

## Literature Review

**Factors affecting early detection of cervical cancer: a scoping review****Fitri Ayu Marpal\***, Ismarwati

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**Abstract**

Cervical cancer is still one of the most common cancers in women, with a total of 604,127 new cases of cervical cancer, where the death rate reached 341,831 in 2020. The achievement of early detection of cervical cancer in 2016 was 1.5 million or 3.5% of women, while the government's target was 50% of women to do early detection of cervical cancer. This review aims to determine the factors that influence the early detection of cervical cancer. The scoping review method uses the PRISMA-ScR checklist mapping. Article selection using PRISMA Flowchart with stages carried out starting from identifying article searches, filtering articles based on titles and abstracts, selecting articles based on full text, critical appraisal, and article results used. The databases used are PubMed, Wiley, and Science Direct. There were 11 relevant articles out of 713 were found based on inclusion and exclusion criteria, depicted in 3 themes: predisposing factors, supporting factors, and driving factors, including age, knowledge, education level, distance affordability, access to information, family support, and health workers. The implementation of early detection of cervical cancer is still very low in developing countries, so there needs to be a good understanding of awareness and knowledge about cervical cancer and its screening among women in developing countries.

**Keywords:** cervical cancer; early detection; scoping review**1. Introduction**

Cervical cancer remains one of the most common cancers in women, with the number of new cases reaching 604,127 while 341,831 deaths, 85% of which occurred in developing countries. The highest incidence of cervical cancer is in the East African country, with 54,560 (40.1%) new cases and 36,497 (3.36%) deaths. In Indonesia, the number of new cases of cervical cancer was 36,633 (9.2%) in 2020, and 21,003 deaths occurred (GLOBOCAN, 2020). The main reason for the high mortality rate from cervical cancer is the delay in screening for early prevention, and most patients are treated at an advanced stage (Kelrey et al., 2021). Other risk factors are age at marriage, contraceptive use, parity, and a family history of cancer (Pratama & Adrianto, 2019). The risk of cervical cancer increases at a young age who have sexual intercourse for the first time. The mortality rate of cervical cancer can be reduced by early detection (Kesehatan et al., 2020). The cause of the high cases of cervical cancer is that there are still many who do not do early detection, as a result of which cancer is diagnosed at an advanced stage, even though the prevention of cervical cancer itself can be done by routinely doing early detection of cervical cancer.

WHO recommends a comprehensive approach, that cervical cancer prevention and control measures are important. This is in accordance with the government's program to take a comprehensive approach by advocating healthy living through regular health care, avoiding cigarette smoke, diligent physical activity, healthy diet with balanced calories, adequate rest, stress management, and conducting Visual Inspection with Acetic Acid (IVA) (CLEVER) (Kemenkes RI, 2021). Women aged 30-50 years are the government's target in the cervical cancer early detection program in Indonesia,



with a target achievement of 50% until 2020. However, until 2016 the achievement of early detection of cervical cancer with the IVA method was only 3.5% (Kemenkes RI, 2018). In 2020 the percentage of early detection of cervical cancer (IVA test) was 8.3. This figure is still very far from the target to be achieved in Indonesia, which is 50%. From the examination results, 50,171 IVAs were positive, and 5,847 were suspected of cervical cancer (Kesehatan RI, 2021). For the community, cancer is a frightening and neglected disease and a major obstacle in dealing with the disease. As a result, patients reach an advanced stage and are difficult to treat (Lee et al., 2020). Many studies have been conducted related to factors that affect early detection of cervical can. There are also programs from the Government related to the early detection of cervical cancer. However, the achievement of early detection itself is still very far from the number targeted by the Government. This review aims to identify factors that influence early detection of cervical cancer. This review is carried out by selecting articles from developed and developing to see differences or influencing factors n be seen from each country. To identify scoping review questions and develop a search strategy, the authors use the Population, Exposure, Outcome, Study Design (PEOS) framework with the research question, "What are the factors that influence early detection of cervical cancer?"

