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The Effectiveness of Health Promotion Media on Increasing Knowledge and Participation of Women of Reproductive Age in VIA Screening: A Systematic Literature Review

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ABSTRACT

Introduction: Cervical cancer remains a major cause of morbidity and mortality among women in Indonesia, largely due to low awareness and limited participation in Visual Inspection with Acetic Acid (VIA) screening. Health promotion media are essential to improving knowledge, shaping positive attitudes, and increasing willingness to participate in early detection efforts. This systematic literature review evaluates the effectiveness of various health promotion media in increasing knowledge and VIA screening participation among women of reproductive age (WRA).

Methods: This review followed the PRISMA 2020 protocol. Literature searches were conducted exclusively through Google Scholar for studies published between 2021 and 2025. Thirteen eligible studies were analyzed using the PICO framework, focusing on population characteristics, intervention types, comparison strategies, and measured outcomes. Most studies used quasi-experimental pre-post designs. This review has limitations, including reliance on a single database, restriction to Indonesian studies, and predominance of quasi-experimental designs without control groups. These limitations may introduce selection bias and reduce generalizability.

Results: Overall findings show significant improvements ($p<0.05$) in knowledge, attitudes, and VIA participation following health promotion interventions. Audiovisual media, mobile-based applications and live demonstrations produced the strongest effects by enhancing multisensory learning and reducing psychological barriers such as fear or embarrassment. Printed media, including booklets, modules and leaflets remained effective as complementary tools, especially in areas with limited digital access. Intervention success was also supported by family involvement, cultural appropriateness, and active engagement of health workers.

Conclusion: In conclusion, multimodal and community-centered health promotion strategies are effective in increasing WRA knowledge and participation in VIA screening. Future research should employ stronger methodological design, expand database coverage, and incorporate cross-national comparisons to enhance the evidence base for cervical cancer screening programs.

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INTRODUCTION

Cervical cancer is one of the leading causes of cancer death in women worldwide. There are approximately 604,127 new cases and 341,831 deaths from cervical cancer each year (1). More than 85% of these cases occur in low- and middle-income countries, including Indonesia (2). The main cause of cervical cancer is persistent infection with oncogenic types of Human Papillomavirus (HPV), especially types 16 and 18, which are responsible for approximately 70% of cases worldwide (1). Although preventable through HPV vaccination and early detection, cervical cancer remains a serious public health problem due to low awareness and low screening coverage.

In Indonesia, cervical cancer ranks second after breast cancer as the leading cause of death in women, with an estimated 36,000 new cases and 18,000 deaths each year (3). The government has promoted early detection through Visual Inspection with Acetic Acid (VIA) for women aged 30–50 years. The VIA method is recognized as an inexpensive, simple, and effective screening method, which can be performed in primary health facilities by trained personnel (4). However, VIA screening coverage in Indonesia is still low, only around 7% of the national target, due to limited information, socio-cultural barriers, and negative perceptions of reproductive organ examinations (5).

To overcome these barriers, innovative, adaptive, and evidence-based health promotion strategies are needed. Health promotion through various communication media has been proven effective in increasing knowledge and interest in early cervical cancer detection among women of reproductive age. Various tipe of media have been used, such as audiovisual media (4), lectures and leaflets/videos (6), PowerPoint and educational videos (7), illustrated electronic pocketbooks (8), booklets and lectures(9), and films and live demonstrations(10). Each medium has advantages in improving certain aspects, such as knowledge, attitudes, or motivation.

These research results indicate that media-based interventions can significantly increase awareness, understanding, and preventive behaviors for cervical cancer. For example, audiovisual media increases interest and understanding of the importance of the VIA test, electronic pocketbooks have been shown to be effective in increasing motivation, and booklets and leaflets play an important role in expanding educational reach in the community. However, there are differences in effectiveness between media, depending on demographic, cultural, and technological accessibility factors (11).

Therefore, a comprehensive literature review is needed that integrates research findings on the effectiveness of various health promotion media in increasing knowledge and participation of women of reproductive age in VIA screening. The results of this review are expected to serve as a basis for health workers, educators, and policymakers in developing evidence-based, culturally oriented, and sustainable health promotion strategies to increase early detection coverage and reduce cervical cancer mortality in Indonesia.

