after washing it (____)? [Hygiene practices during menstruation]				10	0.83	****
15a. Do you bathe when you are menstruating (Yes / No)? [Hygiene practices during menstruation]				12	1.00	****
15b. Do you think it is important to bathe more often when you are menstruating (Yes / No)? [Knowledge about menstrual hygiene]				11	0.92	****
16. What do you do with the menstruation materials when you do not need them anymore (____)? [Access to disposal facilities]	Sommer and Sahin, 2013	Part of the Concept definition of MHM	Not applicable	8	0.67	***

^a I-CVI (content validity index) = number of panelists providing a rating of ‘essential’ / number of panelists

^b Evaluation criteria for the level of content validity: excellent validity = I-CVI ≥ 0.78 (****); good validity I-CVI < 0.78 and ≥ 0.60 (***) or publications supporting importance /significance of association with MHM practices; fair validity I-CVI < 0.6 and ≥ 0.40 (**); and poor validity I-CVI < 0.4 (*)

Appendix 2: Content validity of items in the household status checklist

Item [<i>dimension of interest</i>]	Literature Review			Ratings of 'essential'	I-CVI	Evaluation
	Study	Association with MHM (P value)	Sample size			
1. Which of the following utilities do you have at home (brick walls, electricity, tap water, a toilet)? [<i>socio-economic predictors</i>]	Kalembe and Emojong 2020	Not reported	152	7	0.58	***
2. Which of the following possessions do you have at home (TV, Computer, Car, Phone, Motor bike, Bicycle, Cows)? [<i>socio-economic predictors</i>]				8	0.67	***
3. Does your family get water for daily use from a protected water source (tap, borehole, protected well) (Yes / No)? [<i>socio-economic predictors</i>]	Kishion et. al., 2017	0.004	133	10	0.83	****
4. Does it take more than 20 minutes for a family member to fetch water (Yes / No)?	Sommer and Sahin, 2013	Part of the Concept definition of MHM	Not applicable	5	0.42	***

[Access to water]

5. Who is the head of the household where you live (father, mother, grandparent, other)? [parental predictors]	9	0.75	***
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6. What is the level of education of the head of the household where you live (Not educated, Primary school, Secondary School, Tertiary institution)? [parental predictors]	8	0.67	***
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7. Do you live with your biological mother (Yes / No)? [parental predictors]	8	0.67	***
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8. What is the level of education of your biological mother (Not educated, Primary school, Secondary School, Tertiary institution)? [parental predictors]	Upashe et al., 2015	<0.05	828	7	0.58	***
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^a I-CVI (content validity index) = number of panelists providing a rating of ‘essential’ / number of panelists

^b Evaluation criteria for the level of content validity: excellent validity = I-CVI $\geq$ 0.78 (****); good validity I-CVI $<$ 0.78 and $\geq$ 0.60 (***) or publications supporting importance / significance of association with MHM practices; fair validity I-CVI $<$ 0.6 and $\geq$ 0.40 (**); and poor validity I-CVI $<$ 0.4 (*)

Appendix 3: Reliability (internal consistency) of the measures related to the dependent variable

Items compared [dimension from MHM definition]	Output	Assumptions	Number of responses analysed	Percentage agreement	Cohen's kappa	Interpretation
1a. Do you always have enough material to trap the blood during menstruation? [access to clean absorbents]	yes / no	Respondents with enough material will change more frequently.	165	84.8	0.54	Moderate agreement
1b. How many times do change during a day when you are menstruating? [can change every 6hrs]	Above 4 / less than 4					
2a. Do you always have enough soap & water for your personal needs? [washes body with soap daily]	yes / no	Respondents with enough water and soap will change more frequently.	161	74.5	0.39	Fair agreement
2b. How many times do change during a day when you are menstruating? [can change every 6hrs]	Above 4 / less than 4					
3a. What do you do with the menstruation materials when you do not need them anymore? [access to disposal facilities]	Has specific disposal site / throws away (in a bush)	Respondents with specific sites for discreet disposal will also have privacy for changing.	162	80.2	0.27	Fair agreement

3b. Do you always have a private place yes / no
to change the material when you need
to?

[*access to privacy*]

Appendix 4: Reliability (internal consistency) of measures related to the independent variables

Items compared [<i>predictor or dimension</i>]	Output	Assumptions	Number of responses analysed	Percentage agreement	Cohen's kappa	Interpretation
1a. Can the child fetch water in 20 minutes? [<i>socio-economic predictors</i>]	yes / no	Respondents living near water sources will report having enough water.	168	68.4	0.27	Fair agreement
1b. Do you always have enough soap & water for your personal needs? [<i>washes body with soap daily</i>]	yes / no					
2a. Who is the head of the household where you live (father)? [<i>parental predictors</i>]	yes / no	Respondents living with the fathers will report their fathers as household heads.	167	82	0.47	Moderate agreement
2b. Who do you live with (father)? [<i>parental predictors</i>]	yes / no					
3a-What level of schooling are you (above p5)? [<i>personal predictors</i>]	yes / no	Respondents who are over 16 years of age will probably be attending a level	161	73.3	0.47	Moderate agreement

higher than primary
five.

3b. How old are you (above 16)? yes / no
[*Personal predictors*]

Appendix 12: Approval from the CIU Research Ethics Committee



☎ (+256) 0312 307400
✉ rec@ciu.ac.ug
🌐 www.rec.ciu.ac.ug

To: Dominic Bagenda

+256755850185

Type: Initial Review

Re: CLARKE-2021-153: Predictors of Menstrual Hygiene Management among Adolescent Girls in a Rural Resource-deprived Setting in Bukedea District, Uganda., 2.0, 2021-10-05

I am pleased to inform you that at the **23rd** convened meeting on **13/10/2021**, the Clarke International University REC, committee meeting, etc voted to approve the above referenced application. Approval of the research is for the period of **13/10/2021** to **13/10/2022**.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **13/10/2022** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.

7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Clarke International University REC:

13/10/2021

No.	Document Title	Language	Version Number	Version Date
1	Protocol	English	2.0	2021-10-05
2	Assent forms	Ateso	1.0	2021-10-05
3	Assent forms	English	1.0	2021-10-05
4	Translated data collection tool	Ateso	1.0	2021-08-27
5	Informed Consent forms	Ateso	1.0	2021-08-16
6	Risk Management Plan	English	1.0	2021-08-15
7	Data collection tools	English	1.0	2021-08-12
8	Informed Consent forms	English	1.0	2021-08-12

Yours Sincerely

Samuel Kabwigu
For: Clarke International University REC

