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Knowledge, Perceptions, and Practices in Cervical Cancer Screening Among Female Nurses and Midwives in Dr. Rehatta Hospital, Jepara District, Central Java, Indonesia

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Abstract
Background: Cervical cancer is the fourth most common cancer among women worldwide, with persistent high-risk human papillomavirus (HPV) infection (types 16 and 18) accounting for approximately 70% of cases. Despite the availability of HPV vaccination and screening programs, Indonesia has a low screening coverage rate (12%). Female nurses and midwives play a crucial role in cervical cancer prevention, yet their knowledge, perceptions, and screening practices remain underexplored. Objective: This study aims to assess the knowledge, perceptions, and screening practices of female nurses and midwives in Jepara District, Indonesia, and identify key barriers to participation in screening programs. Methods: A descriptive study was conducted at RSUD Dr. Rehatta, Jepara, involving 74 registered female nurses and midwives. Data were collected using a validated self-administered questionnaire, and descriptive analysis was performed using SPSS version 20. Results: The majority of respondents were aged 20–30 years (37.1%) and over 40 years (37.1%), with 87.1% married. While 98.6% were aware of cervical cancer and 89.2% identified HPV as its primary cause, only 35.3% knew the recommended screening frequency. Although 94.7% recognized cervical cancer as preventable, only 40.0% perceived themselves at risk, and merely 32.0% had undergone screening. The primary barriers included fear of diagnosis (74.7%), embarrassment (56.0%), and misconceptions regarding the necessity of screening in the absence of symptoms (54.7%). Conclusion: Despite high awareness of cervical cancer, screening participation remains low due to psychological, social, and cultural barriers. Structured education, mandatory training, and targeted awareness programs are essential to improving screening uptake among healthcare professionals.

Keywords: cervical cancer, screening, female nurses, midwives

INTRODUCTION

Cervical cancer remains a pressing global health issue, ranking as the fourth most common cancer among women.[1] The primary cause is persistent infection with high-risk human papillomavirus (HPV), particularly types 16 and 18, which account for approximately 70% of cases.[2] Despite advancements in preventive measures, including HPV vaccination and early detection programs, cervical cancer continues to contribute significantly to morbidity and mortality worldwide. The burden is disproportionately high in low- and middle-income countries (LMICs), where limited healthcare resources and low screening coverage hinder early diagnosis and treatment.[3]

Indonesia, a Southeast Asian country with a population of over 270 million people, faces substantial challenges in cervical cancer prevention, with screening coverage falling below the WHO target.[4,5] Only 12% of eligible women undergo regular cervical cancer screening despite national efforts to improve access.[6] The Indonesian government has introduced free screening programs for women aged 30–50 through the National Health Insurance of Indonesia.[7] However, participation remains low due to various barriers, including lack of awareness, fear of screening procedures, misconceptions about cervical cancer, cultural beliefs, and logistical difficulties such as transportation and healthcare access. These challenges highlight the urgent need for targeted interventions to enhance screening uptake.[8]

Jepara, a district located in Central Java Province, Indonesia, is known for its coastal

communities and strong local traditions.[9] Healthcare professionals, particularly female nurses and midwives, play a pivotal role in promoting cervical cancer awareness and encouraging screening participation.[10] However, their knowledge, perceptions, and screening behaviors significantly impact their ability to educate and influence patients.[11] Despite their frontline role in preventive healthcare, research on female nurses' knowledge, perceptions, and screening practices in Jepara District remains limited.[12]

This study aims to assess these factors, identify barriers, and propose solutions to enhance engagement in cervical cancer prevention among female nurses and midwives at Dr. Rehatta Hospital, Jepara District. Understanding their perspectives is essential for developing effective strategies to improve early detection and reduce the burden of cervical cancer in the region. This study aims to assess the knowledge, perceptions, and screening practices of female nurses and midwives at Dr. Rehatta Hospital, Jepara District, and to identify key barriers to cervical cancer screening participation. Understanding their perspectives is essential for developing effective strategies to improve early detection and reduce the burden of cervical cancer in the region.

METHOD

Study Design and Setting

This study employed a quantitative, descriptive analysis design conducted at Dr. Rehatta Hospital, Jepara District, Central Java, Indonesia. The research focused on female nurses and midwives working in inpatient wards. A total of 94 female healthcare workers in inpatient wards were eligible for participation; however, only 74 respondents completed the questionnaire fully and were included in the analysis. Stratified random sampling was used to ensure diverse representation across different hospital units.

Inclusion and Exclusion Criteria

The inclusion criteria for this study required participants to be female healthcare workers, specifically nurses and midwives, employed at Dr. Rehatta Hospital, Jepara District, Indonesia. Additionally, participants had to be willing to participate in the study and provide informed consent. Meanwhile, the exclusion criteria applied to individuals who did not meet the specified requirements, including male healthcare workers and those who either did not complete the questionnaire or provided incomplete responses.

