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Optimizing menarche readiness through video and leaflet health education interventions among primary school girls

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ABSTRACT

The counseling process requires engaging media to effectively enhance understanding and promote behavioral change within the target population. This study aimed to evaluate the impact of health counseling delivered through video and leaflet media on adolescents' readiness to face menarche. A quasi-experimental design with a nonequivalent control group was employed. The study population consisted of students in grades 4 to 6 at SDN 101816, totaling 136 individuals. From this population, 60 respondents were selected and divided equally into two groups: one group (n = 30) received counseling via video media, while the other group (n = 30) received counseling through leaflets. Results indicated that adolescents' readiness to face menarche increased following health counseling with video media, with mean scores rising from 26.47 pre-intervention to 31.20 post-intervention, representing an improvement of 4.73 points. Statistical analysis confirmed a significant effect of video-based counseling on readiness ($p < 0.001$). Similarly, counseling using leaflet media resulted in an increase in readiness, with mean scores improving from 24.73 before intervention to 27.10 after, an increase of 2.34 points, also statistically significant ($p < 0.001$). Furthermore, comparison between the two groups revealed a significant difference in the effectiveness of video versus leaflet counseling approaches, favoring video media ($p = 0.002$). These findings suggest that health workers should prioritize the use of engaging media, such as videos, in health promotion efforts aimed at preparing adolescents for menarche.

Keywords: readiness, menarche, video media, leaflet media

INTRODUCTION

Menarche, defined as the first menstrual bleeding, typically occurs between the ages of 10 and 16, often during early adolescence, amidst puberty, prior to entering the reproductive phase (Marques et al., 2022). It serves as an early indicator of secondary sexual characteristics, such as breast development, pubic and axillary hair growth, and changes in fat distribution around the pelvic region, all of which are influenced by the hormone estrogen (Proverawati, 2018). The onset of menstruation can often be experienced by adolescents as a traumatic event. Girls who are unprepared for menarche may develop negative attitudes toward this physiological process, sometimes perceiving menstruation as threatening or distressing (Marván & Alcalá-Herrera, 2014; Rahmadani & Istiqomah, 2025). Such perceptions may lead to irrational fears and anxieties, often accompanied by unusual fantasies, largely associated with the bleeding that occurs during menstruation. In contrast, adolescent girls who receive adequate preparation generally report feelings of happiness and pride, viewing menarche as a marker of biological maturity (Purbowati et al., 2021). Furthermore, insufficient knowledge

about menstruation among adolescent girls can adversely affect the health of their reproductive organs, as many are unaware of proper hygiene practices, including sanitary pad usage and genital care during menstruation (Neupane et al., 2020; Zaidi et al., 2015).

Effective health education requires the utilization of engaging media to facilitate understanding and promote behavioral change among the target audience (Udoudom et al., 2023). Various health education tools are available, with leaflets commonly employed as printed media in health promotion. These typically consist of folded sheets combining text and images to deliver health messages (Rahayu et al., 2021). Additionally, audiovisual media such as videos offer a dynamic and effective means of conveying health information (Rahayuningsih & Kristinawati, 2023).

Studies indicate that adolescent girls must possess adequate knowledge regarding the physiological changes experienced during puberty to prepare effectively for menarche (Salins et al., 2018; Sharma & Pebma, 2019). Studies show that many girls have average or inadequate knowledge about these physiological processes, with one study reporting only 11% of participants having adequate knowledge (Prasad et al., 2020). This lack of understanding can result in poor preparedness for menarche, with one study finding 79.5% of girls unprepared (Sharma & Pebma, 2019). Social prohibitions and restrictions surrounding menstruation contribute to negative perceptions and limited access to accurate information (Salins et al., 2018). Furthermore, Hidayah & Palila (2018) demonstrated that a secure attachment between mother and daughter contributes 9.3% to a girl's readiness for menarche, with such attachment positively influencing the anxiety levels experienced during this transition. To address these issues, researchers emphasize the need for educational programs to improve knowledge and hygiene practices among adolescent girls. Such interventions could help reduce anxiety, improve preparedness, and potentially decrease the risk of reproductive tract infections (Bhore & Kumbhar, 2014; Prasad et al., 2020).

