

Improving Knowledge about The Dangers of Cervical Cancer in PKK Groups in RT 28, Desa Pasir Panjang Kabupaten Kotawaringin Barat

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ABSTRACT

Cervical cancer remains one of the leading causes of morbidity and mortality among women, particularly in developing countries. Limited knowledge regarding risk factors, symptoms, and early detection methods often results in delayed diagnosis and low participation in screening programs. This community service activity aimed to determine the effectiveness of PowerPoint-based health education in improving knowledge about cervical cancer among PKK members in RT 28, Desa Pasir Panjang. This study used a pre-experimental one-group pre-test and post-test design involving 25 PKK members. The intervention was conducted through a lecture using PowerPoint presentations followed by interactive discussion sessions. Participants completed questionnaires before and after the intervention. Data were analysed using descriptive statistics, Shapiro Wilk normality test, and paired sample t-test with a significance level of $p < 0.05$. The results showed a significant increase in mean knowledge scores from 57.60 ± 8.20 before the intervention to 85.20 ± 6.50 after the intervention. The proportion of participants with good knowledge increased from 16.0% to 64.0%, while poor knowledge decreased from 48.0% to 8.0%. Normality testing showed that the data were normally distributed ($p > 0.05$). Paired sample t-test analysis indicated a statistically significant difference between pre-test and post-test scores ($t = -19.43$; $p = 0.000$).

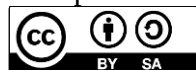
In conclusion, PowerPoint-based health education was effective in improving participants' knowledge regarding cervical cancer. This method can be recommended as a practical community-based health promotion strategy to increase awareness and encourage early detection efforts.

Keywords : Cervical Cancer, Education, Knowledge.

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INTRODUCTION

Cervical cancer remains a major global public health concern and continues to contribute substantially to morbidity and mortality among women, particularly in low- and middle-income countries (WHO, 2025). According to the World Health Organization (Sung et al., 2021; WHO, 2023), cervical cancer is the fourth most commonly diagnosed cancer among women worldwide, with hundreds of thousands of new cases and deaths reported annually. Although cervical cancer is largely preventable through Human Papillomavirus (HPV)

vaccination, routine screening, early detection, and appropriate treatment, the global burden remains high due to inadequate awareness, limited access to reproductive health information, and insufficient participation in preventive programs (Black et al., 2019; Z. Petersen et al., 2022). Therefore, improving public knowledge through effective health education remains an essential component of cervical cancer prevention strategies.

In Indonesia, cervical cancer continues to represent a significant public health burden. Data from the Ministry of Health of the Republic of Indonesia (Kemenkes RI, 2023) indicate that approximately 36,633–36,964 new cervical cancer cases occur annually, placing cervical cancer among the three most common cancers affecting Indonesian women. In Central Kalimantan Province, the prevalence of cervical cancer has been reported at 0.7% (Alestari & Widyandini, 2022). A study conducted in Palangka Raya also demonstrated insufficient knowledge regarding cervical cancer prevention and limited interest in HPV vaccination among female students, indicating persistent gaps in preventive health literacy within the region (Adnyana et al., 2023). Low levels of knowledge regarding cervical cancer risk factors, symptoms, prevention, and screening methods remain important barriers to early detection practices, including Visual Inspection with Acetic Acid (VIA) and Pap smear examinations (Pebriani & Yulianti, 2024; Harahap et al., 2025; Siseho et al., 2022). Consequently, many women continue to seek medical care at advanced stages, resulting in poorer treatment outcomes.

Similar challenges were identified at the community level among members of the Family Welfare Empowerment (PKK) organization in RT 28, Desa Pasir Panjang. Prior to the implementation of this study, a preliminary observation was conducted involving 25 PKK members to assess their baseline knowledge regarding cervical cancer prevention. The preliminary observation indicated that several participants had limited understanding regarding cervical cancer risk factors, early warning signs, HPV vaccination, screening methods, and preventive behaviors. These findings indicated an existing gap in community health literacy and highlighted the need for targeted educational intervention. Considering that PKK members have an important role in family health management and community information dissemination, strengthening their knowledge may contribute not only to individual awareness but also to broader community-level prevention efforts.

