

Menstrual hygiene practice and its determinants among Adolescent Girls in Sub-Saharan Africa: A systematic review and meta-analysis protocol

Etsay Woldu Anbesu (✉ etsaywold@gmail.com)

Samara University <https://orcid.org/0000-0002-4532-6720>

Setognal Birara Aychiluhm

Samara University

Systematic Review

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Abstract

Background: Poor menstrual hygiene practices can lead to gynecological problems, psychosocial stress, and reduced access to school. Menstrual hygiene has not received adequate attention in Sub-Saharan Africa. Moreover, there are fragmented and inconsistent findings. Therefore, this systematic review and meta-analysis aimed to estimate the pooled prevalence of menstrual hygiene practice and identify its associated factors among adolescent girls in Sub-Saharan Africa.

Methods: The protocol for this review had registered at PROSPERO with registration number: CRD42020165628. In this study, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guideline will be used to report the protocol. Online electronic databases PubMed, Google Scholar, CINAHL and grey literature will be searched to retrieve available studies. Joanna Briggs Institute checklist will be used to assess the quality of the studies. Heterogeneity among studies will be examined using a chi-squared test and I-squared statistic.

To investigate sources of heterogeneity, subgroup analyses and meta-regression will be performed. Sensitivity analysis will be conducted to identify influential studies. Publication bias will be examined by funnel plots and Egger's test. The statistical analysis will be conducted using STATA version-14 software. A random-effect model will be used to estimate the pooled prevalence, and statistical significance will be determined at a p-value of <0.05.

Discussion: Poor menstrual hygiene practice affects the health of millions of adolescent girls in developing countries. Currently, there are no meta-analysis research findings on the overall pooled prevalence of menstrual hygiene practice and its associated factor in Sub-Saharan Africa. Therefore, this systematic review and meta-analysis will be used to inform policy-makers, programmers, planners, clinicians, and researchers to design appropriate strategies.

Introduction

Menstruation is a physiological process that occurs in most girls during puberty [1]. Good menstrual hygiene management (MHM) practice is described as “women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be modified in privacy as often as necessary for the duration of the menstruation cycle, washing the body as needed with soap and water, and having access to facilities to dispose of used menstrual management materials” [2].

Globally, poor management of menstrual hygiene affects many school girls and women, particularly in developing nations [3, 4]. In low and middle-income countries, several girls cannot access or afford suitable sanitary materials and they use low-quality products such as new or old cloth, cotton wool, toilet paper, underwear alone, sponge, or not at all [5-9]. According to a UNICEF report, 10% of school-age African girls do not attend school during menstruation [10]. Moreover, a study done in five sub-Saharan African countries showed majority of adolescent girls reported a lack of safe, private, and clean toilets with washing facilities at schools [9].

Review literature showed that factors associated with poor menstrual hygiene practice were lack of access to clean and effective absorbents, facilities to change, disposal of absorbents, soap, and water in school settings, and lack of privacy [3, 5, 11, 12]. Besides, consideration of menstruation as a taboo to discuss with others makes young girls limited knowledge about personal hygiene and develop fear and shame. Even adult women may not be aware of the biological factors of good hygienic practices, difficulties, and preventing them from seeking help [13-15].

Poor menstrual hygiene practices have many consequences. Exposed adolescent girls and women to reproductive organ and urogenital infections, psychosocial stress, and reduced opportunities for accessing school and work [12, 16-18]. A study done in sub-Saharan Africa showed that about 49% of school girls missed four school days monthly due to menstruation [9]. Moreover, studies revealed many school girls suffer concentration, limited participation during class times due to discomfort and dishonor during menstruation [19-21].

In Sub-Saharan Africa countries, menstruation among school-age girls and women is a neglected issue. Adequate attention had not been given by the water, sanitation, and hygiene (WASH), education sectors, sexual and reproductive health programs, despite the formal inclusion of menstrual hygiene under reproductive health [22]. Moreover, there were fragmented and inconsistent findings. Thus, this systematic review and meta-analysis aimed to estimate the overall pooled prevalence of menstrual hygiene practice and its associated factors among adolescent girls in Sub-Saharan Africa.

Research question

1. What is the level of pooled prevalence of menstrual hygiene practice among adolescent girls in Sub-Saharan Africa?
2. What are the determinants of menstrual hygiene practice among adolescent girls in Sub-Saharan Africa?

Objectives

1. To determine the overall pooled prevalence of menstrual hygiene practice among adolescent girls in Sub-Saharan Africa.
2. To identify the determinants of menstrual hygiene practice among adolescent girls in Sub-Saharan Africa.

