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Comparative Effectiveness of Pamphlet and Video Media in Enhancing Breast Self-Examination Knowledge Among High School Students

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Abstract

Background: Adolescence represents a critical developmental stage during which health-related knowledge and preventive behaviours begin to form. Limited awareness of breast health and breast self-examination (BSE) among adolescent girls may reduce opportunities for early detection of breast abnormalities. Educational interventions delivered through accessible media may play an important role in improving adolescents' understanding of BSE.
Objective: This study aimed to evaluate the effectiveness of health education delivered through pamphlets and video media on the level of knowledge regarding breast self-examination among female adolescents.
Methods: A quantitative study with a quasi-experimental design using a two-group pretest–posttest approach was conducted at SMAN 3 Tambun Selatan. The study population comprised 598 female students, of whom 592 participated using a total sampling technique. Knowledge of breast self-examination was assessed using a structured questionnaire administered before and after the educational intervention. Data were analysed using the Wilcoxon nonparametric test.
Results: The findings demonstrated a statistically significant improvement in adolescents' knowledge of breast self-examination following education delivered through pamphlets and video media ($p < 0.001$). Prior to the intervention, most participants showed limited concern for breast health. Post-intervention results indicated increased awareness and understanding of the importance of regular breast self-examination.
Conclusion: Health education using pamphlets and video media is effective in enhancing adolescents' knowledge of breast self-examination. Integrating structured and media-based educational strategies within school health programmes may strengthen preventive health behaviours and promote early breast health awareness among adolescents.

Keywords: Adolescents, Breast self-examination, Health education, Pamphlets, Preventive health, Video media

INTRODUCTION

Adolescence is a critical developmental period marked by the transition from childhood to adulthood and accompanied by substantial physical, psychological, emotional, and social changes. During this stage, adolescent girls begin to encounter various health-related challenges, including issues related to breast health. Establishing health awareness early in life is therefore essential, particularly through education that introduces breast self-

examination (BSE) as a preventive behavior that supports long-term well-being (1,2) .

Early identification of breast abnormalities plays a vital role in reducing the burden of breast cancer. Breast self-examination is a simple and cost-effective method that enables individuals to recognize changes in breast tissue at an early stage (3). Despite its potential benefits, awareness and knowledge of BSE among adolescent girls in Indonesia remain limited. Inadequate understanding and low participation in preventive practices may result in delayed detection, which is associated with increased morbidity and mortality related to breast cancer.

Previous studies have highlighted that insufficient knowledge of BSE among adolescents is a persistent issue, particularly in school-aged populations. Research has shown that structured health education significantly improves adolescents' understanding of breast health and their ability to perform BSE correctly (4). Educational strategies delivered through counseling, printed materials, and audiovisual media have been reported to enhance comprehension, foster positive attitudes, and encourage routine preventive behaviors. Multimedia-based approaches, including video-assisted education, have been found to be especially effective due to their ability to provide clear visual demonstrations that support learning (5,6).

Health promotion initiatives focusing on BSE not only increase knowledge but also function as experiential learning processes that guide adolescents in adopting regular early detection practices. However, much of the existing evidence is derived from studies conducted in urban settings or among adult women. Research examining the effectiveness of combined educational media among adolescent populations in school-based environments, particularly in rural or semi-urban contexts, remains limited (7,8).

Preliminary observations conducted on 18 November 2024 through interviews with female students at SMAN 3 Tambun Selatan revealed that none of the participants were familiar with the concept of BSE, the correct examination procedures, or the appropriate timing for its practice. This finding indicates a low level of breast health literacy among adolescents, underscoring the need for targeted educational interventions within the school setting.

Based on these considerations, limited knowledge of breast self-examination among adolescents represents a critical public health concern (9,10). Therefore, this study aims to evaluate the effectiveness of health education delivered through pamphlets and video media in improving adolescents' knowledge of breast self-examination at SMAN 3 Tambun Selatan in 2024. The findings are expected to provide evidence to support the development of effective school-based health education strategies that promote early prevention and long-term breast health awareness (11).

