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Community-Based Health Education to Improve Knowledge, Attitude, and Participation in Visual Inspection of Acetic Acid Testing

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ABSTRACT

Cervical cancer remains a major reproductive health problem with low Visual Inspection with Acetic Acid (VIA) screening coverage in Indonesia. This study aimed to evaluate the effects of community-based health education through the “Bincang Asik” program on knowledge, attitudes, and participation in visual inspection with acetic acid (VIA) screening among women of reproductive age. A pre-experimental one-group pretest–posttest design was conducted among 59 women selected via simple random sampling at Primary Health Center, West Lombok. The "Bincang Asik" intervention employed a participatory peer-group discussion approach, meeting weekly for one month to discuss cervical cancer prevention. Knowledge (25 items) and attitudes (10 items) questionnaires were administered, alongside tracking VIA attendance. Because the data violated normality assumptions, pre- and post-intervention scores were analyzed using the Wilcoxon signed-rank test. The results of the study show that knowledge scores significantly increased from a baseline mean of 45.20 ± 8.13 to 79.77 ± 6.45 (mean difference: 34.57; p<0.001), with 94.9% achieving good knowledge post-test. Similarly, positive attitudes improved from a baseline mean of 52.30 ± 5.42 to 72.40 ± 4.11 (mean difference: 20.10; p<0.001; 94.9% positive attitudes). However, actual VIA screening participation only reached 25%. In conclusion, while the participatory approach of the "Bincang Asik" program positively influences cognitive and affective outcomes, it does not fully translate into behavior.However, actual VIA screening participation only reached 25%. In conclusion, while the participatory approach of the "Bincang Asik" program positively influences cognitive and affective outcomes, it does not fully translate into behavior.

Keywords: Cervical Cancer, VIA Screening, Community-Based Education, Knowledge, Attitude, Participation.

ABSTRAK

Kanker serviks tetap menjadi masalah kesehatan reproduksi utama dengan cakupan pemeriksaan Inspeksi Visual Asam Asetat (IVA) yang masih rendah di Indonesia. Penelitian ini bertujuan untuk mengevaluasi pengaruh edukasi kesehatan berbasis masyarakat melalui program “Bincang Asik” terhadap pengetahuan, sikap, dan partisipasi dalam pemeriksaan IVA pada wanita usia subur. Desain pra-eksperimental one-group pretest–posttest dilakukan terhadap 59 wanita yang dipilih melalui simple random sampling di Pusat Kesehatan Masyarakat (Puskesmas), Lombok Barat. Intervensi "Bincang Asik" menggunakan pendekatan diskusi kelompok sebaya secara partisipatif, yang diadakan setiap minggu selama satu bulan untuk membahas pencegahan kanker serviks. Kuesioner pengetahuan (25 item) dan sikap (10 item) diberikan, bersamaan dengan pelacakan kehadiran pemeriksaan IVA. Karena data melanggar asumsi normalitas, skor sebelum dan sesudah intervensi dianalisis menggunakan uji peringkat bertanda Wilcoxon (Wilcoxon signed-rank test). Hasil penelitian menunjukkan bahwa skor pengetahuan meningkat secara signifikan dari rata-rata awal 45,20 ± 8,13 menjadi 79,77 ± 6,45 (selisih rata-rata: 34,57; p<0,001), dengan 94,9% mencapai pengetahuan yang baik pada pasca-tes. Demikian pula, sikap positif meningkat dari rata-rata awal 52,30 ± 5,42 menjadi 72,40 ± 4,11 (selisih rata-rata: 20,10; p<0,001; 94,9% sikap positif). Namun, partisipasi nyata dalam pemeriksaan IVA hanya mencapai 25%. Kesimpulannya, meskipun pendekatan partisipatif dari program "Bincang Asik" berpengaruh positif terhadap hasil kognitif dan afektif, hal tersebut belum sepenuhnya diterjemahkan ke dalam perilaku nyata.

Kata Kunci: Kanker Serviks, *IVA Test*, Edukasi Berbasis Komunitas, Pengetahuan, Sikap, Partisipasi.

