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Development Of Instagram-Based Educational Media On Personal Hygiene Durung Menstruation

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ABSTRACT

Adolescent girls require accessible and engaging health information to support appropriate personal hygiene practices during menstruation. Conventional educational media, including printed comic books, may have limitations in accessibility, interactivity, and alignment with adolescents' digital media preferences. This study aimed to develop Instagram-based educational media on personal hygiene during menstruation that was relevant, attractive, and understandable for adolescent girls. A Research and Development (R&D) design was employed by adapting the Borg and Gall model into seven stages: standard media evaluation, needs assessment, focus group discussion (FGD), prototype development, expert validation, prototype revision and finalization, and small-group testing. The study involved six students in the needs assessment, seven students and one teacher in the FGD, two experts for material and media validation, and 15 female students in the small-group trial at SMP Negeri 1 Dau, Malang, Indonesia. Data were collected using interview and FGD guidelines and validation questionnaires and were analyzed descriptively using quantitative and qualitative approaches. The developed media combined Instagram feed images and short Reels videos covering menstrual hygiene practices, the menstrual cycle, myths and facts, and six-step handwashing. Material and media experts both provided a feasibility score of 100%, categorized as very eligible. The small-group trial obtained an 83% response, categorized as very positive. The findings indicate that the developed Instagram-based educational media was feasible and positively accepted by adolescent users. Further studies using larger samples, pre- and post-intervention assessments, control groups, and longitudinal follow-up are recommended to determine its effects on knowledge and menstrual hygiene behavior..

Keywords: Adolescent; Instagram; Menstrual Hygiene; Personal Hygiene; Research and Development

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INTRODUCTION

Adolescence is a transitional stage of human development from childhood to adulthood. The World Health Organization defines adolescents as individuals aged 10–19 years (Dehne, 2001). During this period, adolescents experience substantial physical, psychological, cognitive, social, and emotional changes (Mastorci, 2024). In female adolescents, reproductive maturation is marked by the onset of menstruation, which requires appropriate knowledge and practices related to personal hygiene.

Maintaining personal hygiene during menstruation is an important component of reproductive health (Gupta, 2022). Inadequate menstrual hygiene practices may be associated with various health problems, including vaginal discharge and urinary and reproductive tract infections (Borg, 2023).

According to the World Health Organization (WHO), poor reproductive health accounts for 33% of the total disease burden among women worldwide, one of which is vaginal discharge (Wardani & Irmayani, 2022). In Indonesia, the number of adolescents experiencing vaginal discharge is very high, with 75% of Indonesian women experiencing vaginal discharge at least once in their lives; this figure is significantly higher than the 25% reported in European countries (Irwan & Ridha, 2024). The prevalence of vaginal discharge among adolescent girls in Indonesia is 21.7%, with 20.6% in urban areas and 22.8% in rural areas. A 2023 study in Bogor Regency showed that of the 1.6 million girls, 72% experienced

physiological vaginal discharge, 8% experienced pathological vaginal discharge, and 20% had never experienced vaginal discharge (Warini, 2025). Indonesia's tropical climate, characterized by high temperature and humidity, creates favorable conditions for fungal growth in moist body areas, particularly the female genital tract during menstruation, thereby increasing the likelihood of vaginal discharge. Reports from the Central Statistics Agency (BPS) and Bappenas reveal that a large proportion of the 63 million adolescents in Indonesia are inclined toward inadequate menstrual hygiene practices (Hanifah, 2022). Research conducted in East Java reveals that adolescents' hygiene behavior during menstruation still requires serious attention. The results showed that 62.5% of adolescents changed sanitary pads every 4–8 hours, 71.1% washed their hands with soap before and after changing sanitary pads, and only 55% disposed of sanitary pads in trash bins, while the rest disposed of them in environmentally unfriendly ways, such as burning, burying, or discarding them in rivers (Kennedy, 2015). These data show that although some adolescents demonstrate healthy behavior in maintaining hygiene during menstruation, a large proportion have not adopted proper hygiene practices (Ganguly & Jana, 2025).

