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Original Research Article

Assessment of knowledge regarding cervical cancer among women aged 25 years and above attending Soavinandriana hospital, Madagascar: a cross-sectional study

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ABSTRACT

Background: Cervical cancer remains a major public health concern in low- and middle-income countries, where limited access to screening and vaccination contributes to late diagnosis and high mortality. This study aimed to evaluate the level of knowledge regarding cervical cancer among women aged 25 years and above attending Soavinandriana Hospital, Madagascar.
Methods: A cross-sectional descriptive and analytical study was conducted among 200 women aged ≥25 years. Data were collected using a structured questionnaire assessing socio-demographic characteristics and knowledge of cervical cancer, including definition, HPV etiology, signs, screening, and vaccination. Knowledge was evaluated using a score ranging from 0 to 10 and categorized as insufficient (≤4), medium (5-6), or satisfactory (≥7). Statistical analysis was performed using the Chi-square test, with significance set at $p<0.05$.
Results: Although 71.5% of participants reported knowing about cervical cancer, only 53% correctly defined it, and 38% identified HPV as the causal factor. While 87% were aware that cervical cancer can be screened, 47% could not identify any screening method. Knowledge of HPV vaccination was particularly low, with 86.5% unable to name any vaccine. Overall, 44.5% of participants had insufficient knowledge, 37% had medium knowledge, and 18.5% had satisfactory knowledge. Professional sector was significantly associated with knowledge level ($p<0.001$), with healthcare workers demonstrating higher scores.
Conclusions: Despite existing prevention initiatives, important gaps persist in knowledge of cervical cancer, particularly regarding HPV infection and vaccination. Strengthened, targeted health education strategies are needed to improve awareness and enhance participation in screening and vaccination programs.

Keywords: Cervical cancer, HPV, Knowledge, Screening, Vaccination, Madagascar

INTRODUCTION

Cervical cancer is a malignant neoplasm characterized by uncontrolled and excessive proliferation of cervical epithelial cells.[1] It is primarily associated with persistent infection by oncogenic types of human papillomavirus (HPV), particularly genotypes 16 and 18, which account for the majority of cervical cancer cases worldwide.[2]

Cervical cancer remains a major public health issue, especially in low- and middle-income countries (LMICs), where access to organized screening programs and HPV vaccination remains limited.[3] Globally, it is among the most common cancers affecting women and represents a significant cause of cancer-related mortality.[4,5] Data from LMICs indicate high incidence and mortality rates, with considerable regional variation.[6]

In sub-Saharan Africa, cervical cancer remains one of the most prevalent female cancers, largely due to insufficient screening coverage and limited awareness of the disease and its preventive measures.[7]

In Madagascar, cervical cancer continues to be a major health concern. Despite prevention initiatives and the promotion of screening through visual inspection with acetic acid (VIA), late-stage diagnosis remains frequent, suggesting gaps public awareness and health education.[5]

In this context, assessing women's level of knowledge regarding cervical cancer, its risk factors, and preventive strategies is essential. Several studies conducted in African countries have demonstrated substantial knowledge gaps, even among certain healthcare professionals.[1,7]

The primary objective of this study was to evaluate the level of knowledge regarding cervical cancer among women aged 25 years and above attending Soavinandriana Hospital. The specific objectives were to: describe the sociodemographic characteristics of participants; determine the proportion of women with accurate knowledge of cervical cancer; assess knowledge related to screening and HPV vaccination;identify professional groups with lower levels of knowledge.

METHODS

Study design and setting

This was a descriptive and analytical cross-sectional study conducted in the Department of Obstetrics and Gynecology at Soavinandriana Hospital Center (CENHOSOA), Antananarivo, Madagascar.

Study period

Data collection was carried out from September 1 to November 30, 2024. The overall study period extended from August 1, 2024, to February 15, 2025.

Study population

The study population consisted of Malagasy women aged 25 years and above attending Soavinandriana Hospital during the study period, whether they were: hospitalized patients, accompanying relatives, or present for consultation or any other reason.

Inclusion criteria

Women aged 25 years or older were eligible to participate in the study. Participation was voluntary, and only those who provided written informed consent were included in the study.

Non-inclusion criteria

Women younger than 25 years of age were not eligible to participate in the study. In addition, individuals who declined or refused to provide consent for participation were not included in the study.

Exclusion criteria

Participants were excluded from the study if they submitted questionnaires that were incomplete or incorrectly completed. Only fully completed and accurately filled questionnaires were considered for analysis to ensure the reliability and validity of the collected data.