INTRODUCTION

According to GLOBOCAN 2022 data, cervical cancer ranks as a leading cause of female cancer mortality worldwide, accounting for 662,301 new cases and 348,874 deaths annually (Cohen et al., 2019). The burden is disproportionately higher in developing countries, including Indonesia, where it ranks among the top three female malignancies with 36,964 new cases and 20,708 deaths recorded recently (Bhatla et al., 2021). Despite the availability of low-cost, effective secondary prevention tools like Visual Inspection with Acetic Acid (VIA), utilization rates remain dismal. Globally and nationally, nearly half of diagnosed patients have never undergone routine screening, delaying diagnosis until advanced, incurable stages (Buskwofie et al., 2020)

In Indonesia, the Ministry of Health reported that national VIA screening coverage stood at only 9.32% in 2022, far below the national target of 50%. At the regional level, West Nusa Tenggara Province mirrored this trend with a coverage of 29.8% (Badan Pusat Statistik Provinsi Nusa Tenggara Barat, 2024). Paradoxically, while administrative targets at the Jembatan Kembar Primary Health Center reported high coverage based on annual bureaucratic projections, local programmatic evaluations reveal that actual, voluntary community-wide participation among reproductive-aged women remains low. Existing promotional strategies are restricted to passive, brief health education sessions in clinic waiting rooms. This superficial approach fails to target asymptomatic women in the community who underutilize services due to deep-seated fatalistic beliefs, fear of examination pain, and a profound lack of structural awareness regarding cervical cancer vulnerability (Al-Oseely et al., 2023)

Conceptually, health behavior change is dictated by the interplay of cognitive awareness and affective attitudes, as outlined in health promotion frameworks like the Health Belief Model (HBM) (Teixeira et al., 2022). Knowledge is a prerequisite, individuals must perceive susceptibility to a disease and recognize the benefits of a preventive action before adopting health behaviors (Dozie et al., 2021). Conventional, passive health lectures often improve superficial knowledge but fail to reshape deeply held negative attitudes or catalyze actual screening attendance (Bourgeois et al., 2026). Interactive and group-focused educational interventions have been shown to significantly enhance health literacy and alter intentions by addressing subjective norms and reinforcing perceived behavioral control (Sarfraz et al., 2021). However, standard community health education in rural Indonesian settings rarely utilizes structured peer-support dynamics, leaving a critical gap in translating reproductive health knowledge into sustainable health-seeking behavior.

To bridge this gap, this study introduces the “Bincang Asik” (Engaging Dialogue on Cervical Cancer) program. Unlike standard, passive informational campaigns, "Bincang Asik" is designed as a structured, community-based interactive intervention that leverages horizontal peer-group dynamics. It creates a supportive, non-judgmental environment where reproductive-aged women can comfortably discuss sensitive reproductive anatomy, share experiences, and unpack sociocultural barriers to screening. This study aims to evaluate the effects of the community-based “Bincang Asik” program on improving knowledge, attitudes, and actual behavioral participation in VIA screening among women of reproductive age. By fostering community-driven dialogues, this intervention seeks to clarify whether enhancing collective cognitive and affective outcomes can successfully overcome behavioral inertia and increase voluntary screening uptake.

RESEARCH METHODS

This study employed a pre-experimental, one-group pretest–posttest design. Due to programmatic and field constraints, a control group was not utilized, which is recognized as a limitation regarding internal validity. The study was conducted from April to June 2025 in Jembatan Kembar Village, within the working area of the Jembatan Kembar Primary Health Center, West Lombok Regency, West Nusa Tenggara.

The target population comprised 112 women of reproductive age (WRA) registered in the village health database. The required sample size was calculated using Slovin’s formula with a 5% margin of error, yielding a minimum sample of 59 participants. A simple random sampling technique was executed using a computer-generated random number table from the administrative sampling frame. To ensure sample homogeneity, eligible participants had to meet

the following inclusion criteria: (1) women aged 15–49 years, (2) residing in Jembatan Kembar Village during the study, and (3) able to communicate in Indonesian. Exclusion criteria were: (1) women with a history of total hysterectomy or diagnosed cervical cancer, and (2) individuals undergoing intensive medical treatment for other chronic illnesses.

The “Bincang Asik” (Engaging Dialogue on Cervical Cancer) program was a structured, community-based interactive health education initiative designed to leverage peer-group dynamics. The intervention was facilitated by trained midwifery lecturers and local community health volunteers (kader). The program was implemented in weekly face-to-face sessions over a one-month period (4 sessions total), with each session lasting 30 minutes. The educational sessions utilized a participatory approach combining short lecture components (using flipcharts and educational booklets) followed by interactive peer discussions, myth-busting games, and Q&A sessions. The curriculum covered: (1) definition and epidemiology of cervical cancer, (2) risk factors, signs, and symptoms, (3) early detection methods with a focus on VIA screening, and (4) structural navigation on accessing local primary screening facilities. Confounding variables such as family support and structural barriers were not actively controlled but were tracked qualitatively during group discussions.

