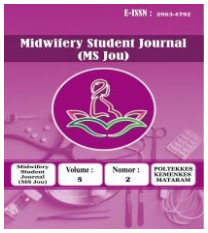
Midwifery Student Journal (MS Jou)
ISSN: 2693-4792 (Online)
Website: https://msj.poltekkes-mataram.id/index.php/home/index



Three-Dimensional Clay Video Education and Adolescent Knowledge of Breast Self-Examination

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ABSTRACT

Adolescents may have limited knowledge of breast self-examination (BSE; locally termed SADARI). This one-group pretest–posttest study assessed knowledge before and after three-dimensional clay video education among 40 girls at Hadil Islah Islamic Boarding School in the Bagu Community Health Center service area. Participants were selected by simple random sampling. Knowledge questionnaires were administered before and after education, and scores were compared using the Wilcoxon test. Median knowledge increased from 5.00 (range 3–11) to 14.00 (range 10–15), with a significant pre–post difference ($Z = -5.525$; $p < 0.001$). All 40 participants reportedly had no prior BSE information. These findings indicate improved short-term knowledge, but the uncontrolled design precludes causal attribution. Controlled follow-up studies are warranted.

Keywords: 3D clay video; breast self-examination; knowledge; adolescent girls; boarding school

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Received August 21, 2026, Accepted August 26, 2026, Published October 30, 2026

INTRODUCTION

Breast cancer is a major women's health concern. The original manuscript cites GLOBOCAN 2022 estimates of approximately 2.3 million new cases and more than 670,000 deaths globally, and an Indonesian estimate of 68,858 new cases in 2020. These population-level figures provide context but do not indicate the risk of breast cancer among adolescent girls. The educational question addressed here is whether students can improve their knowledge of breast self-awareness and appropriate help-seeking.

Provincial health reports from West Nusa Tenggara describe breast examinations, detected lumps, suspected cancer cases, and referrals among adult women. The source cites 107,148 clinical examinations among women aged 30–50 years in 2024, with 274 lumps, 61 suspected cases, and 117 referrals recorded. Local service figures support the importance of awareness and timely assessment when breast changes are noticed.

Breast self-examination (BSE), called SADARI in Indonesia, involves awareness of normal breast appearance and attention to unusual changes. Adolescence is a period of rapid physical and psychosocial development, during which girls may benefit from age-appropriate education about breast changes and appropriate help-seeking. Educational activities should not imply that BSE alone replaces professional assessment or established age-appropriate screening recommendations.

The manuscript describes limited knowledge and practice of SADARI among adolescents in previous studies, including findings reported by Hidayah and Amin (2024) and Fitriwati (2022). Printed descriptions or didactic presentations may not sufficiently communicate an unfamiliar

clinical concept. Animated audiovisual media can provide a clear sequence of images, narration, and memorable characters.

A three-dimensional clay video uses modeled figures, animated movements, and narration to present health information in a visually sequenced format. In this study it was designed to introduce SADARI-related breast awareness and the steps described in the school health education material, rather than relying only on static descriptions. Prior audiovisual educational studies reported knowledge gains (Fitriana, 2022; Surury et al., 2020), but the response to a clay-animation format among girls in an Islamic boarding-school setting had not been established locally.

The study therefore aimed to compare girls' knowledge about SADARI before and after a 3D clay video education session at Hadil Islah Islamic Boarding School within the service area of the Bagu Community Health Center.

METHODS

A quantitative one-group pretest–posttest design was used at Hadil Islah Islamic Boarding School in the Bagu Community Health Center service area. The detailed Methods section of the supplied research identifies a June–July 2026 study period and a population of 68 eligible girls, from which 40 were recruited by simple random sampling following a Slovin-based calculation. Its abstract instead gives a population of 130 and the year 2025; the study register must determine the final population and year. The Methods specifies eligibility ages 12–17 years, whereas the observed data include an 18-year-old. The study therefore requires author verification of the sampling frame and age criteria before final submission.

Participants completed a questionnaire on SADARI knowledge before and after an educational presentation using a 3D clay-animation video. The video introduced breast awareness and described SADARI through modeled visual characters, movement, and narration. Paired knowledge scores were compared using a Wilcoxon signed-rank test at $p < 0.05$. The original record did not specify video duration, the interval to posttest, questionnaire item count or documented validation coefficients, and no values have been inferred for these items.

The supplied manuscript also does not document ethics approval, assent/guardian permission for adolescent participants, or a complete consent procedure. These reporting elements, together with the eligibility age discrepancy and intervention details, require confirmation from existing study records; they should not be reconstructed through assumption.

