



COMIC MEDIA AS AN EFFORT TO IMPROVE KNOWLEDGE AND ATTITUDES ABOUT MENARCHE

Nur Sophia Matin^{1,2} , Ivon Diah Wittiarika¹ , Zakiyatul Faizah³ 

¹ Midwifery, University of Airlangga, Surabaya, Indonesia

² Midwifery, STIKes Maharani, Malang, Indonesia

³ Medical Biology, University of Airlangga, Surabaya, Indonesia

Correspondence address:

Surabaya, Indonesia

Email: nursophia81@gmail.com

Abstract

Background: The age of menarche is getting younger, yet many elementary students are not prepared in terms of knowledge and attitudes. Comic media as an interactive educational method can increase understanding about menarche in a fun and easy-to-understand way. **Objective:** To analyze the effect of comic media on improving knowledge and attitudes about menarche in fifth-grade elementary school girls. **Method:** A quasi-experimental study with a pretest-posttest design in the treatment (comic) and control (lecture) groups using total sampling of 66 fifth-grade girls who had not experienced menarche. Data were analyzed using paired t-test and independent t-test. **Results:** There was a significant increase in knowledge in the comic group ($p=0.000$). Although not statistically significant, there was a positive increase in attitudes in the comic group compared to lectures. **Conclusion:** Comic media is effective in increasing knowledge and potentially improving the attitudes of elementary school girls regarding readiness for menarche.

Keywords: *Comic, menarche, knowledge, attitudes, health education*



INTRODUCTION

Menarche marks the beginning of reproductive ability in girls and typically occurs between the ages of 10 and 14. However, global studies show a trend of decreasing age at menarche due to improved nutrition and lifestyle changes, resulting in earlier onset in some children (Lusiana et al., 2023; Shrestha et al., 2025). This condition can affect children's psychosocial readiness, especially if they lack adequate knowledge about the bodily changes that occur during menarche, leading to anxiety, fear, and rejection of this natural process (Hidayah et al., 2021).

Unfortunately, education about reproductive health, particularly about menarche, is often neglected in elementary schools, even though this period is crucial for developing children's reproductive health understanding (Suarniti et al., 2024). Data shows that many girls experience menarche without prior knowledge, thus viewing menstruation as shameful or even a disease (Triana et al., 2023). Therefore, effective and enjoyable educational interventions are needed to help children understand menarche as part of a normal developmental process.

Comics are a health education tool that can be used to provide an understanding of menarche in a visually appealing and easily understood way for children (Bahij & Dzul'arfah, 2022). Research shows that comics can increase children's knowledge and influence attitudes regarding reproductive health in an interactive, enjoyable, and reusable manner (Septialti et al., 2022). The advantage of comics lies in their ability to package health education materials with illustrations and narratives appropriate to the cognitive developmental level of elementary school children.

However, the use of comics as a means of educating school-aged children about menarche is still not widely implemented in Indonesia, despite the significant potential of this medium for increasing girls' knowledge and positive attitudes about menarche (Safitri, 2023). Research on the effectiveness of comics in menarche education is crucial for providing empirical evidence for more innovative reproductive health education strategies in elementary schools, in line with the demands for implementing reproductive health programs that are adaptive to children's characteristics.

This study aims to analyze the effect of comic book media on improving knowledge and attitudes about menarche in fifth-grade elementary school students. It is hoped that the results of this study can serve as a basis for developing more effective visual-based reproductive health education methods and serve as recommendations for schools and health professionals in improving girls' readiness to face menarche with a correct understanding.



METHOD

This study employed a quasi-experimental design with a pretest-posttest control group approach. This design allowed researchers to compare the effectiveness of using comics and lectures in improving students' knowledge and attitudes regarding menarche. The study was conducted in four elementary schools in Malang City and Regency. Researchers considered accessibility and the schools' readiness to support reproductive health education for fifth-grade female students who had not yet experienced menarche.

The population in this study was all fifth-grade female students who had not yet experienced menarche in the four elementary schools, with a total sample of 66 students selected using a total sampling technique. The sample was then divided into two groups: a treatment group, which received education using comics, and a control group, which received education using the same lecture method. The educational material in the comics included information on the definition of menarche, early signs of menarche, how to maintain menstrual hygiene, and what to do when experiencing menarche. The intervention was delivered in one session, lasting approximately 60 minutes for each group.