## **2. Research Methods**

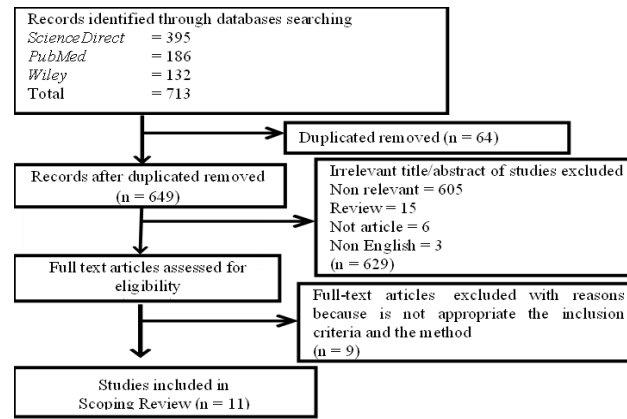
The method used is scoping review. A scoping review is a systematic review used to map evidence-based results on a topic that identifies existing theories, sources of evidence, and knowledge gaps (Tricco et al., 2018). A scoping review is considered a good approach to mapping existing literature because it can meet the necessary goals and requirements and answer research questions (Peters et al., 2020). This scoping review adopts the PRISMA-ScR checklist. Article selection using PRISMA Flowchart (Tricco et al., 2018) with the following stages: (1) identification of article searches, (2) filtering articles based on titles and abstracts, (3) selection of articles based on full text, (4) critical appraisal, (5) article results used.

### **2.1. Identify article search (step 1)**

At this stage, identify relevant articles using inclusion and exclusion criteria from the framework, namely articles published in the last 5 years (2017-2021), research or original articles n English or Indonesian. Excluded articles are review or reporting articles. The keywords used in the literature search and expanded by specifying synonyms using booleant are "cervical cancer" AND "affecting factors" OR "predispose factors" AND "early detection" OR "screening". The databases used are PubMed, Wiley, and Science Direct.

### **2.2. Selection of relevant articles (steps 2 and 3)**

This stage found 713 articles. Then the articles were stored in the Mendeley software. The results of the total article and screening process are depicted in the PRISMA Flowchart (Tricco et al., 2018). The data were filtered according to the criteria that the researchers determined. The stages of data filtering are as follows:



**Figure 1.** PRISMA flowchart (Tricco et al., 2018)

### 2.3. Critical appraisal (step 4)

Critical appraisal is done to assess the quality of each article. The tool used to assess quality in this scoping review is the Mixed-Method Appraisal Tools (MMAT), with the following range of values scale A (Good) for a range of values 10-14, B (Good Enough) for a range of values 5-9, C (Less Good) for a range of values 0-4. Each point of the article assessment criteria is represented by numbers 0-2 with qualifications, namely 0 (No), 1 (Do not know), and 2 (Yes).

**Table 1.** Critical appraisal results

No	Author (Year)	Score
1	(Okunowo et al., 2018)	11/A
2	(Nwabichie et al., 2018)	10/A
3	(Darj et al., 2019)	14/A
4	(Kung et al., 2019)	14/A
5	(H. Lee et al., 2020)	14/A
6	(Woldetsadik et al., 2020)	14/A
7	(Cha & Chun, 2021)	8/B
8	(Sumarmi et al., 2021)	12/A
9	(George T, 2021)	10/A
10	(Juwitasari et al., 2021)	8/B
11	(Natae et al., 2021)	10/A

Critical appraisal has been done on each article used in this scoping review. Articles with a score of 14 have met all assessment criteria and are explained in detail related to the research conducted. Articles with scores 12 and 11 have not met the assessment criteria because there are still unclear assessment points, such as not describing sampling techniques. The study population is unclear, so it cannot assess the sample used. It can already represent the population or not, and those in the study are not explained. At the same time, there is a difference between the number of respondents willing to be involved in the research and the study results. Articles with a score of 10 also do not meet the assessment criteria because it does not explain the measurement indicators used, and there are differences between the initial and final data. However, the reason for the difference is not explained. Overall, the article’s quality meets the assessment criteria and is appropriate for this scoping review. However, there are two articles with a score of 8 because the data collection method is not described, data sources do not exist, and there is no interpretation of research results based on participant quotes. Population and samples are also not described in the article, so the article is difficult for readers to understand.

## 2.4. Articles used (step 5)

At this stage, the results of the articles used and classified using extraction data adopted from the JBI Manual for Evidence Synthesis are presented in Table 2 (Peters et al., 2020).