These findings indicate that appropriate menstrual hygiene practices remain an important health education issue among adolescents. Health education has traditionally been delivered through printed materials such as books, leaflets, booklets, and comic media (Umsapyat & Puspita, 2025). Although these media can improve knowledge and behavior, they may have limitations because they are relatively static, can be damaged or lost, and provide limited multimedia interaction (AbdiShahshahani & Hashemi, 2023). The menstrual comic book Apa Itu Menstruasi?, which was identified as the existing standard educational medium in this study, also presented limitations in accessibility and did not sufficiently emphasize practical menstrual personal hygiene procedures.

In comparison, social media has become an effective means of education. The We Are Social & Hootsuite (2024) report identifies Instagram as the second most popular platform in Indonesia after WhatsApp (We Are Social, 2024). Compared to printed media such as booklets or comics, Instagram excels because its content is easy to share, tag, and repost, allowing it to reach a wider audience. With adolescents being familiar with digital platforms, social media has the potential to become a strategy to increase awareness and practice of personal hygiene during menstruation. Based on these issues, the researcher is interested in developing Instagram-based educational media on personal hygiene during menstruation in adolescents with the aim of increasing adolescent girls' knowledge regarding appropriate menstrual hygiene practices.Contribution of this study includes:

METHOD

Research Design

This research employed a Research and Development (R&D) design by adopting and modifying the Borg and Gall model. The original ten steps were condensed into seven stages to suit the study context: (1) evaluation of standard media, (2) needs assessment, (3) focus group discussion (FGD), (4) prototype development, (5) expert validation, (6) prototype revision and finalization, and (7) small-scale testing. This design was selected as the R&D approach facilitates systematic product development to generate educational media that is both relevant and effective for the intended audience (Aka, 2019).

The development process was also grounded in the Cognitive Theory of Multimedia Learning (Mayer, 2001) and the Theory of Planned Behavior (Ajzen, 1991). These theories guided the design of the educational media by emphasizing that effective learning occurs when visual and auditory information are combined, and that knowledge and attitudes play a crucial role in influencing behavior

Study Setting and Partisipants

The research was conducted at SMP Negeri 1 Dau, Malang, Indonesia, from August 2024 to July 2025. The participants consisted of adolescent female students and experts involved in different stages of the development process. Six female students participated in the needs assessment, while seven female students participated in the FGD together with one biology teacher who served as an educational and reproductive health expert. Two lecturers served as material and media experts. The small-group trial involved 15 female students.
Participants in the small-group trial were selected using purposive sampling according to predetermined criteria. Participants were female students who had experienced menstruation, were able to operate a mobile phone, and had an Instagram account.

Educational Media Developmen

The educational media was adapted from the UNICEF comic Apa Itu Menstruasi? (2015) and transformed into Instagram-based educational content. The developed product consisted of feed images and short Reels videos. The feed content used concise text and illustrations, while the Reels incorporated audiovisual elements, animation, and motion graphics. The educational content included menstruation, menstrual personal hygiene practices, myths and facts, and the six-step handwashing procedure. The content was uploaded using Instagram feed, Reels, and Highlights features.

Data Collection

Data collection was conducted sequentially according to the seven development stages. First, the existing menstrual comic book was evaluated to identify limitations related to format, components, accessibility, interactivity, and content. The findings were subsequently used to formulate questions for the needs assessment.
The needs assessment involved six female students and explored their menstrual hygiene information needs, media use, learning preferences, and expectations regarding the educational media. The results were followed by an FGD involving seven female students and one teacher to obtain more detailed input regarding the desired format and content.

The prototype was then developed based on the findings from the needs assessment and FGD. The prototype was evaluated by a material expert and a media expert. Expert feedback was used to revise and finalize the educational media. Finally, the completed media was tested with 15 students through a small-group trial. User responses were collected using a questionnaire after participants interacted with the developed media.