The research instrument used a knowledge questionnaire consisting of 20 multiple-choice questions and an attitude questionnaire with 15 Likert scale statements that have been validated and have good reliability values with the Cronbach Alpha test. Data collection was carried out by administering a pretest before the educational intervention and a posttest after the intervention was given to measure the increase in knowledge and changes in attitudes after the education was given. Data were analyzed using a paired t-test to determine the differences before and after the intervention in each group and an independent t-test to see the differences in results between the treatment group and the control group. This study has received ethical approval from the Research Ethics Committee of the Faculty of Medicine, Airlangga University, and informed consent was obtained before the study was conducted.

RESULT AND DISCUSSION

This study involved 66 fifth-grade elementary school students who had not yet experienced menarche. They were divided into a treatment group (comic media) of 33 students and a control group (lecture media) of 33 students. Respondent characteristics based on age showed a mean age of 11 years in both the treatment and control groups. All respondents completed the intervention and participated in the pretest and posttest according to the predetermined schedule.



Figure 1. Menarche comic used for the study

The increase in knowledge about menarche before and after the intervention in the treatment group showed a significant increase in scores. The mean knowledge score before the intervention in the treatment group was 12.18 and increased to 17.33 after the comic media education, with a p-value of 0.000. This indicates that comic media is effective in significantly improving students' understanding of the concept of menarche.

In the control group, which received education using the lecture method, knowledge scores also increased from an average of 12.06 to 15.48, with a p-value of 0.000. However, the results of the independent t-test showed no significant difference in posttest scores between the treatment and control groups ($p=0.500$), indicating that both methods were equally effective in increasing knowledge, although the average score increase in the comic group was higher.



For the attitude variable, there was an increase in the average score in the treatment group from 55.21 to 58.03 ($p=0.132$), while the control group saw a very small increase from 54.76 to 55.03 ($p=0.830$). The results of the independent t-test on posttest attitude scores between the two groups showed a $p=0.256$, indicating no significant difference between the two groups, although descriptively, the comic group experienced a greater improvement in attitudes than the lecture group.

The following table provides a more comprehensive understanding of the data:

Table 1. Comparison of Knowledge and Attitude Scores Before and After Intervention

Variable	Group	Pretest (Mean \pm SD)	Posttest (Mean \pm SD)	p-value (Paired t-test)
Knowledge	Comic	12,18 \pm 2,31	17,33 \pm 1,52	0,000
Knowledge	Lecture	12,06 \pm 2,54	15,48 \pm 1,80	0,000
Attitude	Comic	55,21 \pm 4,13	58,03 \pm 3,90	0,132
Attitude	Lecture	54,76 \pm 4,27	55,03 \pm 4,18	0,830

Table 2. Independent t-test of Posttest Scores of Knowledge and Attitude

Variable	Group	Posttest (Mean \pm SD)	p-value (Paired t-test)
Knowledge	Comic	17,33 \pm 1,52	0,500
Knowledge	Lecture	15,48 \pm 1,80	
Attitude	Comic	58,03 \pm 3,90	0,256
Attitude	Lecture	55,03 \pm 4,18	

The statistical test comparing posttest scores between the treatment and control groups yielded a $p=0.5$, indicating a $p>0.05$, indicating no significant difference in knowledge between the treatment and control groups. For the attitude group, the statistical test comparing posttest scores between the treatment and control groups yielded a $p=0.256$, indicating a $p>0.05$, indicating no significant difference in attitudes.

Although neither variable demonstrated statistical significance, the increase in scores in the comic group demonstrates the potential of this medium to shape students' positive attitudes regarding menarche readiness.

These results suggest that comics can be an effective and enjoyable alternative educational method for elementary school girls, with the potential to improve their understanding and readiness for menarche, as well as support the implementation of more adaptive reproductive health education in elementary schools.

The results of this study indicate a significant increase in knowledge in the group of girls educated using comics, supporting the findings of Hidayah (2021) who demonstrated the effectiveness of comics in improving girls' understanding of menarche. This increase in knowledge occurs because comics present information in an engaging visual format, making it easier for children to understand the concepts presented. This aligns with visual learning theory, which explains that visualization can improve information retention.

Furthermore, comics have been shown to stimulate students' interest in reading and enthusiasm for learning reproductive health (Suarniti et al., 2024). Children tend to focus more when reading comics because the illustrations and storylines are relevant to their daily lives, enabling the health messages conveyed effectively. This finding aligns with research by Bahij & Dzul'arfah (2022), which showed that comics about puberty based on Islamic values were effective in improving reproductive health understanding in elementary school students.