Sample size

The minimum sample size was calculated using the formula for estimating a proportion:

$= \frac{Z^2 \times p \times q}{i^2}$, Z=1.96 (95% confidence level), p=0.10 (assuming that 10% of women have accurate knowledge of cervical cancer), q=1−p, i=0.05 (desired precision).

The minimum required sample size for the study was calculated to be 138 participants. To compensate for a potential non-response rate of 5%, the sample size was adjusted to 145 participants. However, a total of 200 women were ultimately recruited and included in the study, thereby exceeding the minimum required sample size and enhancing the robustness of the findings.

Sampling method

Consecutive and exhaustive recruitment was conducted among all eligible women during the study period.

Data collection tool and procedure

Data were collected using a structured questionnaire comprising closed and semi-open multiple-choice questions. All answer options corresponded to scientifically accurate responses. A Malagasy translation was provided to ensure comprehension among participants not fluent in French. For illiterate participants, the questionnaire was administered by a trained interviewer. After obtaining informed consent, questionnaires were completed on-site, reviewed for completeness, and subsequently entered into a database.

Study variables

Sociodemographic variables

The sociodemographic variables collected in this study included age, educational level, and professional sector. These variables were assessed to describe the characteristics of the study participants.

Knowledge-related variables

Knowledge was assessed through ten questions covering: General knowledge of cervical cancer, correct definition, link with HPV infection, warning signs, prognosis, screening, screening methods, preventive measures, identification of HPV vaccines.

Scoring system

Each correct response was awarded one point. The total score ranged from 0 to 10. Knowledge levels were categorized as : Insufficient: score ≤4 ; Moderate: score 5-6 ; Satisfactory: score ≥7.

Statistical analysis

Statistical analysis was performed using SPSS (version 26) and Microsoft Excel. Qualitative variables were expressed as frequencies and percentages. Comparisons of proportions were conducted using Pearson's Chi-square test or Fisher's exact test where appropriate. Means were compared using Student's t-test. Statistical significance was set at $p<0.05$.

Ethical considerations

Confidentiality and anonymity were ensured throughout the study. Written informed consent was obtained from all participants. The study was conducted after approval from the relevant hospital authorities.

RESULTS

Sociodemographic characteristics

A total of 200 women aged 25 years and above were included. The mean age was 35.1±10.0 years (range: 25-71). The most represented occupations were homemakers (19%), midwives (9.5%), students (9%), and vendors (8%).

Regarding educational level, high school diploma (25%) and bachelor's degree (22%) were most frequent. Participants were classified into four professional categories: unemployed, primary sector (Group 1), office workers (Group 2), and healthcare sector (Group 3) (Table 1).

Table 1 : Sociodemographic characteristics of participants according to professional group (n=200).

Variables	N	%
Age (years)		
Mean±standard deviation	35.1±10.0	—
Minimum-maximum	25-71	—
Occupation (main categories)		
Homemaker	38	19.0
Midwife	19	9.5
Student	18	9.0
Vendor	16	8.0
Other occupations	97	48.5
Not specified	12	6.0
Educational level		
High school diploma	50	25.0
Bachelor's degree	44	22.0
Junior secondary certificate (BEPC)	24	12.0
Primary school certificate (CEPE)	13	6.5
Other levels	44	22.0
Not specified	25	12.5
Professional group		
Unemployed	21	10.5
Group 1-primary sector	67	33.5
Group 2-office workers	69	34.5
Group 3-healthcare sector	43	21.5

Table 2 : General knowledge of cervical cancer among participants (n=200).

Variables	N	%	P
Aware of cervical cancer			
Yes	143	71.5	
No/dk*	57	28.5	
Correct definition			<0.001*
Correct	106	53.0	
Incorrect/dk	94	47.0	
Aware of HPV–cervical cancer link			
Yes	76	38.0	
No/dk	124	62.0	
Aware that warning signs exits			
Yes	96	48.0	
No	104	52.0	
Early diagnosis improves prognosis			
Yes	176	88.0	
No/dk	23	11.5	

*dK=Don't know, *Comparison between declared awareness and correct definition.

General knowledge of cervical cancer

Overall, 71.5% reported being aware of cervical cancer. However, only 53% correctly defined it. Knowledge of the HPV cervical cancer link was identified in 38% of participants.