**Table 2. Data charting (Peters et al., 2020)**

No	Title/Author/Year/Country /Coding	Purpose	Methods	Outcome
1.	Women's knowledge of cervical cancer and uptake of Pap smear testing and the factors influencing it in a Nigerian tertiary hospital/(Okunowo et al., 2018)/Tanzania/A1	This study aimed to discover women's knowledge about cervical cancer and the factors that affect pap smear screening.	Quantitative cross-sectional, descriptive Questionnaire The sample was 205 women	The knowledge of the women in the study regarding cervical cancer symptoms and risk factors was very low (40.0% and 15.6%, respectively), despite a level of awareness of 78.5%. The main reasons for doing a Pap smear were recommendations from doctors/nurses (89.4%) and fear of cervical cancer (23.4%), while the reasons for not doing a Pap smear were lack of awareness (53.8%) and not recommended. Influencing factors include education level and previous discussions with doctors/nurses.
2.	Factors Affecting Uptake of Cervical Cancer Screening Among African Women in Klang Valley, Malaysia/(Nwabichie et al., 2018)/Malaysia/A2	This study aimed to identify cervical cancer screening practices and factors influencing the screening status of African immigrant women attending selected church services in Klang Valley, Malaysia.	Quantitative cross-sectional Questionnaire The sample was 320 respondents	The response rate was 98.2%. The majority (68.1%) of respondents were aged 31-50 years and married. The prevalence of screening among respondents over the past three years was 27.2%. Using a p-value of 0.05 as the significance level, the final model showed that marital status (p=0.004), knowledge (p=0.035), perceived barriers (p=0.003), and having a regular healthcare provider (p<0.001) was the only significant predictive factor of cervical screening uptake among African immigrant women in the Klang Valley, Malaysia.
3.	Barriers and facilitators to cervical cancer screening in Nepal: A qualitative study/(Darj et al., 2019)/Nepal/A3	To understand Nepalese women's perceptions of barriers to participation in cervical cancer screening and what influences their participation	Qualitative FGD The informants used were 72 informants with an age range of 25-60 years	Women have low behaviors about cervical cancer screening. Socio-cultural barriers, geographical elements, service providers who lack support, and limited income are barriers to attending screening centers. Facilitating factors, such as participation in awareness programs and support from families and women's groups, can convince women to come to health facilities that provide cervical cancer screening.
4.	"My husband says this: If you are alive, you can be	This study aimed to evaluate individual and	Qualitative In-depth interviews	Interpersonal factors that influence cervical cancer screening include

No	Title/Author/Year/Country /Coding	Purpose	Methods	Outcome
	someone...”: Facilitators and barriers to cervical cancer screening among women living with HIV in India/(Kung et al., 2019)/India /A4	interpersonal factors that influence cervical cancer screening.	The informants used were 25 WLWH and 15 stakeholders	acceptance or lack of instrumental and emotional family support, interaction with health care providers, and acceptance or lack of information about cervical cancer and Pap tests from health care providers.
5.	Exploring Complicity of Cervical Cancer Screening in Malawi: The Interplay of Behavioral, Cultural, and Societal Influence/(H. Lee et al., 2020)/Malawi /A5	This study aimed to identify facilitators and barriers influencing cervical cancer screening behavior in Malawi	Ethnographic qualitative The sample was 11 women and seven men	Three categories (sociocultural influences, access to the health care system, and individual factors) have emerged as facilitators or barriers to cervical cancer screening among Malawian women. The findings also suggest that cervical cancer screening behaviors are socially located through a particular community's cultural and health care services.
6.	Socio-demographic characteristics and associated factors influencing cervical cancer screening among women attending in St. Paul's Teaching and Referral Hospital, Ethiopia(Woldetsadik et al., 2020)/Ethiopia/A6	This study aims to determine the influence of sociodemographic characteristics and related factors on screening.	Quantitative cross-sectional The sample of this study was 425 participants	Women aged 40-49 years are more likely to be screened (36.1%) than those aged 18-29 (8%). Women living in urban areas are more likely to be screened (15.9%) than women living in rural areas (3.9%). Other factors, including low monthly income, less likelihood of developing cancer, lack of knowledge, and fear test results, were significantly associated with low screening uptake.
7.	Barriers and Challenges to Cervical Cancer Screening, Follow-Up, and Prevention Measures among Korean Immigrant Women in Hawaii/(Cha & Chun, 2021)/Amerika Serikat/A7	The purpose of this study was to explore health barriers and cervical cancer prevention challenges among KIWs in Hawaii	Qualitative with an ethnographic approach Structured interviews The informants were 20 KIW aged 21-65 years	The findings revealed that participants (a) lacked knowledge of the U.S. health care system; (b) did not have access; (c) had limited resources regarding cervical cancer screening communicated in Korean; (d) lack of understanding of cultural and psychosocial beliefs about preventive care; (e) shortage of female and Korean-speaking service providers; and (f) experiencing language barriers and limited health insurance coverage.
8.	Factors associated with the intention to undergo Pap smear testing in the rural areas of Indonesia: a health belief model/(Sumarmi et al.,	This study aims to determine the influence of health beliefs, demographic factors, and health characteristics on the intention to undergo a	Descriptive quantitative The sample used 687 married women	The average age of participants was 42 years (SD=8.4). Among participants, 81% of women had never had a Pap smear, and 61% (n=422) of women reported a high intention to receive a Pap smear.