Methods

Study Protocol Registration and Reporting

The Preferred Reporting Items for Systematic review and Meta-analyses (PRISMA) [23], and PRISMA-P 2015 checklist [24] statements will be used to report the findings (*Additional file 1*). The protocol for this review had registered at PROSPERO with registration number: CRD42020165628

PECO search guide

Population: Adolescent girl (10–19years) [25]

Exposure: Predictors or associated factors of poor menstrual hygiene practice. Factors are characteristics or exposures that increase or decrease the likelihood of menstrual hygiene practice among adolescent girls in Sub-Saharan Africa. Those factors include residence, age, maternal educational level, family income, menstrual flow duration, and knowledge on menses.

Comparison: The reported reference group for each associated factor in each study: adolescent girls residing in urban versus rural, from educated mothers versus no education, with good knowledge on menses versus poor knowledge).

Outcome: We will include studies that assess the level of menstrual hygiene practice and its associated factors among adolescent girls in Sub-Saharan Africa.

Study design and Searching strategy

This study protocol will use Systematic review, and meta-analysis. For the preparation and presentation, preferred Reporting Items for Systematic Reviews and Meta-Analysis will be used. Online electronic databases PubMed, Google Scholar, CINAHL and grey literature will be used to search articles until April 30, 2021. The process of searching procedure and selection of studies will be designed in accordance with the PRISMA chart (*Additional file 2*). Cross-referencing will also be used to add other related studies from the final included studies. Retrieved studies will be exported to Endnote version 8 reference manager software [26].

Text search terms will be used using Medical Subject Heading (Mesh) keywords searched using PMID and authors keywords. The search strategies will be developed using different Boolean operators. The core search terms and phrases will be (menstruation OR menarche OR menses OR physiology OR psychology OR sexual and reproductive health OR women health OR reproductive health OR hygiene OR practice OR hygiene practice OR menstrual hygiene management OR menstrual hygiene OR menstrual health OR Sanitation OR management) AND (menstrual hygiene product OR feminine hygiene product OR sanitary product OR supply & distribution OR toilet facilities OR standard schools OR school health services OR education OR health education OR risk factors OR prevalence OR quality of life OR adolescent behavior OR standard social desirability OR standard OR school absenteeism OR Scholl attendance OR absenteeism) AND (human OR adolescent OR female OR students OR adolescent girls OR young adults OR school girls OR school female) AND (Sub-Saharan Africa OR low income countries OR Developing countries OR poverty) (*Additional file 3*).

Study selection and eligibility criteria

First, duplicate studies will be removed from the Endnote citation manager. Two authors (EW and SB) will independently screen the studies based on inclusion and exclusion criteria. Irrelevant titles and articles will be excluded, however relevant titles and articles with the full-text screening will be conducted. In case of articles are not open access, we will contact the corresponding author. If the authors are not willing to provide full text, the articles will be excluded from the study. Studies that will be approved by both authors in the review processes will be included. During the review of the studies, any disagreement among reviewers will be resolve by discussion and reach a common understanding based on established article selection criteria. Finally, we will organize a final list of articles for data extraction.

This review will include all observational studies: cross-sectional, analytical cross-sectional, case-control, and cohort studies. Articles published only with the English language, studies done in Sub-Saharan Africa reporting the prevalence of the menstrual hygiene practice and its associated factors among adolescent girls will be included. If a study analyzed knowledge, attitude and practice, it will only include menstrual hygiene practice result. No restriction will be made to the date of publication. However, citations without abstract, articles without full text, and data that are difficult to extract will be excluded. Moreover, qualitative studies, adolescent girls whose age group is not well defined, studies published other than the English language, Case reports, conference reports, national survey reports, and expert opinions will be excluded.

Quality assessments

Articles assessment using their title, abstract, and a full review of the manuscripts will be done before the inclusion of articles in the final meta-analysis. A critical appraisal will be performed by two authors (EW and SB) using the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MASt-ARI) [27] ((Additional file 4). This instrument include different questions based on the types of study designs. The tools have “Yes” and “No” types of questions and scores will be given ‘1’ for Yes and ‘0’ for No responses. Studies 50% and above of the quality scale will be included and considered for systematic review and meta-analysis). For any scoring disagreements between the authors, the sources of discrepancy will be investigated through revision.

Data extraction and management

After identifying all eligible articles two independent reviewers (EW and SB) will extract the relevant data using an organized format on Microsoft Excel Spreadsheet 2016. Pretesting the data extraction form will be done before the beginning of the actual data extraction. If variations of extracted data exist, the phase will be repeated, and then discrepancies between data extractors will be discussed to reach a consensus. For each included article, we will record the author name, year of publication, the study area, study design,

study period, sample size, the response rate, the target population, outcome definition, comparison groups, predictors, and overall level of practice. For the level of practice studies, the level of prevalence, the logarithm of the level of prevalence, and standard error (SE) of the logarithm of the level prevalence will be calculated. Similarly, for associated factors, OR, logarithms of OR, and SE of the logarithms of OR will be calculated. For any difficulties that might be encountered during data extraction, communication will be made with the corresponding author.