Variables were evaluated using pretest and posttest instruments. Knowledge was measured via a 25-item closed-ended questionnaire (1 for a correct answer, 0 for incorrect). Prior to deployment, the instrument was pilot-tested among 20 non-participating WRA; it demonstrated adequate construct validity (r calculated > 0.444) and internal consistency (Cronbach’s alpha = 0.82). Total knowledge scores were categorized based on the modified Bloom's taxonomy cut-off points: Good ≥76%, Moderate (56%–75%), and Poor (<56%).

Attitude toward VIA screening was assessed using a 10-item Likert-scale questionnaire (1 = Strongly Disagree to 4 = Strongly Agree for positive items; reversed for negative items). Pilot testing confirmed its validity (r calculated > 0.435) and reliability (Cronbach’s alpha = 0.79). Total attitude scores were categorized using mean-based cut-offs: Positive (≥Mean Score) and Negative (< Mean Score). Behavioral participation was operationalized dichotomously (Yes/No) based on confirmed attendance records at the Jembatan Kembar Primary Health Center within two weeks post-intervention.

Data were checked for completeness and normality using the Shapiro-Wilk test. Because the scores violated normality assumptions ($p < 0.05$), non-parametric statistics were utilized. The Wilcoxon signed-rank test was applied to evaluate significant differences in continuous knowledge and attitude scores before and after the intervention. Behavioral participation was analyzed descriptively using frequencies and percentages.

This study received formal ethical approval from the Health Research Ethics Committee of the Ministry of Health Polytechnic Mataram (Poltekkes Kemenkes Mataram) under approval number DP.04.03/F.XL.26/435/2025. All participants provided written informed consent prior to enrollment.

RESULTS

The results of this study are presented in a structured sequence covering participant characteristics, changes in knowledge and attitudes, and participation in the intervention. Descriptive analysis was first conducted to summarize the demographic profile of the respondents and the outcomes of the community based education approach.

Table 1. Frequency distribution of respondents based on age (women of reproductive age), education level, and employment status.

Characteristic	**Respondents**	
	Frequency (n)	**Percentage (%)**
Age(years)		
20-30	25	42.4
31-40	18	30.5
41-50	16	27.1
Occupation		

Unemployed (housewive)	35	56.5
Employed	24	43.5
Education		
Primary	18	30.5
Secondary	35	59.3
Higher	6	10.2

Table 1 shows that most respondents were aged 20–30 years (42.4%), followed by 31–40 years (30.5%) and 41–50 years (27.1%). The majority of respondents were unemployed/housewives (56.5%), while 43.5% were employed. In terms of education, most respondents had secondary education (59.3%), followed by primary education (30.5%) and higher education (10.2%).

Table 2. Knowledge level before and after the intervention.

Knowledge Level	Pre Test	Post Test	Mean Difference	p-value
Good	0	56	34.57	<0.001
Moderate	37	3		
Poor	22	0		
Total	59	59		

Table 2 shows a substantial improvement in respondents' knowledge after the intervention. Before the program, none of the respondents were in the good knowledge category, while most were in the moderate (37 participants) and poor (22 participants) categories. After the intervention, the majority of respondents (56 participants) achieved a good level of knowledge, and no respondents remained in the poor category. The mean difference in knowledge scores was 34.57, and the statistical test showed a significant difference between pre-test and post-test results ($p < 0.001$), indicating that the intervention effectively improved respondents' knowledge.

Table 3. Attitude level before and after the intervention.

Attitude Level	Pre Test	Post Test	Mean Difference	p-value
Postive	3	56	20.10	<0.001
Moderate/ Netral	32	3		
Negative	24	0		
Total	59	59		

Table 2 indicates a marked improvement in respondents' attitudes following the intervention. Before the program, most respondents had moderate/neutral (32 participants) and negative attitudes (24 participants), while only 3 participants showed a positive attitude. After the intervention, the majority of respondents (56 participants) demonstrated positive attitudes, with only 3 remaining in the moderate/neutral category and none in the negative category. The mean difference in attitude scores was 20.10, and the statistical analysis showed a significant difference between pre-test and post-test results ($p < 0.001$), indicating that the intervention effectively improved respondents' attitudes toward VIA screening and cervical cancer prevention.