Health education is recognized as an important strategy for improving knowledge and promoting preventive health behaviors. Adequate knowledge can influence individuals' perceptions, decision-making processes, and willingness to participate in early detection programs. In the context of cervical cancer prevention, increasing awareness regarding risk factors, symptoms, vaccination, and screening is essential to encourage women to adopt appropriate preventive behaviors (Winarningsih et al., 2023). Therefore, community-based educational interventions are needed, particularly in areas where access to reproductive health information remains limited. Previous studies have demonstrated that health education interventions are effective in improving cervical cancer knowledge. Wahyuni and Aryantiningasih (2026) reported that educational interventions significantly increased knowledge regarding early cervical cancer detection among women of reproductive age. Similarly, Hikmawati et al. (2025) found that educational media such as videos and leaflets improved participants' understanding of cervical cancer prevention. Yosepin Hutagalung et al. (2023) showed that e-booklets enhanced knowledge through systematic and visually attractive information delivery. Furthermore, a systematic review by Hidayatusibyan et al. (2025) confirmed that audiovisual-based educational approaches were generally more effective than conventional methods in improving health knowledge outcomes.

Despite the increasing evidence supporting the effectiveness of cervical cancer education, several important research gaps remain. Previous studies have predominantly focused on evaluating the effectiveness of specific educational media, including videos, leaflets, booklets, and audiovisual materials, among women of reproductive age, students, or clinical populations. However, limited research has examined educational interventions targeting community-based organizations such as PKK, despite their strategic role in supporting health promotion at the family and community levels. In addition, previous interventions have generally emphasized improving individual knowledge, while the potential of community organizations as sustainable platforms for disseminating cervical cancer prevention information has received less attention. This gap highlights the need for educational approaches that not only improve knowledge outcomes but also strengthen the capacity of community groups to support preventive health practices.

The novelty of this study lies in the application of a community empowerment-based educational approach that integrates structured visual learning with participatory discussion within a PKK organization. Rather than considering educational media as the primary innovation, this study emphasizes the transformation of PKK members from passive recipients of information into active community health promoters who can share cervical cancer prevention messages within families and neighborhoods. This approach differs from previous studies that mainly evaluated short-term knowledge improvement following media-based education. Furthermore, this study provides empirical evidence from a rural community setting in Central Kalimantan, where research regarding community-based cervical cancer prevention education remains limited. By integrating health education, active participation, and community empowerment, this study contributes a practical and sustainable model for strengthening cervical cancer prevention strategies at the grassroots level.

Based on these considerations, this study aimed to evaluate the effect of a community-based educational intervention using structured visual presentation and participatory discussion on cervical cancer knowledge among PKK members in RT 28, Desa Pasir Panjang. The findings are expected to contribute to the development of sustainable health promotion strategies that enhance cervical cancer awareness and strengthen community involvement in prevention and early detection programs.

METHODS

This study used a pre-experimental one-group pre-test and post-test design to evaluate changes in cervical cancer knowledge following a health education intervention. The study was conducted as part of a community service program involving 25 PKK members in RT 28, Desa Pasir Panjang. Participants were selected using a total sampling technique. The inclusion criteria were active PKK members residing in the study area, willingness to participate, and completion of both pre-test and post-test assessments, while participants who did not complete the intervention or assessments were excluded.

The intervention was conducted on April 16, 2026, at 15:30 WIB at a resident's house in RT 28, Desa Pasir Panjang. Health education was delivered through a PowerPoint-assisted presentation combined with interactive discussion for approximately 30 minutes. The materials covered cervical cancer definition, risk factors, symptoms, complications, prevention, HPV vaccination, and early detection using Visual Inspection with Acetic Acid (VIA). A pre-test was administered before the intervention and a post-test immediately after the session to measure changes in knowledge. The questionnaire used in this study was adapted from previously validated cervical cancer knowledge questionnaires.