RESULTS

Table 1. Participant age (n = 40)

Variable	n	Minimum	Maximum	Mean	SD
Age (years)	40	13	18	15	1.74

The observed respondents were aged 13–18 years (mean approximately 15 years). All 40 participants were described as having received no prior information specifically about SADARI. The original source-information table includes three named media categories with zero counts but no explicit "never received information" row; the narrative is therefore retained separately from the categories recorded in the original table.

Table 2. Previous reported information about SADARI (n = 40)

Information source	n	%
Printed media	0	0
Electronic media	0	0
Other people	0	0
Never received information (narrative report)	40	100

Table 3. Knowledge scores before and after 3D clay video education

Assessment	n	Minimum	Maximum	Median	SD
Pretest	40	3	11	5.00	1.72
Posttest	40	10	15	14.00	1.05

Median knowledge increased by nine points, from 5.00 to 14.00. The lowest recorded score rose from three to ten, and the highest score from 11 to 15. The source also reports mean scores of 5.27 and 13.90 in the abstract; the detailed table does not display these means, so median values are used for the principal descriptive presentation.

Table 4. Wilcoxon signed-rank test of pre–post knowledge scores

Outcome	Paired n	Reported Z	Reported p-value
Knowledge before versus after video	40	−5.525	<0.001

The paired test indicated a statistically significant difference. The source table separately lists 40 positive ranks and six ties for a sample of 40, which is arithmetically inconsistent; these rank counts have not been reproduced as verified results. Authors should confirm the original statistical output before submission.

DISCUSSION

The study sample consisted primarily of mid-adolescent students, with a mean age of approximately 15 years. During adolescence, physical development and growing independence may increase interest in breast health, while accurate information about normal development and symptoms requiring clinical advice may remain limited (Amelia et al., 2021; Herawati Jaya, 2025).

All participants reportedly lacked previous SADARI-specific information. The boarding-school environment was described as imposing restrictions on mobile-phone use, with structured daily learning and religious activities. Limited independent access to digital resources may constrain exposure to reproductive-health content. Nevertheless, no direct assessment of the effect of those restrictions on knowledge was reported.

The pretest median of 5.00 indicates low knowledge relative to the 15-point maximum reported in the source table. Other adolescent studies described similar deficits in knowledge of SADARI, its purpose, and recognition of unusual breast changes (Cindy Eka & Hayati, 2024; Hidayah & Amin, 2024). Structured education can therefore address an identifiable local information need.

Following the 3D clay video, the median score increased to 14.00 and the score range shifted upward. The combination of imagery, modeled animation, motion, and narration may help students understand examination steps and recognize health messages. Previous research using animated video for related health education reported higher knowledge after exposure (Fitriana, 2022; Ningsih et al., 2024). These comparisons suggest the plausibility of audiovisual learning, but the mechanisms were not directly measured in this study.

The Wilcoxon result ($Z = -5.525$, $p < 0.001$) supports a statistically significant difference between baseline and post-intervention scores. Since the study had no control group, the finding cannot establish an independent causal effect. The source contains an additional inconsistency in the Wilcoxon rank counts, which should be corrected from the original SPSS output. Data quality assurance is particularly important before claims of effectiveness are made.

The findings may inform future age-appropriate breast health education in boarding-school settings. Follow-up work should clarify the eligibility age range, population denominator and study period, report validated questionnaire properties, and examine retention, actual help-seeking, and the acceptability of the video. It should also distinguish breast awareness education from evidence-based population screening programs for appropriate age groups.

The age distribution provides context for the educational intervention. The descriptive table reports a minimum age of 13 years, a maximum of 18 years, and a mean close to 15 years. During this phase, many adolescents experience breast development and other physical changes that may prompt questions about what is normal. Breast health education may therefore focus on familiarity with normal changes, confidence to discuss concerns, and knowledge of when professional assessment is appropriate. The study, however, did not measure breast symptoms or clinical examination practices.

The source describes all respondents as lacking previous SADARI education, despite the inclusion of electronic and printed media categories in its information-source table. A residential school environment with restricted smartphone use is proposed as a contextual explanation. This may be relevant, but the manuscript does not quantify access to health information or measure the degree of digital restriction. A future assessment could distinguish information about breast cancer generally from information specifically explaining SADARI procedures, which students might have encountered at different rates.

The observed pretest median was five points, with scores ranging from three to eleven. After the educational video, the median was 14 points and the range was ten to fifteen. These descriptive results show that most posttest scores were concentrated toward the upper portion of the instrument's reported range. The source also describes a decline in score variability, from an SD of 1.72 to 1.05, which is consistent with greater clustering of results after education. Nevertheless, the interpretation of a percentage increase calculated from median values is limited, and a nine-point absolute median change is clearer.