A preliminary study conducted at SDN 101816 indicated that female students possess insufficient knowledge regarding menarche and puberty. Consequently, further research is warranted to evaluate the impact of video media, which can visually and dynamically present complex concepts, alongside leaflets, which effectively convey information through engaging images, on adolescent girls' readiness to face menarche. This study aims to evaluate the impact of using video media and leaflets on adolescent girls' readiness for menarche.

METHODS

This study employed a quasi-experimental design, specifically the nonequivalent control group design. It was conducted at SDN 101816 Pancur Batu, located on Jl. Jamin Ginting, Desa Tengah, Pancur Batu District, involving female students from grades IV to VI in 2022. The research timeline spanned from the proposal submission in March to the final seminar in December. The population comprised all female students in grades IV–VI, totaling 136 students. A sample of 60 students was selected through random sampling based on the Slovin formula and divided into two groups: 30 students in experimental group 1 (video media) and 30 students in experimental group 2 (leaflet media). Data were collected using pre-test and post-test questionnaires to assess adolescent readiness for menarche. The data were analyzed using univariate analysis to describe score distributions and bivariate analysis employing dependent and independent t-tests to evaluate differences both before and after the interventions and between the two treatment groups. Analyses were conducted using SPSS software with a significance level set at 0.05. The results were presented in tables, charts, and descriptive narratives following procedures of editing, coding, scoring, and data entry.

RESULTS

This study involved 60 female students from grades IV to VI, who were divided into two groups. Group 1 received health education through video media, while Group 2 received health education using leaflet media. The objective of the study was to evaluate the effect of health education delivered via video and leaflet media on adolescents' readiness to face menarche at SDN 101816 Pancur Batu. Table 1 displays the frequency distribution of respondents by age, categorized according to the media group to which they were assigned: the video media group and the leaflet media group. Each group consisted of 30 respondents, resulting in a total sample size of 60 participants.

Table 1. Frequency distribution of respondents by age

Age	Video media group	Leaflet media group
10 years	3 (10.0%)	2 (6.7%)
11 years	19 (63.3%)	16 (53.3%)
12 years	8 (26.7%)	12 (40.0%)
Total	30 (100.0%)	30 (100.0%)

Within the video media group, a minority of respondents (n = 3; 10.0%) were 10 years old. The largest subset comprised 19 respondents aged 11 years, accounting for 63.3% of this group. The remaining 8 participants (26.7%) were 12 years old. In the leaflet media group, 2 respondents (6.7%) were 10 years old. The majority were aged 11 years, totaling 16 individuals and representing 53.3% of the group. The largest proportion in this group was observed among 12-year-olds, who numbered 12 and constituted 40.0% of respondents.

Overall, both media groups had an equal number of participants, but the age distribution differed between them. The video media group showed a higher concentration of 11-year-old participants, whereas the leaflet media group exhibited a more balanced distribution between the 11- and 12-year-old age cohorts.

Table 2 presents a comprehensive overview of adolescent readiness for menarche, evaluating the effects of health education delivered by two distinct media: video and leaflet. The data, reported for both pre- and post-intervention phases, enable a clear comparison of changes in readiness within each group.

Table 2. Adolescent readiness for menarche pre- and post-health education

Readiness for menarche	Video media group				Leaflet media group			
	Pre-intervention		Post-intervention		Pre-intervention		Post-intervention	
	n	%	n	%	n	%	n	%
Ready	11	36.7	21	70.0	10	33.3	14	46.7
Not ready	19	63.3	9	30.0	20	66.7	16	53.3
Total	30	100.0	30	100.0	30	100.0	30	100.0

In the video media group, prior to the health education intervention, a majority of adolescents—19 out of 30 participants (63.3%)—were categorized as "Not Ready" for menarche, while only 11 participants (36.7%) were considered "Ready." Following the video-based health education intervention, a substantial positive shift was observed, with the number of adolescents categorized as "Ready" increasing significantly to 21 (70.0%), and those classified as "Not Ready" decreasing to 9 (30.0%). These findings demonstrate the effectiveness of the video intervention in enhancing readiness.

Similarly, the leaflet media group underwent a baseline assessment before the intervention, with 20 out of 30 adolescents (66.7%) identified as "Not Ready" and 10 participants (33.3%) as "Ready." After receiving health education via leaflets, the number of adolescents deemed "Ready" rose to 14 (46.7%), while those classified as "Not Ready" decreased to 16 (53.3%). Although an improvement in readiness was noted, the magnitude of change was less pronounced compared to the video group.