Data Collection and Instrument

A self-administered questionnaire was pretested on 20 female paramedical staff, including registered nurses and midwives working in the outpatient department, to assess its validity and reliability. Validity was evaluated through content validation by expert review, ensuring the questionnaire adequately measured the intended constructs. Reliability was assessed using Cronbach's alpha, yielding a value of 0.8, indicating good internal consistency. The questionnaire encompassed four key domains: socio-demographics, knowledge about cervical cancer, perceptions of screening, and screening practices.

Statistical Analysis

Descriptive statistics were used to summarize the data, including frequency distributions and percentages to describe participants' characteristics, knowledge, perceptions, and screening practices.

Ethical Considerations

This study received ethical approval from the Ethics Committee of Dr. Rehatta Hospital (Approval No: 123/KEPK-DRH/III/2025). All participants provided written informed consent before participation. Confidentiality and anonymity were ensured by using coded identifiers, and data were handled with strict confidentiality in accordance with ethical research guidelines.

RESULT & DISCUSSION

This study involved respondents with diverse characteristics. Based on age distribution, the majority of respondents were aged 20–30 years (37.1%) and over 40 years (37.1%), while the remaining 25.7% were between 31–40 years old. Most respondents were married (87.1%), while 11.4% were

single, and 7.1% were widowed. In terms of education, the majority held a Diploma in Nursing (48.6%) and a Diploma in Midwifery (25.7%), with the rest having a Professional Nursing degree (24.3%) and a Bachelor's degree in Nursing (7.1%). The respondents had varying levels of work experience, with more than half (55.7%) having over 10 years of experience, 40% having worked for 5–10 years, and 10% having less than 5 years of experience. Although knowledge about cervical cancer was relatively high, only 20% of respondents had attended related training. The respondents came from various work units, with the highest number from the Cempaka unit (27.1%), followed by Edelweiss (12.9%) and Flamboyan 1 (10%).

Table 1. Respondent Data Distribution

Variable	Frequency (n)	Percentage (%)
Age		
20-30 years	26	37.1%
31-40 years	18	25.7%
>40 years	26	37.1%
Marital Status		
Married	61	87.1%
Single	8	11.4%
Widow	5	7.1%
Education Level		
Nursing Diploma (D3)	34	48.6%
Midwifery Diploma (D3)	18	25.7%
Professional Nurse	17	24.3%
Bachelor of Nursing (S1)	5	7.1%
Years of Work Experience		
<5 years	7	10.0%
5-10 years	28	40.0%
>10 years	39	55.7%
Attended Training on Cervical Cancer		
Yes	14	20.0%
No	60	85.7%
Work Unit		
ICU	3	4.3%
Cempaka	19	27.1%
Perina	6	8.6%
Merpati	6	8.6%
Edelweiss	9	12.9%
Flamboyan 1	7	10.0%
Flamboyan 2	6	8.6%
Cendana	7	10.0%
Dahlia	5	7.1%
IBS	5	7.1%
Anggrek Anyelir	1	1.4%

Regarding knowledge of cervical cancer, nearly all respondents (98.6%) had heard about the disease. The majority recognized that the primary cause of cervical cancer is HPV infection (89.2%), although a small percentage mistakenly believed it to be caused by genetic factors (5.4%) or fungal infections (5.4%). The most frequently mentioned risk factors included having multiple sexual partners (77.0%), engaging in sexual activity at an early age (77.0%), and a history of sexually transmitted infections (70.3%). In terms of prevention methods, the most widely known measures were early detection through Pap smear or VIA (79.7%), maintaining intimate hygiene (71.6%), avoiding risky sexual behavior (68.9%), and receiving the HPV vaccine (83.8%). As for screening methods, Pap smear was the most well-known among respondents (94.6%), followed by VIA (67.6%) and HPV testing (56.8%).

Table 2. Knowledge about Cervical Cancer

Variable	Frequency (n)	Percentage (%)
Have Heard about Cervical Cancer		
Yes	73	98.6%
No	1	1.4%

Main Cause of Cervical Cancer		
HPV Virus	66	89.2%
Genetic Factors	4	5.4%
Fungal Infection	4	5.4%
Risk Factors for Cervical Cancer		
Multiple Sexual Partners	57	77.0%
Early Sexual Activity	57	77.0%
Sexually Transmitted Infections	52	70.3%
Smoking	24	32.4%
Preventive Measures		
Early Detection (Pap smear/IVA)	59	79.7%
Avoiding Risky Sexual Behavior	51	68.9%
Maintaining Genital Hygiene	53	71.6%
HPV Vaccination	62	83.8%
Screening Methods Known		
Visual Inspection with Acetic Acid (IVA)	50	67.6%
Pap smear	70	94.6%
HPV Test	42	56.8%