Data Analysis

Validation test data from experts were analyzed using quantitative and qualitative descriptive approaches.
Qualitative analysis: obtained from input and suggestions from material and media experts to identify what would be used as a reference for revising the educational media. Quantitative analysis, meanwhile, calculated the percentage of validation test results using the formula:

$$\text{Percentage} = \frac{\text{Total score obtained}}{\text{Maximum possible score}} \times 100\%$$

Results were categorized based on Riduwan's modified Likert scale (Yulifah & Yuswanto, 2023):

Table 1 Expert Validation Result

Percentages	Criteria
81% -100%	Very Eligible
61% - 80%	Eligible
41% - 60%	Fairly Eligible
21% - 40%	Less Eligible
0% - 20%	Not Eligible

Table 2 Result of Small Group Trials

Percentages	Criteria
81% -100%	Very Positive
61% - 80%	Positive
41% - 60%	Somewhat Positive
21% - 40%	Less Positive
0% - 20%	Not Positive

Based on the data and criteria in the table above, the educational product or media is considered complete when the percentage score meets the feasibility criteria (61%-80%). If the percentage score falls below the feasibility criteria, the product needs to be revised. Meanwhile, the feasibility of educational media, based on small group trials, is determined if the percentage score meets the positive criteria (61%-80%). If the percentage score falls below the positive criteria, the product will be revised.

Ethical Considerations

This study has received ethical approval from the Health Research Ethics Committee of the Malang Ministry of Health Polytechnic (Approval Number DP.04.03/F.XXI.30/00608/2025), in accordance with the 2011 WHO ethical standards. Guardians of all study participants provided written informed consent, and assent was obtained from the study participants themselves. This study adheres to ethical standards for conducting research involving vulnerable populations, ensuring confidentiality, voluntary participation, and the right to withdraw at any time without penalty.

FINDING AND DISCUSSION

Standard Media Evaluation

The first stage involved evaluating a standard medium, namely a menstrual comic book, followed by an evaluation of its limitations. The evaluation covered aspects of media format, media components, interactivity, material presentation, relevance to adolescents' habits, and media accessibility. The findings indicated that the menstrual comic book had limitations in terms of accessibility within the media format aspect. With regard to media components, the content was limited to images only. In terms of material content, the comic provided informative material but lacked

practical elements, particularly step-by-step guidance on maintaining personal hygiene during menstruation. Furthermore, the media was considered less relevant to adolescents' current habits in accessing information and education in the digital era.

Needs Assessment

The aspects identified in the evaluation were then formulated into a set of questions used as a guide for conducting the need assessment with six female students. The participants in the need assessment consisted of six students aged 13–14 years, all of whom had experienced menstruation, and therefore were able to provide relevant insights for the development of educational media on menstrual hygiene. The results indicated that, regarding the media format, all students (100%) reported that they did not know and did not own the menstrual comic book, and that they more frequently accessed menstrual information through social media. In terms of preferred media components, the majority of students (83.33%) preferred content in the form of images and videos. For the content aspect, all students (100%) indicated that it was important to include more comprehensive information on personal hygiene during menstruation. These need assessment findings served as a basis for conducting the Focus Group Discussion (FGD).

Focus Group Discussion

The participants of the FGD consisted of one expert (a biology teacher at SMP Negeri 1 Dau) and seven female students aged 13–14 years, all of whom had experienced menstruation and actively used Instagram. Therefore, they were considered capable of providing a representative overview regarding the development of Instagram-based educational media on menstrual hygiene. The results showed that all student participants supported the development of Instagram-based educational media on personal hygiene during menstruation. They suggested that the media should be delivered in the form of audio-visual content (reels videos) and visual content (feed images), and expressed a desire for the inclusion of interactive features such as quizzes. The students also emphasized that the media should provide more complete coverage of practical aspects, particularly step-by-step procedures for maintaining menstrual hygiene, including information on proper handwashing using the six WHO-standard steps, potential health impacts of improper hygiene practices, and myths and facts related to menstrual hygiene. The expert recommended that the material should use language that is easy to understand and avoid overly scientific terminology, so that users can clearly grasp the messages presented in the educational media.