Data analysis was performed using IBM SPSS Statistics version 26. Descriptive

statistics were presented as mean and standard deviation (SD). The Shapiro–Wilk test was used to assess normality due to the small sample size. As the data were normally distributed, a paired sample t-test was applied to compare pre-test and post-test knowledge scores because the measurements were obtained from the same participants. Statistical significance was set at $p < 0.05$. This activity was conducted as a community service program, and verbal informed consent was obtained from all participants before data collection.

RESULTS

Characteristics of Respondents

A total of 25 PKK members participated in this community-based health education activity. The distribution of respondents based on age and educational level is presented in Table 1 and Table 2.

Table 1. Distribution of Respondents by Age (n = 25)

Age Group (years)	Frequency (n)	Percentage (%)
20–29	5	20.0
30–39	8	32.0
40–49	7	28.0
≥50	5	20.0
Total	25	100%

Most respondents were aged 30–39 years (32.0%), followed by those aged 40–49 years (28.0%). This indicates that the majority of participants were within the productive age group, which is relevant for reproductive health education.

Table 2. Distribution of Respondents by Educational Level (n = 25)

Educational Level	Frequency (n)	Percentage (%)
Primary School	4	16.0
Junior High School	7	28.0
Senior High School	10	40.0
Higher Education	4	16.0
Total	25	100%

The majority of respondents had completed senior high school (40.0%), indicating a moderate educational background that may influence the ability to receive and understand health information.

Distribution of Knowledge Levels Before and After Intervention

Table 3. Distribution of Knowledge Levels Pre- and Post-Intervention

Knowledge Level	Pre-test n (%)	Post-test n (%)
Good	4 (16.0%)	16 (64.0%)
Moderate	9 (36.0%)	7 (28.0%)
Poor	12 (48.0%)	2 (8.0%)
Total	25 (100%)	25 (100%)

Before the intervention, most respondents were categorized as having poor knowledge (48.0%). After the intervention, there was a substantial increase in the

proportion of respondents with good knowledge (64.0%), accompanied by a marked decrease in the poor category (8.0%). This indicates a significant improvement in knowledge levels following the educational program.

Descriptive Analysis of Knowledge Scores

Table 4. Mean and Standard Deviation of Knowledge Scores

Variable	Mean	SD
Pre-test	57.60	8.20
Post-test	85.20	6.50

The mean knowledge score increased from 57.60 (SD = 8.20) before the intervention to 85.20 (SD = 6.50) after the intervention. This demonstrates a substantial improvement in knowledge, with reduced variability among participants.

Normality Test

Table 5. Shapiro–Wilk Normality Test

Variable	W	p-value
Pre-test	0.957	0.321
Post-test	0.969	0.548

The Shapiro Wilk test showed that both pre-test and post-test data were normally distributed ($p > 0.05$). Therefore, parametric testing using a paired sample t-test was considered appropriate.

Paired Sample t-test Analysis

Table 6. Paired Sample t-test Results

Variable Pair	Mean Difference	t-value	p-value
Pre–Post	-27.60	-19.43	0.000

The paired sample t-test revealed a statistically significant difference between pre-test and post-test scores ($p < 0.05$). The mean difference of -27.60 indicates a substantial increase in knowledge following the intervention. These findings confirm the effectiveness of PowerPoint-based health education in improving participants' knowledge of cervical cancer.

Documentation of Activities



Figure 1. Educational session using PowerPoint



Figure 2. Participant discussion session

DISCUSSION

The findings of this study demonstrate that a community-based health education intervention significantly improved cervical cancer knowledge among PKK members. This improvement was reflected by the increase in the mean knowledge score from 57.60 before the intervention to 85.20 after the intervention, with a statistically significant difference based on the paired sample t-test ($p < 0.05$). Furthermore, the proportion of participants with good knowledge increased from 16.0% to 64.0%, while those with poor knowledge decreased from 48.0% to 8.0%. These findings indicate that the intervention was effective not only in increasing average knowledge scores but also in improving the overall level of understanding among participants.