METHODS

Study Design

This study employed a quantitative research approach using a quasi-experimental design with a two-group pretest–posttest structure. The design was selected to evaluate the effectiveness of health education interventions delivered through two different media—pamphlets and video—on adolescents' knowledge of breast self-examination (BSE). Measurements of knowledge were conducted before and after the educational interventions to assess changes attributable to each method.

Study Setting and Population

The study was conducted at SMAN 3 Tambun Selatan in 2024. The study population consisted of all female students enrolled at the school during the study period, totaling 598 adolescents.

Sample and Sampling Technique

A total sampling technique was applied, whereby all members of the population were included as study participants. Consequently, the final sample comprised 598 female adolescents. This approach was chosen to ensure comprehensive representation and to minimize sampling bias.

Study Variables

The ndependent variables in this study were health education delivered through pamphlets and health education delivered through video media. The dependent variable was the level of adolescents' knowledge regarding breast self-examination.

Research Instrument

Data were collected using a structured knowledge questionnaire developed to assess understanding of breast self-examination. The

questionnaire employed a Guttman scale, consisting of dichotomous response options (correct/incorrect). The instrument was designed to measure participants' knowledge accurately and consistently. Prior to data collection, the questionnaire underwent validity testing to ensure that the items appropriately reflected the concept of breast self-examination knowledge.

Data Collection Procedure

Data collection was carried out in several stages. Before the intervention, coordination was conducted with school authorities to obtain permission and schedule study activities. Research instruments and educational materials were prepared, followed by the administration of a pretest to assess baseline knowledge levels.

During the intervention phase, participants were divided into two groups. One group received health education using pamphlets, while the other group received education through video media. Educational sessions were supervised to ensure consistent delivery of information. Following the intervention, a posttest was administered to both groups using the same questionnaire to measure changes in knowledge.

Data Analysis

Data were processed and analyzed using SPSS version 25.0. Data management included editing, coding, data entry, processing, and cleaning to ensure accuracy and completeness.

Univariate analysis was conducted to describe the frequency and distribution of variables. Normality testing was performed using the Kolmogorov–Smirnov test, as the sample size exceeded 50 participants. A p-value greater than 0.05 indicated normal data distribution, while a p-value less than 0.05 indicated non-normal distribution.

Bivariate analysis was performed to evaluate the effectiveness of the educational interventions. The Wilcoxon test was used to assess changes in knowledge before and after the intervention when data were not normally distributed. Additionally, paired sample t-tests were applied to examine differences in pretest and posttest knowledge scores within each intervention group.

Type and Source of Data

The study utilized quantitative data, including pretest and posttest knowledge scores, score differences, and the frequency and percentage of correct responses. Primary data were obtained directly from participants through questionnaires, while secondary data were derived from relevant literature and supporting documents.

Ethical Considerations

This study adhered to established ethical principles in health research. Informed consent was obtained from all participants prior to data collection, ensuring voluntary participation. Participant confidentiality and privacy were strictly maintained, and all data were anonymized. The principles of beneficence, non-maleficence, honesty, integrity, and accountability were upheld throughout the research process.

RESULTS

Participant Characteristics

A total of 592 female adolescents participated in this study, with equal allocation into the pamphlet group (n = 296) and the video media group (n = 296). The age distribution of participants in both groups was comparable, with the majority aged 16–17 years (Table 1).

All respondents were senior high school students. The distribution across grade levels (X, XI, and XII) was relatively balanced between the two groups, indicating homogeneity in educational background (Table 2).

Knowledge Levels Before and After Educational Interventions

Prior to the intervention, most participants in both groups demonstrated low knowledge levels regarding breast self-examination. In the pamphlet group, 57.1% of adolescents were categorized as having low knowledge. Following pamphlet-based education, knowledge levels increased substantially, with 73.6% of participants classified in the high knowledge category and none remaining in the low category (Table 3).