Outcome measurement

Good menstrual hygiene management (MHM) practice is described as “women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be modified in privacy as often as necessary for the duration of the menstruation cycle, washing the body as needed using soap and water, and having access to facilities to dispose of used menstrual management materials”[2]. There is a variation in the number of questions to measure menstrual hygiene practice in different studies. Therefore, the menstrual hygienic practices will be evaluated using “Yes” or “No” questions. The response of each item will be scored as “1” for correct answers and “0” for false [28, 29].

Data synthesis and analysis

The extract data will be imported into STATA version 14 software. A narrative description of the study population will be done, and tables and figures will be used to summarize the results.

A random-effect model will be used to estimate the overall pooled prevalence of menstrual hygiene practice among adolescent girls in Sub-Saharan Africa [30]. The Freeman Tuckey variant of the arcsine square root transformation of proportions will be used to avoid variance variability when controlling proportions close to one [31, 32]. We will assess heterogeneity by using the chi-squared test on Cochran’s Q statistic with a 5% level of statistical significance [33] and I^2 statistic test [34]. Assuming I^2 values of 25%, 50%, and 75% is representative of low, moderate, and high heterogeneity respectively. If the heterogeneity is significant ($I^2 > 75\%$), and p-value < 0.05 will be declared as the presence of heterogeneity. Hence, subgroup analyses and meta-regression will be performed to investigate sources of heterogeneity.

Sensitivity analysis will be done to see the effect of a particular study on the overall estimation. Besides, the time-trend analysis will be conducted to check whether variations through time are observed [33]. Publication bias will be examined by the visual inspection of funnel plots [35] and Egger’s test [36]. A p-value < 0.05 will be considered indicative of statistically significant publication bias. If evidence of publication bias present, the trim-and-fill (Duval and Tweedie’s) method will be performed [37]. The statistical significance level will be declared at a p-value of less than 0.05.

Discussion

This systematic review and meta-analysis protocol aim to synthesize research findings on the overall pooled prevalence of menstrual hygiene practice and its associated factor in Sub-Saharan Africa. Poor menstrual hygiene practice affects the health of millions of adolescent girls, particularly in developing countries. Studies in developing countries have reported that more than 50% of girls have inadequate menstrual hygiene management (MHM) practices, with higher proportions in rural areas [38, 39]. Millions of adolescent girls suffer from complex problems, though good menstrual hygienic management practices can have many benefits [40].

A review of qualitative and quantitative research findings showed that poor menstrual hygiene practice affects school absenteeism, distraction, and detachment, poor psychosocial consequences, feelings of shame, fear of stigma, and anxiety [41-44]. Moreover, most young age women don't have comfort to discuss menses, as it is has a social taboo and could not have access to gain adequate information [45]. It is the overlooked opportunity to address the level of menstrual hygiene practice among girls earlier from their adolescent age in most low-income countries [46]. Thus, effective menstrual hygiene management practice is essential for women and girls to participate in society with dignity and comfort [4]. Consequently, it remains important to assess the level of menstrual hygiene practice and its associated factors in Sub-Saharan Africa to inform the development of appropriate programs and policies that will have an impact in reducing poor menstrual hygiene practice in the region.

The finding from this systematic review will help national and non-governmental organizations in the health and education sector of each country of the region to emphasize the main factors that drive poor menstrual hygiene practice. Moreover, the finding will contribute to increase accessibility and availability of services to improve the health status of adolescent girls. Therefore, estimating the overall level of pooled prevalence of menstrual hygiene practice and its associated factors in Sub-Saharan African using high-level evidence will be used to inform policy-makers, health programmers, education sectors, clinicians, decision making, and researchers.

This study protocol has the following limitation. Heterogeneity is common as we will consider varieties of study designs and from different geographic areas of Sub-Saharan African countries. Articles published other than English language will not be considered. Moreover, this protocol considers only observational studies design and excludes randomized clinical trials and quasi-experimental studies.

Declarations

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Author contribution

EW and SB conceived and designed the systematic review and meta-analysis. EW drafted the protocol manuscript. EW and SB extensively reviewed and incorporated inputs in the protocol manuscript development. EW and SB read and approved the final version of the protocol.

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No founder

Availability of data and materials

The systematic review and Meta-analysis protocol was submitted with additional files as supplementary materials.

Ethics approval and consent to participate

N/A

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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