Despite the increase in knowledge, this study found that the increase in attitudes in the comic group was not statistically significant, although descriptively, it showed a positive trend. This suggests that changing attitudes requires a longer time and process than increasing knowledge (Triana et al., 2023). Changes in



attitudes related to menarche readiness are influenced not only by educational media but also by personal experiences, family support, and the child's social environment.

However, the increase in attitude scores in the group exposed to comics demonstrates the positive potential of this medium in shaping children's attitudes regarding menarche readiness (Safitri, 2023). Comics can help children understand menarche as a normal physiological process, thereby helping to reduce fear and anxiety when facing their first menstruation. This aligns with research by Septianti (2022), which showed that comics can positively influence children's attitudes toward reproductive health issues.

Although this study primarily focuses on improving knowledge and attitudes toward menarche readiness, it is also important to consider the broader implications of early menarche. Early onset of menarche has been associated with several physical and psychosocial risks for adolescent girls. Studies have shown that girls who experience menarche at an earlier age are more likely to face challenges such as increased risk of depression, anxiety, low self-esteem, and even engagement in risky behaviors due to a mismatch between physical development and emotional maturity (Lusiana et al., 2023; Shrestha et al., 2025).

From a health perspective, early menarche has been linked to a higher risk of developing metabolic disorders, breast cancer, and reproductive health problems later in life (Triana et al., 2023). Furthermore, early menarche can disrupt the social adaptation of young girls in school and community settings if they are not equipped with appropriate knowledge and emotional support.

This highlights the urgency of implementing effective educational strategies at an early stage, before the onset of menarche. By equipping girls with accurate knowledge and fostering positive attitudes early on, interventions such as comic-based education can help mitigate the potential negative impacts of early menarche. Therefore, reproductive health education should not only aim to increase cognitive understanding but also be part of a preventive approach to support the mental and physical well-being of young girls facing early puberty.

Another factor that can influence improved knowledge and attitudes is the involvement of teachers and health workers in supporting the educational process

using comics in schools. Teacher support can facilitate discussions related to the material in the comics, allowing students to gain a deeper understanding and internalize the values contained within the educational material (Shrestha et al., 2025). Therefore, comics will be more effective if their use is complemented by guided discussions or Q&A sessions.

This study's limitations lie in the short intervention period, which prevented the evaluation of long-term attitude changes. Future research is recommended to employ a longitudinal design to more comprehensively evaluate attitude changes following educational interventions using comics (Suarniti et al., 2024). Furthermore, developing comic materials with local cultural adaptations and language accessible to children will enhance the effectiveness of this medium in reproductive health education.

The results of this study demonstrate that comics can be an innovative alternative for reproductive health education in elementary schools, not only increasing knowledge but also potentially fostering positive attitudes in girls regarding menarche readiness. Implementing comics in health education can support healthy school programs and provide enjoyable reproductive health education for children.

Therefore, integrating comics into the elementary school health curriculum can be an effective and adaptive educational strategy, supporting girls' understanding of reproductive health from an early age, thereby promoting their well-being.

CONCLUSION AND SUGGESTION

Comics as a means of reproductive health education have proven effective in increasing knowledge about menarche among fifth-grade elementary school students. Comics, with their engaging visuals and narratives, can help students understand the concept of menarche in a fun way, making the material easier to grasp and remember. The significant increase in knowledge in the group educated using comics suggests that this method can be an innovative alternative in reproductive health education in elementary schools, particularly in helping prepare students for menarche with a sound understanding.



Although the results of this study indicate that the improvement in attitudes in the comic group was not statistically significant, there was a positive trend towards changes in students' attitudes after receiving education through comics. This suggests that attitude formation requires time and ongoing reinforcement through active mentoring and discussion to ensure students' internalization of the material learned. Therefore, collaboration between schools and health professionals is necessary to support students through reproductive health education activities using media appropriate to their developmental age.

DECLARATION

Conflict of Interest

There is no conflict of interest in this research.

Authors' Contribution

All authors contributed to every stage of the research, from the initial conceptualization and data collection to analysis and manuscript drafting. This reflects the collaborative nature and equal involvement of all contributors throughout the study.

Ethical Approval

This study was approved by the Research Ethics Committee of the Faculty of Medicine, University of Airlangga. Informed consent was obtained from all participants prior to their inclusion in the study.

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Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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