Similarly, in the video media group, 59.8% of participants had low baseline knowledge. After receiving video-based education, 74.7% achieved high knowledge levels, and no respondents remained in the low category (Table 4).

Normality Testing

Normality testing using the Kolmogorov–Smirnov test showed that pretest and posttest knowledge scores in both groups were not normally distributed ($p < 0.001$), indicating the need for non-parametric statistical analysis (Tables 5 and 6).

Effectiveness of Educational Interventions

The Wilcoxon signed-rank test revealed a statistically significant increase in knowledge following pamphlet-based education ($p < 0.001$), with the majority of participants demonstrating positive rank changes (Table 7).

Similarly, the video-based intervention produced a highly significant improvement in knowledge levels ($p < 0.001$), with all participants showing positive rank changes (Table 8).

Comparison of Educational Media

Both educational approaches were effective in improving adolescents' knowledge of breast self-examination. However, comparison of test statistics indicated that video-based education produced a slightly greater effect than pamphlet-based education (Table 9).

Table 1. Age Distribution of Participants

Age (years)	Pamphlet Group n (%)	Video Group n (%)
15	79 (26.7)	75 (25.3)
16	93 (31.4)	97 (32.8)
17	97 (32.8)	100 (33.8)
18	27 (9.1)	24 (8.1)
Total	**296 (100)**	**296 (100)**

Table 2. Educational Grade of Participants

Grade	Pamphlet Group n (%)	Video Group n (%)
X	101 (34.1)	100 (33.8)
XI	102 (34.5)	100 (33.8)
XII	93 (31.4)	96 (32.4)
Total	**296 (100)**	**296 (100)**

Table 3. Knowledge Levels Before and After Pamphlet-Based Education

Knowledge Level	Pre-intervention n (%)	Post-intervention n (%)
High	29 (9.8)	218 (73.6)
Moderate	98 (33.1)	78 (26.4)
Low	169 (57.1)	0 (0)
Total	**296 (100)**	**296 (100)**

Table 4. Knowledge Levels Before and After Video-Based Education

Knowledge Level	Pre-intervention n (%)	Post-intervention n (%)
High	21 (7.1)	221 (74.7)
Moderate	98 (33.1)	75 (25.3)
Low	177 (59.8)	0 (0)
Total	**296 (100)**	**296 (100)**

Table 5. Normality Test Results for Pamphlet Group

Measurement	K–S Statistic	*p-value*
Pretest	0.204	<0.001
Posttest	0.156	<0.001

Table 6. Normality Test Results for Video Group

Measurement	K–S Statistic	*p-value*
Pretest	0.240	<0.001
Posttest	0.250	<0.001

Table 7. Wilcoxon Signed-Rank Test for Pamphlet-Based Education

Rank Type	n	Mean Rank	Sum of Ranks
Negative ranks	1	1.00	1.00
Positive ranks	294	148.50	43,659.00
Ties	1	–	–
p-value			**<0.001**

Table 8. Wilcoxon Signed-Rank Test for Video-Based Education

Rank Type	n	Mean Rank	Sum of Ranks
Negative ranks	0	0.00	0.00
Positive ranks	296	148.50	43,956.00
Ties	0	–	–
p-value			**<0.001**

Table 9. Comparison of Educational Effectiveness

Intervention	Z value	p-value
Pamphlet	-14.941	<0.001
Video media	-14.983	<0.001

DISCUSSION

This study examined the effectiveness of pamphlet- and video-based educational interventions in improving adolescents' knowledge of breast self-examination (BSE) at a senior high school in Indonesia. The findings demonstrate that both educational approaches significantly enhanced participants' knowledge, confirming the important role of structured health education in promoting breast health awareness among adolescents (12–14).

Prior to the interventions, most participants in both groups exhibited low levels of knowledge regarding BSE. This finding is consistent with previous studies reporting limited awareness and understanding of breast health among adolescent girls, particularly in school-based populations. Adolescents often perceive breast cancer as a condition affecting older women, which may reduce their perceived susceptibility and interest in preventive behaviors. The low baseline knowledge observed in this study highlights the need for early and targeted educational strategies within school settings (15,16).