METHOD

Study Design

This study employed a systematic literature review conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. The review aimed to synthesize empirical evidence regarding the association between health promotion media and changes in knowledge, attitudes, and participation in Visual Inspection with Acetic Acid (VIA) screening among women of reproductive age (WRA) (12).

Data Sources and Search Strategy

A systematic literature search was conducted using Google Scholar as the primary database to identify relevant peer-reviewed studies published between January 2021 and December 2025. Google Scholar was selected because it provides broad coverage of both international and nationally accredited Indonesian journals, which are highly relevant to community-based and intervention-focused VIA screening studies conducted in Indonesia. Although the use of a single database may limit retrieval comprehensiveness, this approach was considered appropriate given the study's focus on Indonesian health promotion interventions, many of which are not consistently indexed in major international databases.

Search strategies were adapted to the specific syntax of each database and employed boolean operators and keyword combinations related to VIA screening and health promotion media. The primary search terms included: ("visual inspection with acetic acid" OR "VIA" OR "cervical cancer screening") AND ("health promotion" OR

"health education" OR "media" OR "audio-visual" OR "digital health") AND ("women of reproductive age" OR "WRA") AND Indonesia.

Only articles published in peer-reviewed journals, available in full text, and written in English or Indonesian were considered eligible for inclusion. Reference lists of included studies were also manually screened to identify additional relevant publications. The use of multiple databases was intended to increase search comprehensiveness, reduce database-specific bias, and support systematic retrieval, while the inclusion of Google Scholar as a supplementary source ensured adequate representation of locally relevant Indonesian research.

Eligibility Criteria

Inclusion Criteria

Studies were included if they met the following criteria:

Conducted among women of reproductive age (WRA).

Focused on health promotion or educational media related to VIA screening.

Used experimental or quasi-experimental study designs.

Reported outcomes related to knowledge, attitudes, or participation in VIA screening.

Published between 2021 and 2025.

Available in full text.

Exclusion Criteria

Studies were excluded if they:

Were review articles, opinion papers, editorials, or conference abstracts.

Did not involve VIA screening or WRA populations.

Did not report measurable intervention outcomes.

Were duplicate publications.

Were not accessible in full text

PICO Framework

The research question of this systematic review was developed using the Population, Intervention, Comparison, and Outcome (PICO) framework. The PICO components were defined as follows:

Table 1. PICO Framework of the Systematic Literature Review

PICO Component	Description
Population (P)	Women of Reproductive Age (WRA), generally aged 15–49 years or 30–50 years, residing in community or primary healthcare settings in Indonesia
Intervention (I)	Health promotion or educational media related to Visual Inspection with Acetic Acid (VIA) screening, including audiovisual media, printed materials (booklets, leaflets, modules), digital or mobile-based media, and demonstration-based education
Comparison (C)	Pre-intervention condition, standard health education, or absence of a structured health promotion intervention
Outcome (O)	Changes in knowledge levels, attitudes toward VIA screening, and participation or willingness to undergo VIA examination, measured using questionnaires, pretest–posttest scores, or screening uptake rates

Most included studies employed pretest–posttest designs without external control groups; therefore, the primary comparison across studies was the pre-intervention versus post-intervention condition. The PICO framework was adapted to accommodate the predominance of quasi-experimental and community-based study designs included in this review (13).

Study Selection

The database search initially identified 570 records. After applying year restrictions (2021–2025), 396 records remained for title and abstract screening. Of these, 351 records were excluded for failing to meet the inclusion criteria. Subsequently, 45 full-text articles were assessed for eligibility. Following full-text evaluation, 32 articles were excluded due to non-interventional study design, irrelevant outcomes, duplication, or lack of full-text availability. A total of 13 studies were ultimately included in the systematic review. The detailed selection process is presented in Figure 1 (PRISMA 2020 Flow Diagram):