A clay-animation video may be attractive to adolescents because it uses recognizable visual characters and movements to demonstrate unfamiliar health concepts. The source proposes that narration and modeled sequences can support attention and understanding. Prior studies cited in the manuscript reported improvements in knowledge after animated video education, including reproductive-health and other preventive topics (Fitriana, 2022; Ningsih et al., 2024). However, those results should be considered supportive context rather than proof that the specific 3D clay medium is superior to another well-designed educational approach.

The educational message should be age appropriate. In an adolescent population, an emphasis on recognizing new or unusual breast changes and speaking with a trusted health professional may be more relevant than encouraging fears of cancer. Breast self-awareness can be introduced respectfully while noting that a routine self-examination procedure is not a substitute for clinical diagnosis or guideline-based screening in populations where these services are indicated. This distinction is important when translating educational recommendations into practice. The source did not establish whether this video outperformed other media; any claim of superiority would require a direct comparison.

The original analysis reports $Z = -5.525$ and $p < 0.001$, but its rank table lists 40 positive ranks and six tied observations in a sample of 40. These figures cannot both be correct. As the original

paired-record or SPSS rank output was not supplied, the numbers of positive, negative, and tied differences have not been restated as verified. The author must replace the inconsistent counts from the original analysis before manuscript acceptance.

The results may be useful for designing health education in an Islamic boarding-school setting where access to personal digital devices is restricted. School-supported group screenings of educational content could reach students without requiring internet access on individual phones. For sustained benefits, a program could incorporate time for questions and culturally sensitive discussion, along with clear referral advice when a student reports a concerning breast change. Such program features are implications rather than interventions formally tested in the present study.

The original manuscript provides inconsistent descriptions of the study population and observation period: its abstract identifies 130 girls in 2025, while the detailed Methods section identifies 68 eligible girls in June–July 2026. The age-eligibility range also appears inconsistent with an observed maximum age of 18 years. These values cannot be settled through translation; the responsible authors must confirm the original sampling register and study protocol. Accurate description of recruitment is essential to understanding potential selection bias.

The study has further limitations. There was no comparison group, the posttest timing was not stated, the instrument's psychometric properties were not documented, and the sample was from one school. Consequently, the findings represent short-term changes in reported questionnaire scores and cannot demonstrate improvements in long-term screening behavior. A subsequent controlled study should include baseline comparability, reliable measurement, a follow-up assessment, and an outcome evaluating practical understanding or appropriate help-seeking.

In summary, the educational approach appears feasible and the observed pre–post difference is encouraging. The most informative next step for research reporting is to reconcile the source demographic and Wilcoxon tables, document the educational materials and questionnaire, and clearly specify ethics and consent procedures for the adolescent participants. These improvements can be made from existing study records without changing the core findings or inventing additional observations.

The study also raises important questions about how a knowledge questionnaire represents understanding. An instrument focused only on remembering terms may not capture whether a student recognizes an unusual breast change, knows whom to contact, or can distinguish normal adolescent development from symptoms requiring evaluation. The reported scores should therefore be interpreted as performance on the specific questionnaire administered. The source gives score distributions but not item wording, scoring rules, or evidence of validity and reliability; these details should be provided from the study records.

Because the educational material concerns adolescents in a residential school, privacy and consent should be considered carefully. Group-based health education can be appropriate, but participants should be able to ask sensitive questions without feeling compelled to disclose personal breast changes in front of peers. The source manuscript does not state whether parental or guardian consent and participant assent were documented, nor does it report an ethics-review decision. Those aspects should be accurately described by the authors rather than inferred from institutional involvement.

The intervention's immediate educational potential does not justify claims that breast cancer could be prevented or diagnosed by adolescents themselves. Breast cancer risk, typical presentation, and screening recommendations differ by age and individual circumstances. A responsible learning objective is to support breast health awareness, understanding of concerning changes, and help-seeking when necessary. A future trial may compare clay video with

conventional education and assess acceptability and longer-term knowledge retention as outcomes.

CONCLUSION

In this sample of 40 adolescent girls, the reported median SADARI knowledge score increased from 5.00 (range 3–11) to 14.00 (range 10–15) following 3D clay-video education (reported Wilcoxon $Z = -5.525$; $p < 0.001$). The study provides initial evidence of short-term knowledge change, not proof of a causal effect or improved screening behavior. Sampling and Wilcoxon rank inconsistencies still require verification against the original records.

ACKNOWLEDGMENTS

The authors thank Poltekkes Kemenkes Mataram, the Bagu Community Health Center, Hadil Islah Islamic Boarding School, participating students, and academic supervisors for their support.

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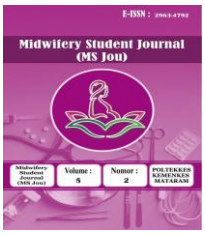

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