No	Title/Author/Year/Country /Coding	Purpose	Methods	Outcome
	2021)/Indonesia/A8	Pap smear test in women in rural Indonesia.		Health beliefs about the Pap smear test differ between women who have low and high intentions to undergo a Pap smear test. Health beliefs, such as perceived benefits, severity, barriers to Pap smear tests, and health motivation for Pap smear tests are associated with intent to undergo Pap smear tests among rural Indonesian women. Overall, hierarchical multiple regression with three steps containing demographic variables, health characteristics, and health beliefs accounted for 31% of the variance of intent to undergo a Pap smear test among rural Indonesian women.
9.	Factors influencing utilization of cervical cancer screening services among women – A cross-sectional survey/(George T, 2021)/India/ A9	This study aimed to assess various factors that influence the utilization of cervical cancer screening services.	Quantitative cross-sectional Questionnaire The sample was 430 women aged 30-60 years	The utilization of cervical cancer screening services was very low in the population studied, and only 5% had undergone Pap smear screening during their lifetime. In this study, lower levels of knowledge regarding cervical cancer screening were significantly associated with nonparticipation in screening services. Lack of awareness (25.06%), lack of adequate health facilities (22.67%), lack of symptoms (11.69%), not feeling at risk (11.93%), and social stigma (9.55%) were identified as important factors influencing the utilization of cervical cancer screening services.
10.	Husband Support Mediates the Association between Self-Efficacy and Cervical Cancer Screening among Women in the Rural Area of Indonesia/(Juwitasari et al., 2021)/Indonesia/A10	This study aimed to examine indirect husband support factors and the use of self-efficacy tests and Visual Inspection with Acetic Acid (VIA) in women in rural Indonesia.	Kuantitatif cross-sectional The sample used was 219 women aged between 20-65 years	Only 7.31% had an IVA test a year ago, and most (65.75%) had an IVA test within four years. The Papanicolaou test directly impacted the husband's assistance, with a directional coefficient of 0.312 ( $P < 0.001$ ). The mediator between spousal assistance and the use of IVA tests is self-efficacy (standard path coefficient: 0.123. $P < 0.001$ ).
11	Cervical cancer screening uptake and determinant factors among women in Ambo town, Western Oromia, Ethiopia: Community-based cross-sectional study/(Natae et al.	This study aimed to assess cervical cancer screening rates and their determinants among Ambo City women	Quantitative cross-sectional Cross-sectional Questionnaire The sample used was 422 women aged 20-65 years.	In this study, 392 women participated, giving a response rate of 93%. Only 8.7% (34) of the study participants received cervical cancer screening in their lifetime. Be in the age group of 30-39 years (AOR = 3.2, 95% CI:

No	Title/Author/Year/Country /Coding	Purpose	Methods	Outcome
	2021)/A11			1.22, 8.36), have discussions related to cervical cancer with health care providers (AOR = 3.5; 95% CI: 1.17, 10.7), and know the availability of cervical cancer screening services (AOR = 2.8; 95% CI: 1.03, 7.87) regularly significantly associated with the use of cervical cancer screening.

### 3. Results and Discussion

#### 3.1. Article Characteristics

The articles used in this scoping review are 11 articles. The review results of each article are interconnected with each other, related to factors that affect early detection of cervical cancer, which have characteristics such as each being numbered based on the year of publication from A1-A11. The quality of article assessment in this scoping review uses MMAT with the results of 9 articles classified as grade A and two articles classified as grade B. Articles obtained are based on 10 Developing Countries and 1 Developed Country, based on research methods, seven articles using quantitative research methods and four articles with qualitative methods.

