

## The Impact of Audiobooks on Female Adolescents' Knowledge and Perceptions of Menstrual Hygiene in Emergencies

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### ABSTRACT

Banjar Regency is geographically located in a lowland area crossed by several rivers and hydrographically is greatly influenced by rainfall. From February to March 2023, 17,257 houses in seven sub-districts in Banjar Regency, South Kalimantan were submerged in floods with a height of 20-70 cm. Many women and young women find it difficult to practice Menstrual Hygiene Management (MHM). The use of audiobooks as health promotion media is expected to increase the knowledge and perceptions of young women regarding the practice of MHM when a flood occurs. This study aims to analyze the effect of audiobooks on young women, especially on the variable knowledge and perceptions of MHM in emergency situations. This study is a quasi-experimental study that provides intervention in the form of audiobooks with a one-group pretest-posttest-only design. The sample in this study was 40 female students of Junior High School (SMPN) 2 Martapura Timur, taken using purposive sampling. Data analysis used the T-test with a confidence level of 95%. The results of this study indicate that intervention in the form of audiobooks has proven effective in increasing knowledge (p-value: 0.0001) and perception (p-value: 0.0001) of female adolescents regarding menstrual hygiene management in emergencies. It is expected that the use of audiobooks can be maintained by schools in disseminating information about MHM.

**Keywords:** Audiobook, menstrual hygiene management, knowledge, perceptions

### INTRODUCTION

Indonesia is prone to disasters, and the most common are hydrometeorological, such as floods. According to the Indonesian Disaster Information Data from the National Disaster Management Agency (DIBI - BNPB), there were a total of 74.1% (out of a total of 78,890) hydrometeorological disasters throughout 2021. Throughout 2023, there have been 75 cases of flooding in Indonesia.<sup>1</sup> The worst flood disaster in South Kalimantan in the last decade occurred in 2021, where 10 out of 13 districts/cities were affected by flooding, resulting in 24,378 houses being submerged in floodwaters and 34,549 people being displaced. One of the areas experiencing flooding problems is Banjar

Regency, which is geographically located in the lowlands with several rivers passing through and is greatly affected by rainfall. Recently, 17,257 houses in seven sub-districts in Banjar Regency were submerged in floodwaters from February 25 to March 4, 2023, with a height of 20-70 cm.<sup>2</sup> One of the affected sub-districts is East Martapura, which has caused some residents to temporarily evacuate.

Most disaster victims will seek refuge in evacuation sites, shelters, or refugee areas. This area is built on the principle of providing temporary housing but is often limited in several aspects. These limitations make certain groups, especially women and female adolescents, more vulnerable. A study conducted in

Bangladesh stated that many women and adolescents are vulnerable during a disaster because certain needs from the logistical aspect of the disaster only focus on basic needs but forget about special needs from a women's perspective, especially those related to reproductive health, more specifically Menstrual Hygiene Management (MHM).<sup>3</sup>

Menstrual hygiene problems during a disaster can have serious impacts, where the conditions of the refugee camps are not optimal in meeting the needs for cleanliness and reproductive health, and facilities are very limited.<sup>4</sup> Bhattacharjee in his research stated that emergency conditions during a disaster cause vulnerability in terms of reproductive health, especially for women and female adolescents. During a disaster emergency, women and female adolescents who menstruate feel afraid and ashamed because they do not have or do not prepare sanitary napkins, because it is not a priority. Female adolescents are forced to accept the situation by using sanitary napkins made from used clothes which are at risk of being unhygienic.<sup>5</sup> Another research stated that the reproductive health of female adolescents has not received attention. This is proven by the absence of kits for adolescents during menstruation. There are 95.1% of female adolescents affected by disasters who need sanitary napkins, underwear, and medication. As a result, female adolescents are embarrassed to meet other people, do not dare to do activities, and prefer to sleep and lock themselves away because of the limited menstrual sanitation equipment they need.<sup>6</sup>