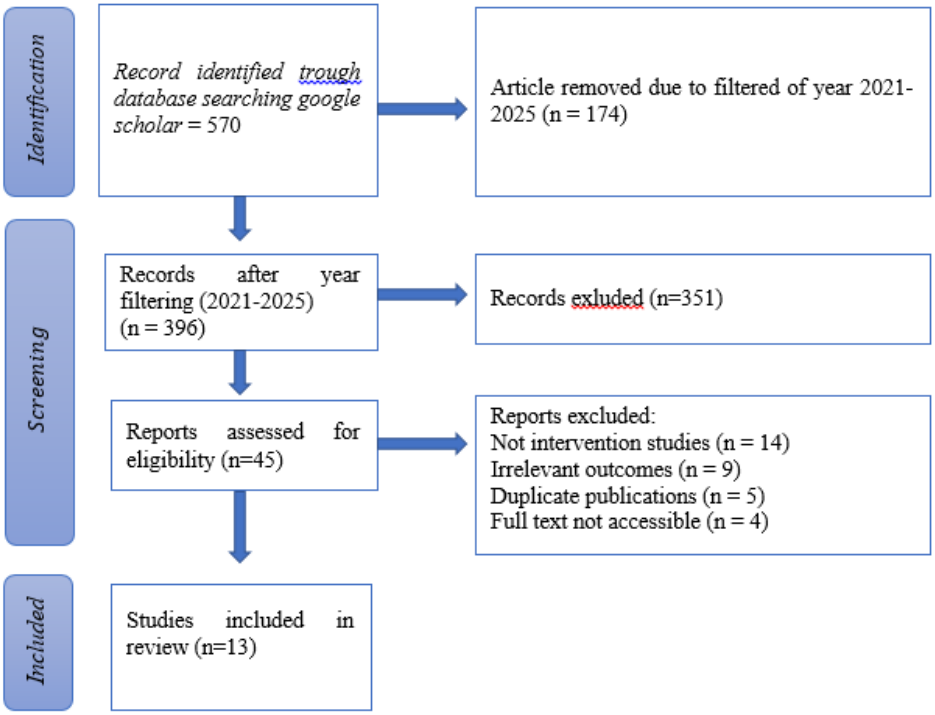

Figure 1. PRISMA 2020 Flow Diagram

Data Extraction

Data extraction was conducted using a standardized data extraction form developed by the authors. Relevant information extracted from each included study comprised author(s) and year of publication, study location, study design, sample size and population characteristics, type of health promotion media or intervention, comparison group, outcome measures, and key findings related to knowledge, attitudes, and participation in Visual Inspection with Acetic Acid (VIA) screening among women of reproductive age (WRA). The extracted data were organized systematically to ensure consistency and accuracy prior to synthesis.

Quality Assessment

The methodological quality of the included studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist appropriate to each study design. The assessment focused on key methodological aspects, including clarity of study objectives, appropriateness of study design, sampling methods, validity of outcome measurements, and completeness of data reporting. Each study was evaluated independently, and the results of the quality assessment were used to support the interpretation of findings rather than as criteria for exclusion.

Data Synthesis

Data synthesis was conducted using a narrative synthesis approach. The extracted data were grouped and compared based on the type of health promotion media, study design, and reported outcomes related to knowledge, attitudes, and participation in VIA screening among women of reproductive age (WRA). Due to heterogeneity in study designs, intervention types, and outcome measurements, a meta-analysis was not performed. The findings were synthesized descriptively to identify patterns, similarities, and differences across the included studies.

RESULTS

Study Selection Results

The literature search initially identified 570 records from the selected databases. After applying publication year filters, 396 records remained for further screening. Title and abstract screening resulted in 45 potentially relevant studies. Following full-text assessment, several studies were excluded due to duplication, irrelevant outcomes, non-intervention study designs, or inaccessible full texts. Ultimately, 13 studies met all eligibility criteria and were included in this systematic review. The study selection process is summarized in the PRISMA 2020 flow diagram. At the full-text screening stage, studies were excluded due to non-intervention study designs, absence of measurable outcomes related to VIA screening, duplication, or unavailability of full-text articles. These exclusion criteria were applied to ensure methodological relevance and consistency with the review objectives.

Characteristics of Included Studies

A total of 13 studies were included in this systematic review. All studies were conducted in Indonesia and published between 2021 and 2025. The majority of studies employed quasi-experimental designs, primarily using pre-test post-test approaches. The study populations consisted of women of reproductive age (WRA), with sample sizes varying across studies.