Prototype Development

Based on the needs assessment and FGD, the educational media was developed in the form of Instagram feed images and Reels videos. The final product incorporated visual and audiovisual materials and practical information related to menstrual hygiene.

Figure 1. Results of Developing an Instagram-Based Educational Media Account



Figure 2. Educational Media Feeds

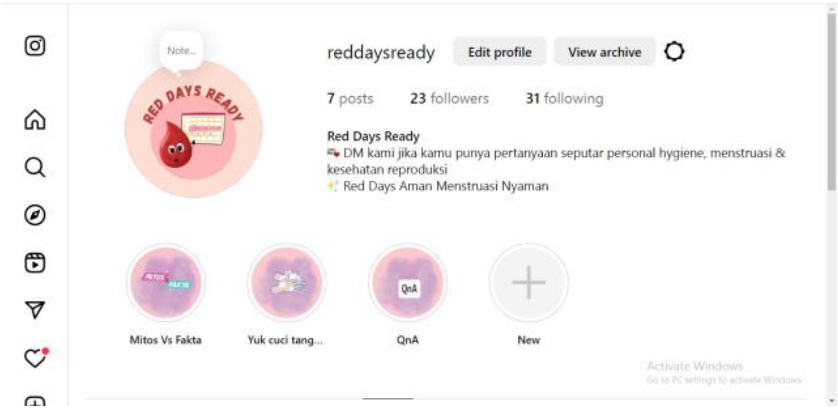
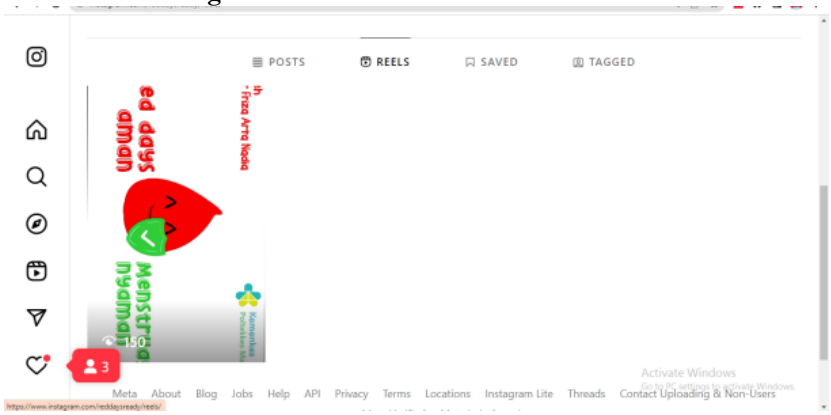


Figure 3. Educational Media Video Reels



The developed media was subsequently evaluated by material and media experts. Revisions were implemented based on their comments and recommendations before the product was tested in a small group.

Expert Validation and Small-Group Trial

Table 1. Final Validation and Small-Group Trial Results

Assessment	Percentage	Category
Material expert validation	100%	Very Eligible
Media expert validation	100%	Very Eligible
Small-group trial	83%	Very Positive

The material expert and media expert both provided a feasibility score of 100%, classified as very eligible. The small-group trial involving 15 female students resulted in an 83% response, categorized as very positive.

DISCUSSION

Instagram-based educational media on personal hygiene during menstruation. The development results in the form of feed images and reels videos demonstrated excellent feasibility, with expert validation achieving a score of 100%, indicating the appropriateness of both the content and visual presentation of the media. In addition, the small-group trial obtained a score of 83%, categorized as positive, which indicates that the media was attractive, understandable, and well accepted by adolescents. These findings are consistent with Borg and Gall's principles, which emphasize that need assessment and expert validation are key stages in producing an effective and appropriate educational product.

Based on the analysis of both the development process and its outcomes, it can be concluded that the use of Instagram-based educational media in the form of reels and feed images is highly relevant to the current needs of adolescents. The developed media not only meet expert-defined feasibility standards, but also is well received by adolescents as the end users. The visual and audio-visual formats allow the material to be delivered in a more engaging and easily understood manner compared to conventional media such as printed books. This is in line with the Cognitive Theory of Multimedia Learning (Mayer, 2001). which states that educational media containing both visual and audio-visual elements (such as Instagram feeds and reels) is more effective than using a single format, as it engages multiple senses and enables learners to gain a more concrete learning experience (Dale's Cone of Experience).