Respondents' perceptions of cervical cancer and screening indicated that the majority (94.7%) believed that cervical cancer could be prevented, and 90.7% were confident that the disease could be treated if detected early. However, only 40.0% perceived themselves to be at risk of developing cervical cancer, while 45.3% believed they were not at risk, and 13.3% were unsure. Most respondents considered screening to be very important (82.7%) and believed it to be effective in reducing cervical cancer incidence (97.3%). Despite this, several barriers to screening remained, including fear of a positive result (74.7%), embarrassment about the examination procedure (56.0%), and the perception that screening was unnecessary due to feeling healthy or asymptomatic (54.7%). Other obstacles included lack of time (8.0%) and discomfort with male examiners (45.3%).

Table 3. Perceptions of Cervical Cancer and Screening Barriers

Variable	Frequency (n)	Percentage (%)
Cervical Cancer is Preventable		
Yes	71	94.7%
No	2	2.7%
Do not know	1	1.3%
Cervical Cancer is Treatable if Detected Early		
Yes	68	90.7%
No	4	5.3%
Do not know	2	2.7%
Perceived Risk of Cervical Cancer		
Yes	30	40.0%
No	34	45.3%
Do not know	10	13.3%
Screening is Important		
Very Important	62	82.7%
Important	12	16.0%
Screening is Effective in Reducing Cervical Cancer Cases		
Yes	73	97.3%
No	1	1.3%
Do not know	0	0.0%
Screening Barriers		
Fear of Positive Results	56	74.7%
Embarrassment with Procedure	42	56.0%
No Symptoms, So Unnecessary	41	54.7%
No Time	6	8.0%
Uncomfortable with Male Examiner	34	45.3%
Never Had Sexual Intercourse	1	1.3%

Although knowledge about cervical cancer was relatively high, the practice of screening among respondents remained low. Only 32.0% had ever undergone cervical cancer screening, and among them, only 1.3% had done so in the past year, 4.0% within the last 1–3 years, and 26.7% more than three years ago. The main reasons for the low screening rate included feelings of embarrassment or discomfort with the procedure (32.0%), fear of the results or the examination process (30.7%), and a

lack of information about free screening programs (22.7%). Additionally, some respondents believed they were healthy and therefore did not need screening (17.3%), while 4.0% stated that their husbands did not allow them, and 2.7% refrained from screening because they were unmarried. In terms of preference, 89.3% of respondents felt more comfortable being examined by female healthcare providers. Despite the low screening rate, awareness of the importance of screening was high, with 94.7% of respondents supporting and recommending cervical cancer screening to patients or colleagues.

Table 4. Cervical Cancer Screening Practices and Barriers

Variable	Frequency (n)	Percentage (%)
Ever Had Cervical Cancer Screening		
Yes	24	32.0%
No	50	66.7%
Last Screening Time		
This Year	1	1.3%
Within Last 1-3 Years	3	4.0%
More Than 3 Years Ago	20	26.7%
Reasons for Not Screening		
Embarrassed/Uncomfortable	24	32.0%
Fear of Procedure or Results	23	30.7%
Unaware of Free Screening	17	22.7%
Feels Healthy, So Unnecessary	13	17.3%
Not Allowed by Husband	3	4.0%
Not Married	2	2.7%
Comfortable with Female Examiner		
Yes	67	89.3%
No Preference	7	9.3%
Recommends Screening to Patients/Peers		
Yes	71	94.7%
No	3	4.0%

Overall, this study indicates that the level of knowledge about cervical cancer is fairly good; however, challenges remain in increasing participation in screening. Various factors such as fear, embarrassment, lack of information, as well as cultural and social barriers are the main obstacles that need to be addressed to improve cervical cancer screening coverage among healthcare workers.

Discussion

The findings of this study indicate that while healthcare workers demonstrate a high level of knowledge about cervical cancer, screening participation remains low. This phenomenon has also been observed in previous studies conducted in various countries, highlighting that knowledge alone does not always translate into preventive health behaviors. Studies from different regions reveal similar trends in low screening rates among healthcare professionals. Research in Ethiopia reported that although 86,9% of healthcare workers were aware of cervical cancer screening, only 11,4% had undergone the procedure.[13] A study in Malaysia similarly found that despite strong awareness, many healthcare workers hesitated to undergo screening due to fear and social stigma.[14] However, this differs significantly from high-income countries such as Australia, where cervical cancer screening participation is much higher due to mandatory health policies for healthcare workers and systematic reminder programs.[15] But Rwanda has made significant strides to eradicate cervical cancer, as it is also a developing country.[16] To improve cervical cancer screening in Indonesia as a developing country, a comprehensive approach is needed, including continuous education for healthcare workers, strengthening mandatory screening policies, and implementing effective reminder systems. Additionally, addressing social barriers such as stigma and fear through community-based approaches can help increase screening participation, as successfully demonstrated in other developing countries like Rwanda.