MHM requires access to safe places, personal water and sanitation facilities, menstrual needs are met, and basic information and knowledge about menstrual hygiene in the context of evacuation. This information must be understood by women and female adolescents before a disaster occurs to improve disaster preparedness.<sup>7</sup> However, the results of a survey by the research team on 30 female adolescents aged 12–15 years in East Martapura District (March 7–21, 2024) in one school, only 13.3% of female adolescents knew about the practice of MHM during a disaster. Furthermore, >50% of them explained that the practice of MHM was never taught in schools and considered this a “taboo” thing to talk about due to religious and belief factors, which is indeed an area known for its religiousness. However, if this information is not understood, it will increase the vulnerability and risk of disease due to unhygienic reproductive organs. The lack of preparedness and knowledge of female adolescents when menstruating in

disaster situations makes female adolescents vulnerable to reproductive health problems, especially reproductive tract infections and skin irritation.<sup>8</sup>

This challenge can be overcome by increasing literacy in female adolescents regarding MHM practices. Previous studies have attempted to increase this literacy, such as the study by Saputri et al entitled Effectiveness of Using Menstrual Hygiene Pocketbooks and Preventing Violence in Disaster Situations in Adolescents.<sup>9</sup> Batjo, et al entitled Health Promotion Through Menstrual Hygiene Pocketbooks in Disaster Situations Both previous studies used similar media, namely pocketbooks, with the same construct, namely increasing the knowledge of female adolescents regarding menstrual hygiene in disaster situations.<sup>4</sup> Saputri et al's study focused on high school students, while Batjo et al focused on adolescent Posyandu in areas prone to flash floods. The fundamental differences between the 2 previous studies are the targets, the focus of the research variables, namely knowledge and perception, and the differences in the health promotion media used. So far, no previous studies have been found that aim to increase MHM literacy in female adolescents during the disaster in East Martapura District, Banjar Regency. Therefore, the research team attempted to empirically study this by developing a different health promotion media from before, namely the form of an Audiobook referring to UNICEF Menstrual Hygiene Management, and to analyze the effect of Audiobooks on female adolescents, especially on the variable Knowledge and Perceptions of MHM in Emergency Situations.<sup>10</sup> The selection of this media was based on the consideration that it is suitable for adolescents aged 12-15 years with light information, can be read, and also listened to via gadgets (such as smartphones) which are often used by female adolescents.

The selection of audiobooks as an intervention modality introduces a pioneering approach to menstrual hygiene management (MHM) in emergency settings. While existing literature predominantly relies on print media, such as pocketbooks, these formats often assume literacy skills and may fall short in engaging adolescents during crises when visual materials are impractical. Audiobooks, by contrast, offer an adaptable and accessible auditory learning experience, which is more suitable for urgent, disaster-related contexts. This research builds on prior efforts by integrating digital, technology-based solutions that resonate with contemporary adolescents' media consumption habits, such as

smartphones and audio platforms. Thus, this study fills a critical gap in utilizing digital tools for health promotion in MHM, establishing a cutting-edge approach to emergency preparedness and public health education.

The purpose of this research is to analyze the effectiveness of audiobooks as an innovative health promotion tool for improving knowledge and perceptions of menstrual hygiene management among female adolescents in disaster-prone areas. Menstrual hygiene in disaster contexts is a neglected aspect of public health, particularly for adolescents. In Indonesia, where floods are frequent, adolescents face significant challenges in MHM due to stigma, lack of education, and inadequate facilities. Preliminary surveys revealed that only 13.3% of adolescents in East Martapura had knowledge of MHM during disasters. Previous interventions have focused on visual or textual media, neglecting auditory-based tools, which are advantageous in disaster settings where visual and physical access to educational materials is limited. This gap underscores the urgent need for alternative, scalable, and effective methods to address MHM education.