The findings of this study are supported by previous research on the use of Instagram as a nutrition education intervention, which showed that Instagram-based media is effective in improving adolescents' nutritional knowledge and behavior, particularly when the intervention is delivered intensively and continuously. For example, (Simatupang, 2024) found that Instagram posts combining static visuals and infographics increased nutrition knowledge scores among high-school students by 25%. Similarly, (Hernianti & Citrakesumasari, 2023) reported that Instagram was found to be more effective than WhatsApp in raising adolescents' knowledge about anemia because its visual-based and interactive features facilitate better message processing and retention. Unlike WhatsApp, which relies mainly on text communication, Instagram allows the use of infographics, videos, and repeated exposure through feeds and stories, which enhance engagement and comprehension. This indicates that multi-format content combining both static visuals and dynamic videos is more effective in sustaining adolescents' attention and comprehension. Accordingly, the main difference between this study and previous studies lies in the intervention design, specifically the use of a structured and scheduled combination of reels (audio-visual) and feeds (visual)**,** supported by expert validation and iterative revision. This approach enhanced the feasibility and acceptance levels, addressing limitations observed in previous single-format interventions.

Similar results were also reported in studies In line with research (Kurniawati et al., 2024) which revealed the advantages of Instagram in the aspect of interactivity, Instagram can highlight its role in creating educational accounts that display data, knowledge and information in an eye-catching display. through the regular upload feature, reels, Instagram stories, direct messages because this convenience is obtained for free. So that Instagram social media becomes a learning medium for students who have more interactivity, not just reading and watching education, this makes education relatively easy to understand.highlighting Instagram's high potential as an educational platform due to its combination of visual, audio-visual, and interactive elements, making the delivery of materials more engaging and easier to understand, especially for younger generations. Nevertheless, the effectiveness of Instagram as an educational medium is highly dependent on the content format and presentation strategy. In addition, the article *Exploring the Potential of Reels as an Educational Tool* noted that while reels are effective in capturing initial attention, the use of reels alone is often insufficient to build deeper understanding. Therefore, additional visual content is required to reinforce the material.

Accordingly, the main difference between this study and previous studies lies in the intervention design, specifically the use of a structured and scheduled combination of reels (audio-visual) and feed (visual) formats, which resulted in a more significant increase in adolescents' knowledge (Raj & Daniel, 2024). Other studies have reported that Instagram-based educational interventions did not result in significant knowledge improvements; however, the present study demonstrated a positive impact on adolescents' knowledge, which may be attributed to the combined use of reels (audio-visual) and feed/carousel (static visual) formats that allowed adolescents to receive information more comprehensively and progressively.

Despite these strengths, this study has some limitations that should be considered. First, the media was developed on the Instagram platform, which can only be accessed by users who have an Instagram account. Although the sharing feature allows the media to be disseminated via other platforms, such as WhatsApp, Facebook, or Telegram, the shared content is limited to links. Thus, individuals who do not have an Instagram account need to download the application first or access it through other means. Second, because this study employed a research and development design, it cannot be conclusively determined whether the developed media will directly improve knowledge and personal hygiene behavior during menstruation. Although the small-group trial showed a positive response, this does not necessarily indicate actual changes in knowledge or behavior. According to behavioral change theory, the development of behavioral change is not solely determined by the provision of information, but rather through a series of gradual stages beginning with increased knowledge, followed by changes in attitude, and eventually leading to actual behavior. The Theory of Planned Behavior (Ajzen, 1991) states that individuals will only change their behavior if they possess sufficient knowledge, a positive attitude, and a strong sense of control over the behavior in question.