Table 4. Participation in VIA screening after the intervention.

Participation in VIA Screening	Frequency (n)	Percentage (%)
Participation	15	25
Did not participate	44	75
Total	59	100

Table 4 shows that after the intervention, 25% of respondents (15 women) participated in VIA screening at the health center, while the majority, 75% (44 women), had not yet undergone screening. This indicates that the community-based education program contributed to increasing participation in VIA screening, although most respondents still had not utilized the service.

DISCUSION

The findings of this study demonstrate that the community-based “Bincang Asik” education program was highly effective in improving knowledge and attitudes toward VIA screening among women of reproductive age. Prior to the intervention, most respondents had moderate and poor levels of knowledge, whereas after the intervention the majority moved into the good knowledge category. This significant increase indicates that structured, discussion-based health education can effectively enhance understanding of cervical cancer, its risk factors, and the importance of early detection. The use of a community discussion format likely contributed to this improvement, as interactive learning environments allow participants to ask questions, share experiences, and receive clarification in a supportive setting (Rahmati et al., 2020). Such participatory approaches are known to strengthen comprehension and retention compared with passive information delivery (Sarfraz et al., 2021).

However, a stark disconnect emerged between psychological readiness and actual health-seeking behavior, as only 25.4% of the participants utilized the VIA screening services within the two-week follow-up window. This distinct knowledge-attitude-practice (KAP) gap can be critically analyzed through the lens of the Health Belief Model (HBM) (Alyafei & Easton-Carr, 2026)The "Bincang Asik" program successfully heightened two core domains of the HBM: perceived severity of cervical cancer and perceived benefits of early detection, which collectively generated highly positive attitudes toward screening (Maleki et al., 2025). Nevertheless, these cognitive-affective shifts were insufficient to overcome entrenched perceived barriers, which ultimate paralyzed behavioral execution.

In rural Indonesian contexts, these perceived barriers are multifaceted, spanning cultural, emotional, and structural dimensions. Emotionally, deep-seated feelings of kewajiban moral (familial duties) often cause women to deprioritize their own health, prioritizing childcare and domestic labor instead (Ramphoma et al., 2024). Furthermore, clinical procedures involving lithotomy positions provoke severe emotional distress, embarrassment (malu), and fear of pain or malignant diagnoses . Culturally, reproductive health decisions in rural patriarchal families are rarely individualistic, they are heavily mediated by spousal approval. Without explicit partner endorsement, positive intentions seldom translate into physical healthcare utilization (Wahyuningsih et al., 2024). Structurally, despite the theoretical availability of VIA services at the primary health center, the rigidity of standard clinical operational hours conflicts directly with the daily routines of working women and agricultural laborers, presenting a logistical hurdle that standard educational workshops cannot resolve (Alyafei & Easton-Carr, 2026)

A similar pattern was observed in attitudes, where respondents shifted from predominantly moderate and negative attitudes to overwhelmingly positive attitudes after the intervention. This change suggests that increased knowledge was accompanied by greater acceptance of cervical cancer screening and recognition of its benefits (Dozie et al., 2021). Positive attitudes toward screening are essential because they shape motivation and readiness to adopt preventive health behaviors (Maleki et al., 2025), The supportive group environment may also have helped reduce stigma, fear, and misconceptions surrounding reproductive health examinations, thereby encouraging more favorable perceptions of VIA screening (Cruwys et al., 2024)

Despite these encouraging improvements in knowledge and attitudes, participation in VIA screening remained relatively low, with only 25% of respondents undergoing the examination. This gap highlights the well-recognized discrepancy between knowledge, attitude, and practice in health behavior research. Behavioral change is influenced not only by cognitive and emotional factors but also by practical, social, and cultural barriers (Zuckerman et al., 2021). Women may still face fear of diagnosis, embarrassment, limited time, competing household responsibilities, lack of partner support, or perceived absence of symptoms (Al-Oseely et al., 2023). These factors can prevent individuals from translating positive intentions into concrete action, even when awareness and attitudes have improved.

The findings emphasize that education alone, although necessary, is not sufficient to ensure behavioral change. Comprehensive strategies are required to address structural and psychosocial barriers simultaneously. Interventions that combine education with social support, accessible services, and continuous engagement are more likely to produce sustained behavioral outcomes (Shrestha et al., 2023). Community-based programs should therefore be

complemented by follow-up reminders, family involvement, peer support, and convenient screening services (Bruni et al., 2022).