## METHOD

This research started from August to September 2024. The research methodology was conducted in four distinct phases. In the preparation phase, the audiobook content was developed based on UNICEF's guidelines for menstrual hygiene management (MHM). To ensure the content's accuracy and relevance, it underwent expert validation by professionals in public health and education. Additionally, a pilot test was conducted to assess both the comprehension and technical quality of the audiobook.

During the implementation phase, a pretest was administered through a structured questionnaire to establish baseline knowledge and perceptions of the participants regarding MHM. The audiobook was then distributed via WhatsApp, enabling participants to listen at their convenience. This method ensured flexibility and ease of access for the participants. Following the intervention, the post-intervention phase involved administering

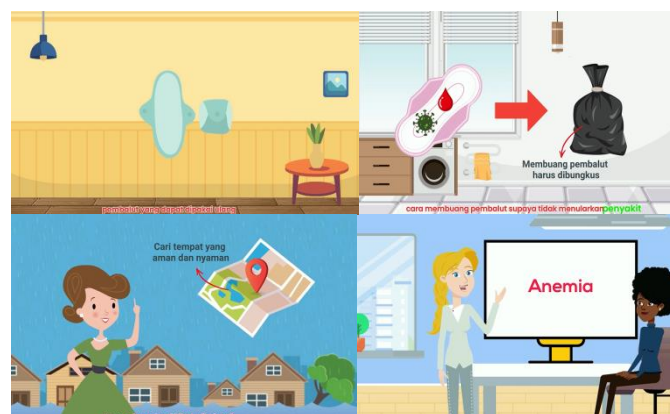
a posttest to measure any changes in participants' knowledge and perceptions of MHM. Data was collected and entered for analysis.

The data analysis and reporting phase included statistical analysis using T-tests to assess the significance of changes between pre-and post-intervention responses. The findings were then compiled and synthesized into a comprehensive report. The study was conducted over a total of six weeks, with three weeks dedicated to implementation and data collection, and three weeks for preparation, content development, and analysis.

The research design was quasi-experimental with health promotion media intervention in the form of audiobooks, with a one-group pretest-posttest-only design. The one-group pretest-posttest design was selected due to resource constraints and the specific focus on assessing the impact of audiobooks on participants. While the absence of a control group limits the ability to compare outcomes with alternative methods, the study's primary goal was to evaluate the feasibility and initial effectiveness of this novel intervention based on knowledge and perceptions as the variables.

The variables in this study were students' knowledge and perceptions related to MHM, before and after the intervention. The audiobook made in MP4 file format is 14 minutes 23 seconds long, this time selection is considered quite ideal so that it does not seem too long and not too fast. Before being used, the audiobook has gone through an expert judgment stage from health promotion experts and health promotion extension practitioners from the Health Center. The audiobook was sent using Whatsapp to then be listened to by respondents after the pre-test was carried out.

The selected audiobook uses a voice-over with a female voice in the Indonesian language and uses Indonesian subtitles. The audiobook display screenshot can be seen in the following picture.



**Figure 1.** An example of an audiobook

The population was all female students in grades VII, VIII, and IX at SMPN 2 Martapura Timur. Based on the 2024 Active Student Master Data, there were 54 people. The sample was determined using a purposive sampling technique, with the following inclusion criteria: (1) Have experienced flooding in the last 3 years. The research focuses on flooding, aligned with the geographical characteristics and the disaster history of the research location over the past three years; (2) Have a smartphone. The determination of the number of samples was carried out using the Slovin formula and a sample of 40 female students was obtained. The Slovin formula was employed in this study to calculate the sample size, ensuring robust statistical representativeness of the population while accounting for a predetermined margin of error. This method is particularly advantageous in research contexts where the population size is known, but conducting a full census is neither feasible nor practical.

Consequently, a sample of 40 female students was identified, offering a reliable basis for evaluating the impact of audiobooks on adolescents' knowledge and perceptions of menstrual hygiene management in emergency settings. The sample of 40 female students, drawn from the specific population at SMPN 2 Martapura Timur, provides targeted insights into the effectiveness of audiobooks as a health promotion tool. While not representative of all female adolescents in the region, this sample is well-suited to assess the intervention within the context of this study.