Therefore, although the developed educational media received positive responses in the small-group trial, these results are not sufficient to conclude that changes in knowledge or behavior have occurred. Further stages and reinforcement of the intervention are required to ensure that the information received is fully internalized by adolescents and translated into hygienic behavior during menstruation. From a practical perspective, the findings of this study suggest that systematically designed educational media based on appropriate research procedures can serve as an effective educational tool in the digital era, particularly for adolescent girls who have recently begun menstruating. This supports strategies for providing communication, information, and education on reproductive health. Consistent with the role of midwives as mandated in the Law No. 4 of 2019 (Articles 47 and 51), this media can be an effective alternative for health education among adolescents. By utilizing reels and feed features, the developed media can be packaged in an attractive manner without appearing didactic, thereby effectively reaching adolescents and enhancing their understanding and awareness of personal hygiene during menstruation in an enjoyable and comprehensible way.

In addition, the developed media can be used as an alternative learning resource in schools by integrating it into curricula related to reproductive health, or as a reference material in midwifery courses on reproductive and community health, particularly in the context of menstrual hygiene. This study provides evidence that, in the current digital era, learning methods must also adapt to technological developments, including the use of digital media such as Instagram. Despite its strengths, this study has several limitations. First, the small sample size limits the generalizability of the findings. Second, as the media was delivered via Instagram, its effectiveness may be influenced by users' digital literacy and access to internet-connected devices. Adolescents with limited technological skills or unstable internet access may find it difficult to engage fully with the content. Third, cultural differences related to menstrual hygiene were not examined, which may affect the broader applicability of the media. Future studies should involve larger and more diverse samples, explore offline or blended learning approaches to improve accessibility, and incorporate culturally sensitive content through collaboration with educators and health practitioners. Longitudinal studies are also recommended to assess knowledge retention and behavioral outcomes over time.

CONCLUSIONS

This study aimed to develop an Instagram-based educational media on menstrual personal hygiene that is relevant to the needs of adolescents. The development process followed the Borg and Gall model, which was simplified into seven steps, including standard media evaluation, need assessment, focus group discussion, prototype drafting, expert validation, prototype revision and finalisation, and small group trial. The results of the standard media evaluation indicated that the previously used menstrual comic book still had several limitations, such as being printed and easily damaged, limited to static text and images, lacking interactivity, and not sufficiently emphasizing personal hygiene aspects during menstruation. The need assessment showed that all students were not familiar with the menstrual comic book, even though they considered it interesting and easy to understand; however, the content regarding practical menstrual personal hygiene was still inadequate. The focus group discussion revealed that all participants agreed to redesign the comic book into an Instagram-based educational media combining feed images (visual) and reels (audio-visual) to make it more attractive and aligned with adolescents' preferences in accessing digital information. Expert validation involving a content expert and media expert indicated that the media obtained a "very feasible" category with a feasibility score of 100%**.** In the small-scale trial conducted on 15 junior highschool students**,** 83% of the respondents provided a "very positive" response to the developed educational media. Therefore, the Instagram-based educational media is considered effective, attractive, and relevant to be used as a means of reproductive health education, especially for improving menstrual personal hygiene among adolescents. Nevertheless, this study was limited to a small-group trial stage; hence, future studies are recommended to use a longitudinal design, involve a control group and larger sample size, and evaluate both knowledge retention and behavioural changes in a more comprehensive manner.

The effectiveness of the developed Instagram-based educational media was assessed through qualitative feedback and comprehension questions administered after participants interacted with the media. The findings indicated that the media was perceived as attractive, clear, and useful, demonstrating good feasibility and user acceptability. These results suggest that Instagram-based educational media can serve as an effective and engaging tool for reproductive health education, particularly in improving menstrual hygiene knowledge among adolescents.

However, the present study was limited to a small-group trial and primarily focused on evaluating feasibility rather than measurable improvements in knowledge or behavioral change. Therefore, future research is recommended to adopt a more rigorous design by incorporating pre- and post-intervention assessments, control groups, and larger sample sizes. Longitudinal follow-up studies are also encouraged to examine knowledge retention and behavioral outcomes, thereby providing stronger empirical evidence of the media's long-term educational effectiveness.

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