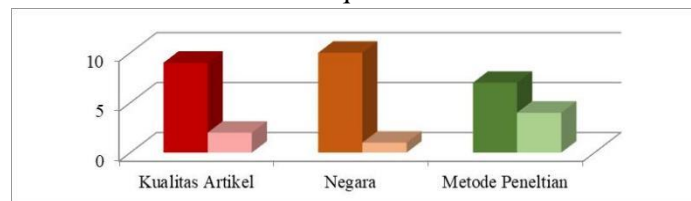


Figure 2. Article characteristics

#### 3.2. Thematic Analysis

Based on a review of 11 articles, three main themes were found from this scoping review and mapped based on theory: predisposing, supporting, and driving factors (Green, 1980).

Table 3. Theme mapping

Theme	Article
Predisposing factors: age, marital status, level of knowledge, level of education, employment status, and socio-economic.	A1, A2, A4, A5, A6, A7, A8, A9, A11
Supporting factors: information access, affordability	A4, A5, A7
Driving factors: family support, health worker support	A1, A2, A3, A4, A5, A7, A9, A10, A11

#### Theme 1: Predisposing Factors

Knowledge has significantly affected the collection of Pap smears in the last three years. Respondents with high knowledge will be more likely to have a Pap smear examination than those with low knowledge (A2). Limited knowledge also affects a person's behavior to do early detection of cervical cancer (A5). Research respondents have less knowledge about the early detection of cervical cancer, which results in screening obstacles. Respondents are afraid of the tests and results they get. This fear stems from a lack of knowledge about cervical cancer screening procedures (A4). This is in

line with other studies where good knowledge about cervical cancer and its screening can influence WUS to conduct early detection more than respondents with low knowledge (La Patilaiya et al., 2021). Women cannot distinguish between screening tests and diagnostic tests, so they often misunderstand and believe that cervical cancer screening is a test to diagnose the cause of problems from cervical cancer (E. A. Lee et al., 2017). Lack of understanding of early detection of cervical cancer through the IVA method also makes respondents feel embarrassed, scared, and lost the will to live when he realized he had cancer because of their opinion. It is common knowledge that cancer cannot be treated and is always connected with death (Suryanti & Apriani, 2021). The level of knowledge about early detection of cervical cancer is still low in line with the very low behavior of respondents in conducting early cervical cancer examinations, so it requires a persuasive communication strategy so that public awareness and concern for this health program can increase (Mariana, 2019). This shows that patient education about cervical cancer and cervical cancer screening is still lacking. Limited knowledge has an impact on respondents' behavior in cervical cancer screening. Interest can be influenced by knowledge of something and the experience gained during life, and that information is useful and meaningful in deciding service health (Apriyanti & Adista, 2020).

Participation in cervical cancer screening in the young age group (18-29 years) is smaller than women in the age (40-49 years) (A6). Women aged 30-49 years are screened more often than those aged 20-29 (A4). This is also in line with Natae's (2021) research that the use of cervical cancer screening increases with age because older women have a higher chance of developing cervical cancer than younger ones. However, it is important to consider that sexually active women, even though at a young age, can get cervical cancer (Natae et al., 2021). Low levels of education can limit women's health literacy about cervical cancer and cervical cancer screening (A8). The high level of awareness to conduct cervical cancer screening because most (76.5%) of the study respondents were highly educated. It may also explain that more than half (55.1%) of respondents knew the pap smear (A1).

Marital status is one factor that influences early detection of cervical cancer. Women who have been married two or more times may have early detection of cervical cancer compared to unmarried women (A2). However, in contrast to the results of other studies, 88.3% of married women have not undergone cervical cancer screening (Dinas et al., 2016). History of marriage has been married more than once or is included in the risk group category. Called a risk group because women with high sexual activity often change partners (Haerani et al., 2022). Respondents' marital status did not show a significant association in line with this study. However, employment status was a factor influencing the early detection of cervical cancer. Women with self-employed jobs were more likely to do early detection of cervical cancer than women who worked in government institutions (A6).