The variables in this study are knowledge

defined as the level of knowledge of respondents related to MHM during a disaster, seen from knowledge on menstruation, menstrual practices, menstrual hygiene, cleaning and drying techniques of menstrual cloths, menstrual hygiene management scenarios during a disaster, health issue of women and female adolescent. Perception variables are defined as respondents' views on MHM during a disaster, seen from menstrual practices, menstrual hygiene, cleaning and drying techniques of menstrual cloths, and menstrual hygiene management scenarios during a disaster.

The validity testing was conducted at SMPN 1 Martapura Timur to ensure that the questionnaire used in this study accurately measured the constructs it intended to assess. This step was necessary because the questionnaire was designed specifically for female adolescents in disaster-prone areas, and it was important to confirm that the instrument was both reliable and valid for the target population. By testing the questionnaire on a sample of 30 respondents from SMPN 1 Martapura Timur, we ensured that the content of the questionnaire was relevant and appropriate and that the responses were consistent. The calculated r-value exceeding the critical r-value (0.347 at  $\alpha = 5\%$ ) and the Cronbach's alpha coefficient greater than 0.81 further validated the reliability and internal consistency of the instrument. This process was essential for ensuring the accuracy and robustness of the data collection, which would underpin the study's conclusions.

## RESULT AND DISCUSSION

**Table 1.** Frequency Distribution of Respondent Characteristics

Characteristics	Frequency	Percentage
<b>Age (y.o)</b>		
12	11	27.5
13	9	22.5
14	13	32.5
15	7	17.5
<b>Class</b>		
VII	12	30
VIII	9	22.5
IX	19	47.5

Source: Primary Data, 2024

According to Table 1, the largest age distribution was 14 years (32.5%), followed by

12 years (27.5%), 13 years (22.5%), and 15 years (17.5%). This age range reflects the

population of female adolescents in the early to middle puberty phase, where they begin to menstruate and need a deeper understanding of Menstrual Hygiene Management (MHM). According to previous studies, female adolescents aged 12-15 years tend to face challenges in MHM, especially if they are not given adequate education.<sup>11</sup> The age of puberty is a crucial phase in the formation of perceptions and practices of reproductive health.<sup>12</sup>

Based on the same table, the majority of

respondents were from grade IC (47.5%), while grade VII (30%) and grade VIII (22.5%) had fewer respondents. This reflects that older students tend to be more exposed to reproductive health information, either through school curriculum or personal experience. Students in grade IX may have more experience in menstrual management, but it is still important to provide comprehensive interventions for all grade levels so that awareness regarding MHM can be increased at all levels.<sup>13</sup>

**Table 2. Bivariate Analysis**

Variable	Mean	Min	Max	SD	SE	P-value
<b>Knowledge</b>						
Before Intervention	9.5	7	12	1.219	0.193	0.0001
After Intervention	10.73	8	21	2.088	0.33	
<b>Perception</b>						
Before Intervention	37.75	30	44	3.6	0.569	0.0001
After Intervention	40.48	33	48	3.515	0.556	

Source: Primary Data, 2024

The data in the table provides compelling evidence of the intervention's efficacy in enhancing both knowledge and perception related to menstrual hygiene management among female adolescents. The mean score increased substantially from 9.5 pre-intervention to 10.73 post-intervention, accompanied by an expanded range (pre: 7–12; post: 8–21). The notable rise in standard deviation (SD) from 1.219 to 2.088 indicates increased heterogeneity in knowledge levels among participants, suggesting that while the intervention was effective overall, its impact may have varied across individuals. The p-value of 0.0001 strongly supports the statistical significance of this improvement, underscoring the intervention's role in enhancing knowledge.