The health promotion interventions evaluated included audiovisual media, printed educational materials such as booklets, leaflets, and modules, digital or mobile health media, and direct health education sessions delivered by health workers. The primary outcomes assessed across the studies were changes in knowledge, attitudes, and participation in Visual Inspection with Acetic Acid (VIA) screening.

Table 2. Data Extraction Table

No	Name, Year, Title	Sample	Intervention	Comparison	Outcome
1.	Riya Ayomi Nurkhasanah, Reni Retnaningsih, Nila Widya Keswara, Zainal Alim. (2024) (4). Journal of Issues in Midwifery. The Influence of Audiovisual Media on the Interests of Mothers of Reproductive Age In Visual Inspection with Acetic Acid (VIA).	The characteristics of the respondents consisted of 50 people with a dominant age of 26–35 years.	Health education using audiovisual media about the VIA test.	Conditions before the intervention (pre-test) were compared with those after the intervention (post-test) within the same group (without a control group).	Increased interest in VIA screening for women of reproduction age. The Wilcoxon test yielded a ρ value of 0.000 (< 0.05), indicating a statistically significant effect.

2.	Nathasia Elga Haryono, Wilda Wahyuni Siregar, Raisha Octavariny, Kurniawati, Ulfah Khomaina Hall. (2025) (6). Journal of Community Service (JPK) Increasing Awareness of Cervical Cancer in Fertile Couples: Educational Strategy for VIA (Visual Inspection with Acetic Acid) Screening for Early Detection.	Fertile-Age Couples (FAU), namely husband and wife with the wife aged 15–49 years, in the Sukorame Community Health Center (Puskesmas) work area.	Health education uses an interactive lecture method, supported by leaflets and educational videos.	Conditions before education (pre-test) were compared with those after education (post-test) within the same group.	Significant improvements were achieved in three key areas. Knowledge of VIA increased from 20% to 86.67 %, indicating understanding of the purpose and procedures of the test. Readiness to undergo the test increased from 20% to 66.67%, indicating willingness to undergo VIA in the near future. Shared awareness among partners increased to 60%, indicating improved communication and support within the household.
3.	Sari Saripah, Rizkiana Putri, Shinta Mona Lisca. (2023) (7) SENTRI: Scientific Research Journal The Effectiveness of Health Counseling with PowerPoint and Audiovisual Media on Increasing the Knowledge of Women of Reproduction Age about Cervical Cancer in the Working Area of the Bayongbong Community Health Center, Garut Regency in 2023	The sample consisted of 30 women of reproduction age in the Bayongbong Community Health Center (UPT) working area in Garut Regency.	Health education was conducted using two educational media methods: PowerPoint and audiovisual (educational video).	The counseling group used PowerPoint. The counseling group used audiovisuals (video). The two-group pretest-posttest research design allowed for comparisons before and after the intervention in each group, while also comparing the effectiveness of both media.	The results of the Independent T-Test showed no significant difference between the two media ($p = 0.794$). This means that both methods are equally effective in increasing knowledge, but do not differ significantly in the level of effectiveness.
4.	Ni Kadek Dian Oktaviani, Luh Ayu Purnami, Indrie Lutfiana. (2024) (8). Journal of Proceedings of the National Health Symposium The Effectiveness of Electronic Illustrated Pocket Books on Increasing the Interest of Women of Reproduction Age (WRA) in Undergoing VIA Tests at the Kubutambahan I Community Health Center	Women of reproductive age (WRA) aged 30-50 years in the Kubutambahan I Community Health Center, Buleleng Regency, Bali. Population and sample size: 27 people (total sampling).	The educational media provided was an electronic illustrated pocket book.	There was no external comparison group because the study design was a one-group pretest-posttest.	Statistical results: Mean interest before intervention: 28.7. Mean interest after intervention: 31.1. The Wilcoxon test showed $p=0.029$ ($\alpha=0.05$), meaning there was a significant influence between the intervention and increased interest of WRA in conducting VIA test.