Table 3 presents the Shapiro-Wilk test results assessing the normality of data on adolescent readiness for menarche in both the video media group and the leaflet media group, across pre- and post-intervention measurements. The Shapiro-Wilk test evaluates whether data are drawn from a normally distributed population, a key assumption for many parametric statistical analyses. In this study, p-values above 0.05 indicate that the data do not significantly deviate from normality.

Table 3. Normality test results

Readiness	Video Group	Description	Leaflet Group	Description
Ready	0.432*	Normal	0.546*	Normal

*p value

For the video media group, the Shapiro-Wilk test yielded a p-value of 0.432, indicating a normal distribution of readiness scores. Similarly, the leaflet media group produced a p-value of 0.546, also supporting the assumption of normality. These findings suggest that readiness scores in both groups are appropriately distributed for parametric analysis, without significant skewness or kurtosis.

Table 4. Adolescent readiness pre- and post-intervention using video media and its effects

Readiness	Mean	SD	Difference	Lower	Upper	p-value
Pre-intervention	26.47	5.32	-4.73	-5.72	-3.74	0,000
Post-intervention	31.2	5.36				

The detailed analysis in Table 4 demonstrates that health education delivered via video significantly improved adolescent readiness for menarche. The mean readiness score increased from 26.47 before the intervention to 31.20 after the video-based education. This change was statistically significant ($p < 0.001$), with a 95% confidence interval for the difference of 3.74 to 5.72, indicating a true effect beyond random variation. These findings support the effectiveness of video media as a tool to enhance adolescent preparedness for menarche.

Table 5. Adolescent readiness pre- and post-intervention using leaflet media and its effects

Readiness	Mean	SD	Difference	Lower	Upper	p-value
Pre-intervention	24.73	4.84	-2.34	-2.97	-1.76	0,000
Post-intervention	27.10	4.32				

Analysis of the data presented in the table demonstrates that health education delivered via leaflets had a statistically significant positive effect on adolescents' readiness for menarche. The mean readiness score increased from 24.73 before the intervention to 27.10 afterward. This improvement was statistically significant, with a p-value of <0.001 and a 95% confidence interval for the mean difference ranging from 1.76 to 2.97, indicating the effect is unlikely due to chance. These findings suggest that leaflet-based educational interventions are effective in enhancing adolescent readiness for menarche.

Table 6. Comparison between video and leaflet media

Readiness	Mean	SD	Difference	Lower	Upper	p-value
Video media	31.20	4.32	-4.10	-6.62	-1.26	0,002
Leaflet media	27.10	5.36				

According to Table 6, the average readiness score in the video media group was 31.20, which was higher than that in the leaflet media group, which had a mean score of 27.10. The mean difference between the two groups was 4.10. An independent samples test yielded a p-value of 0.002, which is less than the significance level of 0.05, indicating a statistically significant difference in readiness between the groups. These findings suggest that health education delivered through video media is more effective than leaflet-based education in enhancing adolescents' readiness to face menarche.

DISCUSSION

Health education delivered via video media significantly enhanced adolescents' preparedness for menarche. Prior to the intervention, the average preparedness score among adolescents was 26.47 (SD=5.32). Following the video-based education, this average increased to 31.20 (SD=5.36), representing an improvement of 4.73 points. Questionnaire responses further supported this finding: the percentage of adolescents who believed that menstruation should be openly discussed increased from 79% to 83%, while confidence in managing menstruation rose from 68% to 72%. Notably, the proportion of adolescents changing sanitary pads 3-4 times daily rose markedly from 25% to 83% post-intervention.

This heightened preparedness can be attributed to the capacity of audio-visual media, such as video, to facilitate information assimilation and knowledge acquisition in adolescents, thereby improving memory retention and the application of acquired knowledge. These findings align with the research of Novita et al. (2020), who reported that the majority (90.7%) of elementary school girls were prepared for menarche after receiving health education, with a statistically significant p-value of 0.000 ($p < 0.05$), indicating a substantial difference between pre- and post-intervention states. Similarly, studies highlight that a lack of accurate information and the presence of negative perceptions contribute to inadequate adolescent preparedness for menstruation (Chandra-Mouli & Patel, 2017; Mekle et al., 2020).