The mean perception score rose from 37.75 to 40.48, reflecting a consistent and meaningful improvement. The slight widening of the range (pre: 30–44; post: 33–48) suggests a more inclusive shift in perception levels. The relatively stable SD (3.6 to 3.515) implies that the intervention had a uniform impact across participants. The p-value of 0.0001 reaffirms the statistically significant enhancement in perception, highlighting the intervention's effectiveness in addressing this dimension.

Overall, the T-test analysis reveals statistically significant improvements in both knowledge and perception, as evidenced by the exceptionally low p-values ( $p < 0.05$ ). The variability in knowledge outcomes warrants further investigation to identify potential factors influencing individual responsiveness to the intervention, while the consistent gains in

perception underscore its robust and equitable impact.

This research supports the finding that audio-based educational media is effective in increasing knowledge, especially when applied in emergencies.<sup>14</sup> The ability to convey information repeatedly without requiring intense visual concentration makes audiobooks an ideal choice for health education.<sup>15</sup> The increase in perception was also significant, from an average of 37.75 before the intervention to 40.48 after the intervention. The P-value of 0.0001 confirms that this difference is statistically significant. These results indicate that the audiobook intervention was not only successful in increasing knowledge but also in changing the perspective and awareness of adolescents regarding menstrual hygiene. Changes in perception are very important in stimulating behavioral change, where positive perceptions can encourage adolescents to implement better MHM practices.<sup>16</sup> Education through audio media, with a persuasive tone, can create a sense of urgency and relevance that makes information more engaging and impactful.<sup>17</sup>

The highest increase in knowledge and perception was in the component of "cleaning and drying techniques of menstrual cloths". Respondents initially did not know how to use reusable menstrual cloths, and how to clean them both in normal situations and during a disaster (the increase in knowledge occurred by 40% of the total sample, or 16 female students and the increase in perception occurred by 50% of the total sample, or 20 female students).

Improvement in perception also occurred in the use of reusable menstrual cloths, where 77.5% “felt interested in buying and felt it was important to have” (where initially 100% of the sample did not have reusable menstrual cloths) in case the menstrual cloths that were usually used were not available if a disaster occurred). Improvement in perception also occurred in terms of “the supply of disposable pads in school bags when approaching the menstrual cycle”, which initially at the pre-test only 60% felt it was necessary, increasing to 92.5% at the post-test.

This study showed very positive results with all respondents showing an increase in knowledge and perception after the intervention using audiobooks. However, it should be noted that this study was only conducted with a limited sample (40 respondents), and in one school, so generalization of the results to a wider population needs to be done with caution. In addition, there was no control group used, which could provide deeper insight into the effectiveness of the intervention when compared to other educational methods.<sup>18</sup> Audiobooks as an educational medium can be integrated into community-based disaster management programs, especially for female adolescents who are very vulnerable to menstrual health problems in evacuation centers.<sup>19</sup>

The substantial improvement in knowledge scores highlights the intervention’s effectiveness in bridging critical knowledge gaps. The increased range and variability in scores (SD: 1.219 to 2.088) suggest that the intervention had differential impacts across participants, potentially influenced by factors such as baseline knowledge, individual learning styles, or varying levels of engagement with auditory content. Multimedia interventions, which incorporate cognitive engagement alongside diverse learning preferences, are often associated with such variability. While the overall efficacy of the intervention is evident, the observed heterogeneity emphasizes the need for supplementary strategies to achieve more equitable learning outcomes. For instance, integrating interactive discussions or follow-up quizzes with audiobooks could reinforce knowledge retention and address individual learning gaps.

The consistent improvement in perception scores further underscores the intervention’s ability to positively influence attitudes toward menstrual hygiene management (MHM). Unlike knowledge, the relatively stable standard deviation in perception scores suggests a more uniform response across participants, likely due to the

emotive and relatable nature of the audiobook content. This shared understanding may have facilitated a collective shift in attitudes, a key factor for behavior change, particularly in culturally sensitive issues such as MHM. Perceptions are crucial for facilitating lasting behavioral change, especially when integrating culturally relevant narratives and practical advice. The slight expansion in the perception score range indicates that participants with initially lower perceptions benefited more from the intervention, thus enhancing its inclusivity.