5.	Meta Nurbaiti, Nuriza Agustina. (2023) (5). Journal of Community Service (JPMBA) Health Education: Early Detection of Cervical Cancer Using the VIA Method for Women of Reproduction Age and Those at Risk	Women of Reproduction Age (WRA) and women with risk factors for cervical cancer in Sukodadi Village, Sukarami District, Palembang. Number of participants: 20.	Health education (counseling) on early detection of cervical cancer using the VIA method was provided. The counseling was conducted interactively and face-to-face, accompanied by educational media in the form of illustrated leaflets and visual banners.	A one-group pretest–posttest design with no control group was used.	Evaluation Results: 70% of participants demonstrated good understanding after the counseling session. Another 30% demonstrated adequate understanding.
6.	Magdalena Prihatin Ningsih, Haspita Rizki Syurya Handini, Femi Wulandari. (2021). (10) Independent Health Journal Differences in the Effectiveness of Health Promotion Using Film Media and Demonstrations on Mothers' Knowledge and Attitudes regarding VIA Examination	Population: 14,582 people, with a sample of 32 respondents (16 per group). Inclusion criteria: age 30–50 years, minimum junior high school education, never had a VIA test, and willing to be respondents.	The film's content included an explanation of cervical cancer, risk factors, the benefits of early detection with VIA, examination procedures, and educational testimonials. Another group received an intervention in the form of a live demonstration of the VIA examination using props (phantoms, VIA equipment, and atlas images), allowing respondents to witness the examination steps in concrete detail.	Comparison of two educational media: Film Group (passive audiovisual) and Demonstration Group (active visual-kinesthetic).	Changes in Film Attitude: the mean increased from 59.50 to 62.62. Demonstration: the mean increased from 60.81 to 63.75. There was no significant difference between the two ($p= 0.99$).
7.	Dessy Hidayati Fajrin, Utin Siti Candra Sari, Siti Utami. (2025) (9). Medicare Journal The Influence of Booklets and Lectures on Women of Reproduction Age's Knowledge about Cervical Cancer and VIA Examination	Sample size: 114 respondents (57 per group). Main characteristics: the majority are aged >35 years (±76%), have a high school/vocational high school education (±78%), are employed (56%), and use hormonal contraception (89%).	Health education using booklets and lecture.	A lecture group (without printed media) served as a comparison. The counseling was conducted using direct verbal methods without additional visual media.	Increased Knowledge about Cervical Cancer. Booklet: median increased from 9.00 to 14.00. Lecture: median increased from 8.00 to 12.00. Mann-Whitney test: $p < 0.001$

8.	Anissa Syafitri Almufaridin, Eva Susanti, Rahmieta Ully Yasera, Revi Susanti, Sumarsih, Yalimah. (2024) (14). Ungu Community Service Journal (Servant to Ungu) VIA Counseling for Fertile Age Couples (PUS) in the Kemiling Health Center Work Area, Bandar Lampung in 2024	Number of participants: 20 couples. General characteristics: women aged 30–50 years, most of whom had never had a VIA test, and had little knowledge about cervical cancer.	The cervical cancer and VIA screening education activities were conducted through lectures, interactive discussions, leaflets, and PowerPoint presentations.	The design used internal comparisons (pretest-posttest) without a control group.	The activity resulted in increased knowledge of cervical cancer and VIA after the counseling session. Twenty participants (100%) expressed their willingness and willingness to undergo VIA testing. The counseling session was proven to increase awareness, motivation, and participation of women in VIA testing.
9.	Nofa Anggraini & Koyah Rokayah. (2023) (11). Scientific Journal of Nursing The Influence of Health Promotion Media, Husband's Support, and Self-Awareness on the Interest of Women of Reproduction Age (WRA) in Undergoing VIA Tests at the Lemah Abang Community Health Center, Karawang Regency in 2022	In 2022, 60 respondents from women of reproduction age residing in the Lemah Abang Community Health Center, Karawang Regency,	Providing health promotion media (leaflets, print, and electronic media), husband support, and increasing self-awareness can encourage interest in VIA testing.	Women of reproduction age who did not receive health promotion, did not receive husband support, and had low self-awareness.	Increased interest and participation of women of reproduction age (WRA) in undergoing the VIA Test. Outcomes were measured using an interest questionnaire, and the Pearson correlation test results showed a p-value of $0.000 < 0.05$ for all variables.
10.	Ni Luh Putu Sri Erawati, Ni Wayan Ariyan, I Gusti Ayu Surati. (2024) (15). Journal of Healthy Community Service Increasing Knowledge and Participation of Women of Reproduction Age in Early Detection of Cervical Cancer Using the Visual Inspection with Acetic Acid (VIA) Method through Counseling in Serangan Village	Women of reproductive age (WRA) aged 21–53 years in Serangan Village, South Denpasar. Number of counseling participants: 54 people.	Health education and counseling on early detection of cervical cancer using booklets and leaflets,	There was no external control group, but internal comparisons were made between pretests and posttests.	Research results: Knowledge scores increased significantly: the average pretest was 61.48 to posttest 84.44 ($p = 0.000$). Participation in VIA examination increased: 42 people (77.78%)