The improvement in knowledge observed in this study supports the concept of health promotion, which emphasizes that knowledge is an important predisposing factor influencing health-related behaviors. According to Çol et al. (2024), Dzerounian et al. (2022), and Tabrizi et al. (2024), increased knowledge contributes to changes in perceptions, decision-making, and the adoption of preventive health behaviors. In this study, the educational intervention provided structured information regarding cervical cancer risk factors, symptoms, prevention strategies, and early detection methods, which likely enhanced participants' awareness and understanding of cervical cancer prevention.

These findings are consistent with previous studies demonstrating the effectiveness of health education interventions in improving cervical cancer knowledge. Putri et al. (2025) and Wahyuni et al. (2026) reported that educational interventions significantly increased knowledge among women of reproductive age. Similarly, Hikmawati et al. (2025) and Wahidin et al. (2022) found that educational media such as videos and leaflets were effective in improving health knowledge. A systematic review by Hidayatusibyan et al. (2025) also confirmed that structured educational media, particularly audiovisual approaches, contribute to better knowledge outcomes. However, the contribution of the present study extends beyond confirming the effectiveness of educational media. This study demonstrates that a community-based educational approach involving PKK members, supported by structured visual learning and interactive discussion, can effectively improve cervical cancer knowledge within a community setting. These findings suggest that existing community organizations may serve as strategic platforms for delivering sustainable health education, particularly in areas with limited access to reproductive health information.

One important factor contributing to the success of this intervention was the integration of structured visual learning with participatory discussion. Visual presentation allows complex health information to be delivered in a simpler and more understandable format, while interactive discussions provide opportunities for participants to ask questions, clarify misconceptions, and actively engage in the learning process. This approach is consistent with

adult learning principles, which emphasize active involvement, relevance, and two-way communication as essential components of effective education. Therefore, the effectiveness of this intervention may not only be attributed to the educational material itself but also to the participatory learning process that encouraged active involvement among PKK members.

Another important finding was the reduction in the standard deviation of knowledge scores from the pre-test (SD = 8.20) to the post-test (SD = 6.50). This reduction suggests that participants' knowledge became more homogeneous after the intervention, indicating that the educational program helped reduce differences in understanding among participants. In community-based health promotion, achieving a more consistent level of knowledge is valuable because it may strengthen collective awareness and improve the capacity of community members to share accurate health information within their social networks.

From a public health perspective, improving cervical cancer knowledge represents an essential first step toward increasing participation in preventive behaviors, including HPV vaccination and early detection programs such as Visual Inspection with Acetic Acid (VIA) and Pap smear screening (Ahmed et al., 2020; IARC, 2022). Limited knowledge has been identified as one of the major barriers influencing screening participation and early diagnosis. Therefore, the findings of this study highlight the potential role of community-based educational interventions as complementary strategies to support cervical cancer prevention programs, especially in community settings where health promotion activities are commonly delivered through local organizations.

Despite these positive findings, several limitations should be considered. First, the one-group pre-test and post-test design without a control group limits the ability to establish causal relationships, as external factors may have contributed to changes in knowledge. Second, the small sample size ($n = 25$) from a single community setting limits the generalizability of the findings to broader populations. Third, the immediate post-test assessment only measured short-term knowledge improvement and did not evaluate long-term knowledge retention or actual preventive behaviors.

Future studies should consider using stronger research designs, such as quasi-experimental studies or randomized controlled trials, involving larger and more diverse populations. Longer follow-up periods are also recommended to assess knowledge retention and behavioral outcomes, including participation in cervical cancer screening programs. Further research may also explore the role of community organizations such as PKK as sustainable partners in implementing cervical cancer prevention strategies at the grassroots level.

CONCLUSION

PowerPoint-based health education combined with interactive discussion significantly improved cervical cancer knowledge among PKK members. The findings suggest that community-based organizations such as PKK may serve as effective platforms for delivering cervical cancer prevention education. Further studies with larger samples and longer follow-up periods are recommended to evaluate knowledge retention and behavioral outcomes.

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