While both knowledge and perception scores showed significant improvements, the differences in variability highlight the distinct processes underlying knowledge acquisition and attitude formation. Knowledge improvement depends on cognitive processes such as engagement and retention, which can vary considerably between individuals. Perception, however, is more heavily shaped by emotional and social influences, making it more likely to exhibit uniformity when exposed to an effective intervention. These insights carry important implications for the design of future interventions. For knowledge, adapting content delivery to cater to individual needs, such as incorporating visual aids or interactive components could reduce variability. For perception, maintaining the emotive and culturally relevant nature of the content is essential to ensure a broad and consistent impact.

The use of audiobooks as an educational tool proves especially valuable in emergency settings, where access to traditional educational resources may be limited. The marked improvements observed in this study underscore audiobooks’ potential to provide timely, scalable, and accessible health education. Given their low cost and user-friendly nature, audiobooks present an ideal solution for addressing menstrual hygiene management challenges in disaster contexts, where infrastructure and resources are often strained. Furthermore, the consistent positive shift in perception scores indicates that audiobooks are capable of overcoming cultural and psychological barriers, empowering adolescents to adopt healthier practices even in challenging environments. These findings align with prior studies that advocate for innovative educational approaches, particularly in resource-limited and emergency contexts.

While the intervention demonstrated notable success, the variability in knowledge outcomes highlights the need for further exploration of factors influencing individual responsiveness, such as socioeconomic status, prior exposure to menstrual hygiene education,

and engagement with the intervention. Future research could benefit from a mixed-methods approach, incorporating qualitative interviews or focus group discussions to gain deeper insights into participants' experiences and the specific challenges they face.

Moreover, the study focused solely on female adolescents. Expanding the scope to include male peers, parents, and educators would offer a more comprehensive understanding of the social dynamics surrounding menstrual hygiene. Such a broader approach would inform the development of community-based interventions that create a supportive environment for adolescents.

Lastly, while the immediate improvements observed are promising, the long-term impact of the intervention remains uncertain. Longitudinal studies that track knowledge retention and behavioral changes over time are essential to assess the sustainability of the intervention's effects and refine future strategies for enhancing its effectiveness.

## CONCLUSION

The intervention demonstrated significant improvements in both knowledge and perception regarding menstrual hygiene management among female adolescents. The findings highlight the potential of audiobooks as an effective educational tool, particularly in emergency and resource-limited settings. However, the variability in knowledge outcomes underscores the need for supplementary strategies to address individual differences. By building on these insights, future interventions can contribute to improved health outcomes and the empowerment of adolescents.

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## REFERENCES

1. Badan Nasional Penanggulangan Bencana. Risiko Bencana Indonesia, Memahami Risiko Sistemik di Indonesia [Internet] Jakarta: Pusat Data, Informasi dan Komunikasi Kebencanaan BNPB, 2023. Available from:

- <https://inarisk.bnppb.go.id/BUKU-RBI-2022/mobile/index.html#p=30>
2. Kompas. 17.257 Rumah terendam banjir di Kalimantan Selatan, Ketinggian Air Capai 70 cm [Internet]. 2023 [cited 2024 Apr 18]. Available from: <https://regional.kompas.com/read/2023/03/05/084710878/17257-rumah-terendam-banjir-di-kalimantan-selatan-ketinggian-air-capai-70>
  3. Maknun, Syeda Shahida & Nahar, Naznin & Kabir, Md. Humayun. Women Health and Menstrual Hygiene Management in Natural Disasters: A Study in Islampur Upazila of Jamalpur District. *Journal of the Asiatic Society of Bangladesh, Science* 2017. 43 (1): 83-99.
  4. Batjo, S.H., Taqwin, Rindi, A.A., Bangga, D., Sigi, K., Tengah, S., Saku, B., & Menstruasi, H. Promosi Kesehatan Melalui Buku Saku Higiene Menstruasi pada Situasi Bencana Meningkatkan Pengetahuan Remaja Putri di Desa Bangga Sigi. *Jurnal Mutiara Kesehatan Masyarakat* 2022. (7(2): 122-129. Available from: <http://e-journal.sari-mutiara.ac.id/index.php/JMKM/article/view/3513/2421>
  5. Bhattacharjee, M. Menstrual Hygiene Management During Emergencies: A Study of Challenges Faced by Women and Adolescent Girls Living in Flood-prone Districts in Assam. *Indian Journal of Gender Studies* 2019. 26(1-2): 96-107. Available from: <https://doi.org/10.1177/0971521518811172>
  6. Suryati. Gambaran Kebutuhan Dan Perilaku Remaja Putri Pada waktu Menstruasi dalam situasi darurat bencana di Sumatera Barat. *J Kesehatan Masy.* 2013;7(2):60-5.
  7. Sommer, M., Schmitt, M., Ogello, T., Mathenge, P., Mark, M., Clatworthy, D., Khandakji, S., Ratnayake, R. Pilot testing and evaluation of a toolkit for menstrual hygiene management in emergencies in three refugee camps in Northwest Tanzania. *Journal of International Humanitarian Action* 2018, 3(6):1-14. Available from: doi: 10.1186/s41018-018-0034-7
  8. Kementerian Kesehatan RI. Pedoman pelaksanaan paket pelayanan awal minimum (PPAM) kesehatan reproduksi remaja pada krisis kesehatan. 1<sup>st</sup> Ed. Jakarta: Kementerian Kesehatan; 2017
  9. Saputri LA, Iin PF., Yussie AM. Efektivitas penggunaan buku saku hygiene

- menstruasi dan pencegahan kekerasan dalam situasi bencana pada remaja putri. *Jurnal Kebidanan dan Kesehatan Tradisional* 2020. 5(2); 75-63. Available from: <https://jurnalbidankestrad.com/index.php/jkk/article/view/159/113>
10. UNICEF dan PP Muslimat NU. Manajemen Kebersihan Menstruasi. 2020. Diakses pada [link https://www.unicef.org/indonesia/media/9491/file/MHM%20and%20Child%20Marriage%20Prevention%20\(Indonesian\).pdf](https://www.unicef.org/indonesia/media/9491/file/MHM%20and%20Child%20Marriage%20Prevention%20(Indonesian).pdf)
  11. Patton GC, Sawyer SM, Santelli JS, et al. Our future: a Lancet commission on adolescent health and wellbeing. *Lancet*. 2016;387(10036):2423-2478.
  12. Sommer M, Caruso BA, Sahin M, et al. A time for global action: addressing girls' menstrual hygiene management needs in schools. *PLoS Med*. 2016;13(2):e1001962.
  13. Tegegne T, Sisay MM. Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia. *BMC Public Health*. 2014;14:1118.
  14. Garg S, Anand T. Menstruation-related myths in India: strategies for combating it. *J Family Med Prim Care*. 2015;4(2):184.
  15. Oyeyemi SO, Oyeyemi AY, Bello U. Menstrual hygiene management among in-school adolescents in a rural community in Ebonyi state, South-East Nigeria. *Afr J Reprod Health*. 2020;24(2):123-135.
  16. Fishbein M, Ajzen I. Predicting and changing behavior: the reasoned action approach. Psychology Press; 2011.
  17. Kingori C, Seiber EE, Ayuku D. Menstrual hygiene management practices and education preferences among adolescent girls in Kenya: a cross-sectional study. *BMC Public Health*. 2021;21(1):1-8.
  18. Levitt HM, Bamberg M, Creswell JW, et al. Qualitative research in psychology: the APA task force report. *Am Psychol*. 2018;73(1):26-46.
  19. Crofts T, Fisher J. Menstrual hygiene in Ugandan schools: an investigation of low-cost sanitary pads. *J Water Sanit Hyg Dev*. 2012;2(1):50-58.