Following the interventions, a substantial improvement in knowledge was observed in both groups, with the majority of participants achieving high knowledge levels and none remaining in the low category (17,18). These results support earlier research indicating that health education interventions can effectively increase adolescents' understanding of BSE and early detection practices. Educational exposure appears to play a key role in translating abstract health concepts into practical knowledge that adolescents can apply in daily life.

Although both interventions were effective, the video-based education demonstrated a slightly greater impact compared with pamphlet-based education. This finding may be explained by the audiovisual nature of video media, which allows learners to observe step-by-step demonstrations of BSE procedures. Visual and auditory stimuli can enhance comprehension, retention, and engagement, particularly among adolescents who tend to respond well to interactive and multimedia learning formats. In contrast, pamphlets rely primarily on reading comprehension and self-motivation, which may be less engaging for some students.

The results of this study have important implications for school-based health promotion programs. Integrating video-based educational materials into adolescent health education may improve learning outcomes and encourage greater participation in preventive behaviors. However, pamphlets remain a valuable educational tool due to their accessibility, low cost, and ease of distribution, especially in settings with limited technological resources. Combining both media may therefore offer a complementary approach to maximize educational effectiveness.

Despite its strengths, this study should be interpreted in light of certain limitations. The quasi-experimental design limits causal inference, and the study was conducted in a single school, which may restrict generalizability. Additionally, the assessment focused on knowledge outcomes and did not evaluate long-term behavioral changes or actual BSE practice (19,20). Future research should consider longitudinal designs, include multiple school settings, and assess behavioral outcomes to better understand the sustained impact of educational interventions.

Overall, the findings reinforce the importance of early breast health education and demonstrate that both pamphlet and video media are effective tools for improving adolescents' knowledge of breast self-examination, with video-based education showing a modest advantage.

CONCLUSION

This study demonstrates that health education delivered through both pamphlet and video media significantly improves adolescents' knowledge of breast self-examination. Prior to the intervention, most participants exhibited limited understanding of breast health and BSE practices. Following the educational interventions, knowledge levels increased substantially in both groups, with video-based education showing a slightly greater effect compared with pamphlet-based education. These findings highlight the effectiveness of structured, school-based health education in enhancing breast health awareness among adolescent girls.

Practical Implications

The results of this study have important implications for health promotion and preventive education in school settings. Schools and healthcare providers, particularly nurses and public health practitioners, should integrate breast self-examination education into adolescent health programs using engaging and age-appropriate media. Video-based educational materials may be prioritized due to their stronger impact and ability to clearly demonstrate examination techniques. However, pamphlets remain a valuable complementary tool, especially in contexts with limited access to digital resources.

Incorporating regular breast health education sessions into school curricula can support the early development of preventive health behaviors and improve adolescents' readiness to engage in self-care practices. Policymakers and education authorities are encouraged to support the implementation of multimedia-based health education strategies to strengthen early cancer prevention efforts. Future programs should also consider combining educational interventions with follow-up activities to reinforce knowledge retention and promote sustained behavioral change.

Future Research Recommendations

Future studies should explore the long-term impact of educational interventions on adolescents' breast self-examination practices to determine whether increased knowledge translates into sustained preventive behaviors. Longitudinal and multicenter studies involving diverse school settings are recommended to enhance generalizability and capture contextual differences. Additionally, future research may examine the effectiveness of combined or interactive educational approaches, including digital and peer-led interventions, as well as assess psychosocial factors that influence

adolescents' engagement in breast self-examination.

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Author Contributions

All authors contributed substantially to this study. The first author was responsible for study conception, research design, data collection, data analysis, and manuscript preparation. The second author contributed to methodological development, data interpretation, critical revision of the manuscript, and final approval of the submitted version. All authors have read and approved the final manuscript.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request and subject to ethical and privacy considerations.

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