Psychosocial and Cultural Barriers to Screening

Despite recognizing cervical cancer as a preventable disease (94.7%), only 40.0% of respondents

in this study perceived themselves at risk. This finding aligns with studies in India and the Middle East, where personal risk perception was found to be a major determinant of screening behavior.[18] A significant proportion of respondents (74.7%) cited fear of receiving a positive diagnosis as a primary reason for avoiding screening, while embarrassment about the screening procedure (56.0%) and the belief that screening is unnecessary in the absence of symptoms (54.7%) further contributed to low participation. These barriers are not unique to Indonesia but are commonly reported in LMICs, where stigma and misinformation surrounding cervical cancer screening remain prevalent.[19]

One critical finding is the preference for female healthcare providers (89.3%), which suggests that increasing the availability of female examiners could help address concerns related to discomfort with the procedure. The availability of female healthcare providers is a key facilitator for migrant women's participation in cervical cancer screening.[20] Incorporating gender-sensitive policies in screening programs, such as offering female-only screening days or ensuring female examiners in primary healthcare settings, may help improve participation rates in Indonesia.

Systemic and Institutional Factors

Beyond individual psychological barriers, systemic and institutional challenges also play a role in low screening rates. Despite government efforts to provide free cervical cancer screening through the National Health Insurance of Indonesia program, many respondents in this study were unaware of these services (22.7%), indicating gaps in communication and outreach strategies. This aligns with findings from other LMICs, where awareness of free or subsidized screening programs is often limited, reducing participation rates.[21]

Another major institutional barrier is the absence of mandatory screening policies for healthcare workers in Indonesia. In contrast, in high-income countries such as Australia, cervical cancer screening is often integrated into routine occupational health check-ups for female healthcare professionals.[15] Implementing similar policies in Indonesia—where healthcare workers are required to undergo routine screening as part of their annual health assessments—could potentially improve participation rates.

Strategies to Improve Cervical Cancer Screening Participation

This study highlights that while healthcare workers have high knowledge of cervical cancer, screening participation remains low. In the United Kingdom, the National Cervical Screening Programme (NCSP) successfully increases screening rates through a call-and-recall system, which could be adapted in Indonesia to enhance participation.[22] A significant barrier is the preference for female healthcare providers (89.3%), similar to findings in Rwanda, where gender-sensitive approaches, including HPV vaccination and female-led screening services, have improved participation.[23] Implementing women-only screening days and increasing female examiners in Indonesia could address cultural discomfort.

Institutional barriers also contribute to low screening rates. Unlike Australia, where The National Cervical Screening Program involves mandatory Pap tests for women aged 18-70 every 2 years as part of occupational health policies, Indonesia lacks such regulations. Australia's HPV DNA test policy has enhanced early detection, suggesting Indonesia could benefit from mandatory screenings and HPV DNA integration in routine health assessments.[24] Psychosocial barriers, including fear of diagnosis (74.7%) and perceived lack of necessity (54.7%), hinder participation. Rwanda's community-based peer education programs have successfully reduced screening hesitancy. Establishing peer-support networks in hospitals and involving family members in educational efforts, as done in India and Rwanda, could improve participation in Indonesia.[25,26] By adopting successful strategies from the UK, Australia, and Rwanda, Indonesia can enhance cervical cancer screening participation through structured education, institutional policies, and gender-sensitive approaches.

This study has several limitations. The small sample size and single-location design limit generalizability. Additionally, data collection relied on self-reported questionnaires, which may introduce response bias. Furthermore, this study only aimed to describe knowledge, perceptions, and screening practices without conducting inferential statistical analysis. Future research should explore statistical associations to provide deeper insights into screening participation.

CONCLUSION

This study concludes that although healthcare workers have a high level of knowledge about cervical cancer, their participation in screening remains low. The main barriers include fear of positive results, embarrassment about the procedure, and the belief that screening is unnecessary in the absence of symptoms. The preference for female healthcare providers highlights the need for policies that ensure the availability of female examiners. Additionally, the lack of mandatory screening regulations for healthcare workers contributes to the low screening rates. To improve participation, strategies such as a call-and-recall system mandatory:policies for healthcare workers, and community-based approaches like peer education and family support should be implemented. These initiative are expected to enhance screening coverage and early detection of cervical cancer.

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CONFLICT OF INTEREST

The author declares no conflicts of interest.

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