11.	Jasmawati, Siti Raihanah, Ratna Wati. (2025) (16). Journal of Community Service Creativity (PKM) Implementation of the E-DUVA Application for Early Detection of Cervical Cancer in Women of Reproduction Age in Sempaja	Population characteristics: women of reproductive age with low awareness of early detection of cervical cancer, where only 40% have had a VIA test, 10% are VIA positive, and there is one active case of cervical cancer under treatment.	Education and implementation of the E-DUVA application, a mobile-based digital application containing information, education, and guidance on cervical cancer and the VIA examination.	Comparison of knowledge before and after the intervention (pretest–posttest) without an external control group.	Research results: The average pretest score was 70.40 increasing to 90.88 in the posttest. Knowledge increased by 90%.
12.	Marlindawati, Inda Corniawati, Elisa Goretti Sinaga. (2023) (17). Journal of Aspiration of Health Journal The Influence of the Reproductive Health Module on the Knowledge of Fertile Age Couples (PUS) and VIA Test Visits in Apung Village	The total population was 332, with 16 respondents as samples using a purposive sampling technique.	Health education uses a reproductive health module covering topics such as: Sexual development and sexuality (puberty, unwanted pregnancy), sexually transmitted infections (STIs) and HIV/AIDS, and reproductive health of women of reproduction age.	Comparison of knowledge and behavior of VIA visits before and after the module intervention (pretest–posttest). There was no external control group.	This means that the reproductive health module is effective in increasing knowledge and behavior of VIA examinations.
13.	Yeni Suryaningsih, Annisa Respati, Nita Ayu. (2024) (18). Papanda Journal Journal of Community Service Increasing Awareness and Knowledge of Reproductive Health through Socialization of VIA Examination as an Effort for Early Detection of Cervical Cancer in Candra Jaya Village	Women of reproduction age (20–50 years old) residing in Candra Jaya Village.	Interactive socialization of the VIA examination through lectures, discussions, visual media (leaflets, slides), and demonstrations of the procedure using a cervical anatomical phantom.	Comparison of knowledge levels before and after socialization through a pre-post test with 10 questions.	Main conclusion: Community-based interactive education is effective in increasing knowledge and readiness for healthy behaviors.

Effects of Health Promotion Media on VIA Screening Outcomes

All included studies reported improvements in at least one outcome following health promotion interventions related to VIA screening. The outcomes assessed across the studies included knowledge, attitudes, and participation in VIA screening among women of reproductive age (WRA).

Audiovisual media interventions consistently demonstrated improvements in participants' knowledge and attitudes toward VIA screening. Several studies reported statistically significant increases in knowledge scores following video-based educational interventions. Digital and mobile health media interventions also showed positive effects, particularly in increasing awareness and willingness to participate in VIA screening.

Printed educational media, including booklets, leaflets, and modules, were associated with increased knowledge levels; however, their effects on screening participation varied across studies. Direct health education sessions conducted by health workers resulted in improvements in knowledge and attitudes and, in some studies,

increased participation in VIA screening services. Overall, the magnitude of intervention effects differed depending on the type of health promotion media used.

Summary of Key Findings

This systematic review identified consistent evidence indicating that health promotion media interventions positively influenced VIA screening outcomes among women of reproductive age (WRA). Improvements were most frequently observed in knowledge outcomes, followed by attitudes and participation in VIA screening services. Audiovisual and digital media interventions demonstrated more consistent improvements across multiple outcome domains compared to printed educational materials. Nevertheless, printed media and direct health education sessions also contributed to increased awareness and participation in VIA screening in several studies. Overall, the findings highlight the effectiveness of diverse health promotion media in supporting VIA screening programs. Despite the overall positive trends observed across the included studies, notable heterogeneity was present in terms of study design, sample size, intervention duration, and outcome measurement tools. Most studies employed quasi-experimental pretest–posttest designs without control groups, which limits direct comparison of effect magnitude across interventions. This heterogeneity precluded quantitative synthesis but provides important contextual insight into how the effectiveness of health promotion media may vary depending on population characteristics and implementation settings. However, due to heterogeneity in study designs, intervention duration, and outcome measurement tools, direct comparison of effect magnitude across studies was not feasible.