Overall, this study highlights the important role of community-based education in strengthening knowledge and attitudes toward cervical cancer prevention, while also revealing the need for more integrated and sustained interventions to increase participation in VIA screening. These results provide valuable evidence that community discussion programs can serve as a foundation for broader cervical cancer prevention strategies, particularly in settings where awareness and screening uptake remain low (Dozie et al., 2021)

Although almost all respondents demonstrated good knowledge and positive attitudes after the intervention, participation in VIA screening remained relatively low (25%). This finding suggests that improving knowledge and attitudes alone is not always sufficient to translate into actual health behavior. Several external and internal barriers may still influence women's decisions to undergo screening, such as fear of the examination results, feelings of embarrassment, limited time, lack of family or spousal support, perceived absence of symptoms, and accessibility of services (Herwansyah et al., 2023). This gap between knowledge, attitude, and practice indicates that behavioral change is a gradual process requiring continuous reinforcement, social support, and strategies that address practical and psychological barriers. Therefore, future interventions should integrate community education with family involvement, counseling, reminders, and easier access to screening services to increase participation in VIA screening (Khabibah et al., 2022)

Future efforts should focus on strengthening family involvement, particularly spousal support, as partners play an important role in women's decisions to undergo screening. Educational activities should be expanded to include couples and families through community meetings, family health classes, and targeted counseling. In addition, reminder and follow-up strategies such as WhatsApp groups, community health volunteers, and home visits are needed to ensure that positive intentions are translated into real actions (Kadhuluri et al., 2023). Providing more flexible screening services, including extended clinic hours, weekend services, or mobile screening programs, can also help women who face time and accessibility constraints (Masoni & Guelfi, 2020)

Furthermore, integrating VIA screening into routine community activities such as women's groups, maternal classes, and community health posts may increase convenience and participation (Longulo et al., 2022). Individual counseling is also essential to address personal barriers such as fear, embarrassment, and anxiety about examination results. Engaging trained community volunteers and peer educators who have already undergone VIA screening can serve as role models and increase trust and motivation (Yoong et al., 2022). Continuous and sustainable community-based interventions are therefore necessary to bridge the gap between knowledge, attitudes, and actual screening practices (Aung et al., 2021)

The scientific contributions of this manuscript must be interpreted within the context of its inherent methodological limitations. First, the utilization of a pre-experimental, one-group pretest–posttest design lacks a parallel control group, which limits internal validity and complicates definitive causal attributions. Second, tracking behavioral outcomes within a tight two-week post-intervention window restricts the assessment of long-term behavioral sustainability and continuous health-seeking patterns. To elevate the academic value and generalizability of future research, we strongly recommend implementing longitudinal or cluster-randomized controlled trials (RCTs) that integrate mixed-methods approaches to comprehensively map the fluid socio-cultural dynamics governing rural women's decisions over time.

CONCLUSION

The community-based "Bincang Asik" program demonstrates a significant contribution to cervical cancer prevention frameworks by confirming that a structured, participatory peer-group dialogue format effectively dismantles cognitive resistance and enhances favorable health attitudes in rural settings. However, this study underscores a critical behavioral bottleneck: while interactive education successfully optimizes perceived severity and perceived benefits, it does not automatically translate into screening uptake, as active participation in actual VIA screening

.This stark knowledge attitude practice (KAP) gap highlights that cognitive-affective alignment is merely a foundational milestone that remains paralyzed by deeply entrenched emotional, patriarchal, and logistical barriers.

Practically, these findings offer vital blueprints for reshaping reproductive health policies and maternal care programs under the Ministry of Health in Indonesia. To bridge the behavioral gap, public health authorities must transition from passive, facility-bound informational campaigns to active structural scaffolding. First, community health programs should institutionalize culturally tailored counseling that transitions from individualistic frameworks into family-centered health promotion, actively engaging spouses to mitigate patriarchal barriers. Second, cues to action must be fortified by mobilizing trained community health workers (kader) to deploy personalized home visits and structured digital reminders via mobile communication platforms. Finally, to eliminate structural accessibility friction, primary healthcare networks should decentralize screening delivery by integrating mobile outreach VIA services into routine village health posts (Posyandu) and weekend community gatherings, shifting healthcare from a passive clinical destination into an accessible, community-anchored system.

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