A paired samples test corroborated these findings, with a p-value of 0.000 ($p < 0.05$) confirming a significant difference in adolescent preparedness before and after video-based education. This result substantiates the substantial impact of video-based health education on adolescent readiness. These outcomes are consistent with the findings of Purbowati et al. (2021), who reported increased preparedness scores following a video intervention on menstruation, and Handini (2018) who similarly observed that video media enhanced knowledge about menstruation, with average scores rising from 19.9 to 22.0. Video is an effective educational tool as it communicates content through both auditory and visual modalities, thereby supporting more comprehensive transmission of concepts, principles, procedures, and theories (Brame, 2016).

In comparison, health education delivered via leaflet media also led to improved preparedness, although to a lesser extent than video. For the leaflet group, the average preparedness score pre-intervention was 24.73 (SD = 4.84), increasing to 27.10 (SD = 4.32) post-intervention, for a gain of 2.34 points. This outcome is consistent with Handini (2018), who reported that leaflet media improved knowledge about menstruation, with average scores increasing from 18.0 to 20.1. Leaflets, as print-based health promotion materials, typically consist of folded sheets containing text, images, or both.

The paired samples test for the leaflet group also yielded a p-value of 0.000 ($p < 0.05$), indicating a significant difference before and after the intervention. However, the improvement in preparedness achieved through leaflet use was relatively modest. Several questionnaire indicators showed no improvement; for example, the proportion of students changing sanitary pads 3–4 times daily remained at 25%, and understanding that menstruation signifies female maturity did not change. Additionally, declines were observed in some areas, such as the percentage of students recognizing the importance of thorough genital hygiene during menstruation, which decreased from 54% to 25%. This may be attributable to the tendency to rinse with water only, rather than using soap, after menarche. Nonetheless, improvements were observed in other aspects: the percentage of students feeling confident about experiencing their first menstruation increased from 63% to 67%, and fear surrounding menarche declined from 69% to 65%. This preparedness involves several stages, including receiving information, responding, valuing, and assuming responsibility, all of which align with factors influencing attitudes such as knowledge, personal experience, environment, influential individuals, and mass media (Purbowati et al., 2021).

When comparing the two media, the average preparedness score in the video group was 31.20, in contrast to 27.10 in the leaflet group—a 4.1-point higher increase for the video group. An independent samples test ($p = 0.002$; $p < 0.05$) confirmed a statistically significant difference in mean preparedness between the two groups. Consequently, video-based health education had a greater impact on adolescent preparedness for menarche. While girls in both intervention groups (video and leaflet) demonstrated greater preparedness than those in the control group, video was perceived as more engaging and more effective in conveying information compared to leaflets. These findings are further corroborated by previous research demonstrating significant differences in preparedness scores before and after video or leaflet interventions (Dahniman et al., 2016). Preparedness for menarche reflects an individual's readiness for physical maturation, and health education has the potential to improve attitudes and behaviors related to menstruation (Asni & Dwihestie, 2016). Explanations provided through video are generally more meaningful and comprehensive than those in leaflets, which tend to be concise and contain limited illustrations. Although leaflets are practical for retention and review, poor design can impede effective message delivery (Dahniman et al., 2016).

CONCLUSION

This study demonstrates that video-based health education is significantly more effective than leaflet-based education in enhancing adolescent girls' preparedness for menarche. Participants in the video group showed a greater mean increase in preparedness scores, with scores rising from 26.47 to 31.20, compared to the leaflet group, which improved from 24.73 to 27.10. The observed difference—a 4.73-point increase in the video group versus a 2.34-point increase in the leaflet group—was statistically significant ($p = 0.002$). Additional analysis of questionnaire data further supports the superiority of video-based education, revealing marked improvements in the video group across key indicators such as discussions about menstruation, self-efficacy, and frequency of sanitary pad changes. Although leaflet-based education also produced statistically significant gains, the extent of improvement was less substantial than that observed with the video intervention. The increased efficacy of video-based education may be attributed to its ability to deliver comprehensive audio-visual information, facilitating a deeper understanding than can be achieved through traditional leaflets.

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