Income is also one of the influencing factors. Women with higher incomes tend to have intentions for early detection of cervical cancer, whereas women with low incomes tend to have low intentions to undergo cervical cancer screening (A8). Women with higher economic status adhered well to cervical cancer screening (A9). The level of income is one of the factors for a person in taking action, especially those related to the health sector. In addition, economic status is the level of a person's ability to meet his life needs. If a person's socioeconomic level is higher, it will make it easier for him to meet his needs in the health sector (Dewi, 2020).

Based on the results of the study shows that one of the factors that influence early detection of cervical cancer is education and knowledge, which greatly impacts behavior in early detection of cervical cancer. Respondent's education and knowledge about cervical cancer and cervical cancer screening are still lacking, so there must be more effective efforts to promote cervical cancer and its screening to the public to increase public knowledge.



**Theme 2: Supporting Factors**

Geographically, women living in rural areas are less likely to be screened than women living in urban areas (A6). This is in line with research that most women who require cervical cancer screening do not have geographical access to health facilities in Malawi. Poor road conditions and lack of transportation make it difficult for villagers to access basic health services (A5).

Access to information also affects cervical cancer screening behavior. Women who know where cervical screening services are located tend to be screened more than those who do not know (A6). This is in line with other studies. WUS who have good access to information are more likely to screen than WUS who need more information (La Patilaiya et al., 2021). Educational media is very helpful in conveying information to make it more interesting, and the health consultation group is very influential because it will share experiences from those who have done cervical cancer screening (Jaya Rochkmana et al., 2020). Access to information that is difficult to access is also due to language differences between providers and recipients of health services, so recipients of health services do not understand the purpose or information provided by the service provider (A7).

The results of this study obtained that access to information and affordability of distance is one of the factors that influence a woman's early detection of cervical cancer. Women living in rural areas are less likely to have early detection than women in urban areas. Women who know of early detection of cervical cancer are more likely to detect it than women who do not have access to information from the surrounding environment. This can be used as a concern by the Government and health workers to provide a fair opportunity for early detection of cervical cancer even in areas with inadequate distance access and provide information related to early detection of cervical cancer evenly in all places, including underdeveloped areas.

**Theme 3: Driving Factors**

The support of the husband or family and health workers is an influencing factor in this scoping review. Women who live with families whose decisions are dominated by men have no decision-making power and feel restricted in communicating and expressing feelings. As a result, women's health can be neglected because they depend on decisions made by their husbands or in-laws and can even be prohibited from cervical cancer screening (A3).

This goes hand in hand with husband support can influence screening behavior through social and religious norms. Spousal support has a direct effect on health behaviors. In addition, according to Indonesian culture, women depend on their husbands. Wives must obey their husbands. This means that the knowledge given to husbands by health workers must be strengthened so that husbands can know about cervical cancer and give permission to their wives to conduct routine cervical cancer screening (A10).

Talking to a healthcare provider about cervical cancer screening also improved utilization; women who discussed it with a provider were 3.5 times more likely to be screened than those who had never discussed it (A11). The main obstacle to cervical cancer screening is the absence of cervical cancer screening programs, so the importance of health education and regular counseling about cervical cancer by doctors/health workers in health facilities or the community cannot be underestimated (A1). These findings show that health workers, especially cervical cancer screening service providers, are important in reducing the burden and perception that develops in the surrounding environment (La Patilaiya et al., 2021). Health education influences fertile women's motivation to improve health services, especially the provision of health education about the early detection of cervical cancer by the IVA method. Therefore, health workers are expected to continue to provide information about the early detection of cervical cancer by the IVA method (Wahyuni, 2020).

Health education and cervical cancer counseling in women regularly need to be considered. This is because screening service providers will have more contact with women in health facilities. Patients will feel comfortable being cared for about their health problems, leading to new knowledge that develops.

#### 4. Conclusion

Based on the review that has been carried out, it was found that factors that affect early detection of cervical cancer are age, knowledge, education level, affordability, access to information, family support, and health workers.

Researchers found gaps in this study, including the implementation of early detection of cervical cancer is still very low in developing countries, so there needs to be a good understanding of awareness and knowledge about cervical cancer and its screening among women in developing countries. The media or service providers must disseminate information about cervical cancer and its screening to rural areas in various countries. Screening services must also move to remote areas in various countries as a strategy to increase the coverage of early detection of cervical cancer.

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