DISCUSSION

Given that most included studies employed quasi-experimental and community-based designs without randomization, the findings of this review should be interpreted as associative rather than causal. This systematic literature review indicates that health promotion media interventions are consistently associated with improvements in knowledge, attitudes, and participation in Visual Inspection with Acetic Acid (VIA) screening among women of reproductive age (WRA) (19). Nevertheless, these associations must be interpreted with epistemological caution. The predominance of quasi-experimental and community-based designs without randomization limits the strength of causal inference. Consequently, the findings should be understood as indicative of plausible relationships rather than definitive evidence of direct causality (20).

The observed associations may be influenced by several internal validity threats, including selection bias, baseline differences in motivation, prior exposure to reproductive health information, and concurrent community health initiatives(21). Additionally, reliance on self-reported outcomes may introduce social desirability bias, particularly in culturally sensitive contexts such as gynecological screening (22). Explicit acknowledgment of these limitations is essential to situate the findings within an appropriate methodological framework and to avoid overstating the effects of media-based interventions (21).

Beyond outcome associations, this review contributes a deeper theoretical synthesis by elucidating how and why different media modalities may interact with behavioral antecedents and contextual determinants. Drawing primarily on the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB), the findings suggest that health promotion media function as mechanisms that activate specific cognitive, affective, and experiential pathways underlying preventive health behavior (23).

Audio-visual and digital media modalities appear to predominantly engage cognitive and affective mechanisms. By presenting information through synchronized visual and auditory channels, these media enhance message salience, clarify procedural steps, and reduce ambiguity related to VIA screening (4). Within the HBM framework, such mechanisms may strengthen perceived susceptibility and perceived benefits while attenuating perceived barriers. From a TPB perspective, these modalities are more likely to influence attitudes toward screening and intention formation rather than directly producing behavioral change (4).

The effectiveness of audio-visual media can also be interpreted through Dual Coding Theory, which posits that information encoded through multiple representational systems is more easily retained and recalled. In this context, videos and digital applications may support sustained knowledge retention and emotional engagement, which are critical precursors to preventive decision-making. However, the reviewed studies suggest that these cognitive

gains do not automatically translate into screening behavior, underscoring the mediating role of contextual and social factors (24).

Experiential modalities, such as live demonstrations and the use of anatomical phantoms, appear to operate through distinct mechanisms rooted in Experiential Learning Theory. These interventions transform abstract knowledge into embodied understanding, thereby enhancing perceived behavioral control and self-efficacy (10). This pathway is particularly relevant in settings where fear, embarrassment, and uncertainty about gynecological procedures constitute major psychological barriers. While these modalities are associated with higher readiness for screening, the absence of randomized comparisons precludes definitive claims regarding their causal superiority (24).

Print-based media, including booklets, leaflets, and modules, demonstrated consistent associations with knowledge improvement but more variable relationships with screening participation. From an andragogical perspective, these media support reflective, self-directed learning and serve as reinforcement tools rather than primary drivers of behavior change. Their effectiveness appears contingent upon literacy levels, motivation, and opportunities for repeated exposure, suggesting that print media alone may be insufficient to activate complex behavioral processes without complementary interactive or social components (9).

Importantly, this review highlights that media effectiveness is not an intrinsic property of the modality itself, but rather an emergent outcome of its interaction with contextual determinants. Sociocultural norms, spousal support, family decision-making dynamics, access to health services, and trust in health workers significantly shape how media messages are interpreted and acted upon (7). Within the TPB framework, these factors function as subjective norms and perceived behavioral constraints that mediate the translation of intention into action (25).

Several included studies underscore the role of husbands and family members in influencing women's screening decisions, indicating that media interventions may exert indirect effects by reshaping normative expectations rather than directly altering individual cognition. In collectivist contexts, such as many Indonesian communities, preventive health behaviors are often socially negotiated. As a result, media-based interventions that fail to address these relational dynamics may achieve knowledge gains without corresponding behavioral uptake(14).

Comparison with international evidence further strengthens this interpretation. Studies from Kenya and Iran emphasize participatory dialogue, community engagement, and theory-driven intervention design as key determinants of cervical cancer screening uptake. In contrast, Indonesian studies tend to emphasize media format and delivery mechanisms. This divergence suggests that future interventions in Indonesia may benefit from embedding media strategies within explicitly articulated behavioral frameworks that address both individual-level cognition and social structure (26).

Taken together, the findings of this review suggest that health promotion media act as mechanistic enablers that selectively activate behavioral antecedents depending on modality and context (27). Rather than producing direct causal effects, media interventions appear to facilitate behavioral change by shaping attitudes, strengthening self-efficacy, reducing psychological barriers, and influencing social norms (20). The relative effectiveness of a given modality thus depends on its alignment with dominant behavioral barriers and contextual constraints (21).

This review advances the existing literature by moving beyond descriptive comparisons of media types toward an integrative theoretical explanation of media behavior interactions. By situating Indonesian evidence within broader behavioral theory and international scholarship, the review contributes a nuanced understanding of how media-based health promotion may support VIA screening programs (23). These insights provide a foundation for future research employing stronger experimental designs and for the development of theory-informed, context-sensitive cervical cancer prevention strategies in low- and middle-income settings (25).

CONCLUSION

Based on the results of the analysis of thirteen research articles, it can be concluded that educational interventions based on health promotion media consistently increase the knowledge, attitudes, and participation of women of reproductive age (WRA) regarding Visual Inspection with Acetic Acid (VIA) examinations.

Each media form has specific strengths: audiovisual media, film, and PowerPoint have proven most effective in motivating and enhancing conceptual understanding because they simultaneously activate visual-auditory learning processes. Demonstrative media, such as anatomical phantoms and hands-on VIA practice, have a significant impact on behavioral change through real-world experiences that build confidence. Digital media, including the E-DUVA

application and e-booklets, expand the reach of education through interactive and accessible methods, especially among young, technology-savvy individuals. Traditional print media, such as leaflets, booklets, modules, and banners, remain relevant in communities with limited access to technology due to their reusability and low cost. These results confirm that the effectiveness of health promotion media does not depend on a single format, but rather on a combination of multimodal approaches appropriate to the target audience and sociocultural context.

These findings support the Health Belief Model, the Theory of Planned Behavior, and the Experiential Learning Theory, which collectively explain that increased knowledge, direct experience, and social support are key determinants of preventive behavior. In addition to media, social support and family participation play a crucial role in strengthening the educational effect. Husband's support is positively correlated with interest in VIA screening. An approach involving partners and the community is key to the success of early detection programs at the community level. Therefore, interactive, participatory, and community-based health promotion media are the most effective strategy for increasing the coverage of early cervical cancer detection in Indonesia.

These findings should be interpreted cautiously due to the predominance of quasi-experimental designs without control groups, which limits causal inference.

AUTHOR'S CONTRIBUTION STATEMENT

Astin Nur Hanifa acts as the main research conceptualizer who is responsible for compiling the research design, collecting and analyzing data, writing the initial draft, and developing the manuscript structure. Nana Usnawati and Nuryani, contributed to the literature review, methodology review, validation of research results, and editing of the content and language of the final manuscript. The three authors jointly made scientific revisions, adjusted to reviewer input, and gave final approval to the manuscript submitted for publication. All authors declare that their contributions have been proportionally explained and that no other party meets the criteria for authorship but is not listed as an author.

CONFLICTS OF INTEREST

The authors declare that they have no personal or financial conflicts of interest that could have influenced the results or interpretation of this study. The entire research, analysis, and writing process was conducted independently without any external intervention.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors declare that this study did not use artificial intelligence (AI) technology in the preparation of the scientific material. The use of AI-based tools such as ChatGPT or Grammarly was limited to grammar checking and technical editing of the manuscript to improve sentence clarity, without affecting the scientific content, research results, or data interpretation.

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