Less than half (48%) knew that warning signs exist, while 88% recognized that early diagnosis improves prognosis. The association between declared awareness and correct definition was statistically significant (p<0.001) (Table 2).

Knowledge of warning signs

Twenty-four percent of participants identified no warning signs. Twenty-seven percent provided one correct response, 27% two correct responses, and only 7% identified at least four signs.

Participants who acknowledged the existence of warning signs provided significantly more correct answers (p<0.001) (Table 3).

Table 3 : Number of correct responses regarding cervical cancer warning signs (n=200).

Variables	N	%	P
Aware that warning signs exits			
Yes	96	48.0	
No	104	52.0	
Number of correct responses			<0.001*
0	48	24.0	
1	54	27.0	
2	54	27.0	
3	30	15.0	
4	11	5.5	
5	3	1.5	

*Comparison between awareness of the existence of warning signs and number of correct responses.

Knowledge of screening

Most participants (87%) knew that cervical cancer can be screened. However, 47% could not identify any correct screening method.

The association between awareness of screening and correct identification of at least one method was statistically significant (p<0.001) (Table 4).

Knowledge of HPV vaccination

Seventy percent were aware that preventive measures exist, but 86.5% could not name any HPV vaccine.

The association between awareness of prevention and correct identification of a vaccine was statistically significant (p<0.001) (Table 5).

Table 4 : Knowledge related to cervical cancer screening (n=200).

Variables	N	%	P
Aware that cervical cancer can be screened			
Yes	174	87.0	
No	26	13.0	
Correct responses regarding screening methods			<0.001*
0 correct response	94	47.0	
1 correct response	78	39.0	
2 correct responses	21	10.5	
3 correct responses	5	2.5	
4 correct responses	2	1.0	

*Comparison between awareness of screening and correct identification of screening methods.

Table 5 : Knowledge regarding HPV vaccination (n=200).

Variables	N	%	P
Aware that a preventive measure exists			
Yes	140	70.0	
No	60	30.0	
Correct responses regarding HPV vaccines			<0.001*
0 correct response	173	86.5	
1 correct response	25	12.5	
2 correct responses	2	1.0	
3 correct responses	0	0.0	

*Comparison between awareness of the existence of a preventive measure and correct identification of an HPV vaccine.

Overall level of knowledge

Knowledge scores ranged from 0 to 8 out of 10. Overall, 44.5% had insufficient knowledge, 37% moderate knowledge, and 18.5% satisfactory knowledge.

A statistically significant association was observed between professional sector and knowledge level (p<0.001). Women in the healthcare sector predominantly had satisfactory knowledge (62.8%), whereas insufficient knowledge predominated in the primary sector (64.2%) (Table 6).

Table 6: Overall level of knowledge according to professional sector (n=200).

Professional sector	Insufficient N (%)	Moderate N (%)	Satisfactory N (%)	Total	P
Unemployed (n=21)	8 (38.1)	12 (57.1)	1 (4.8)	21	
Group 1-primary sector (n=67)	43 (64.2)	23 (34.3)	1 (1.5)	67	
Group 2-office workers (n=69)	34 (49.3)	27 (39.1)	8 (11.6)	69	
Group 3-healthcare sector (n=43)	4 (9.3)	12 (27.9)	27 (62.8)	43	
Total (n=200)	89 (44.5)	74 (37.0)	37 (18.5)	200	<0.001*

*Comparison of knowledge level according to professional sector.

DISCUSSION

The present study aimed to assess the level of knowledge regarding cervical cancer among women aged 25 years and older attending Soavinandriana Hospital. With respect to general awareness, 71.5% of participants reported being familiar with cervical cancer ; however, only 53% were able to provide a correct definition. This discrepancy between perceived and accurate knowledge is consistent with findings reported by Dakenyo et al, Cameroon, 2018, where a substantial proportion of women claimed awareness of cervical cancer but were unable to accurately describe its characteristics.[7] Similarly, Afoukou Obossou et al, Benin, 2021 identified gaps in precise knowledge, even among healthcare professionals.[1] These observations suggest that community awareness efforts may succeed in disseminating the existence of the disease without necessarily ensuring a comprehensive understanding of its nature.

Knowledge of the association between HPV infection and cervical cancer was limited (38%). Comparable findings were reported by Shrestha et al, low- and middle-income countries, 2018, and by Dakenyo et al, Cameroon, 2018, highlighting a frequent lack of awareness regarding viral etiology in resource-limited settings.[6,7]

Nevertheless, the causal relationship between HPV and cervical cancer is firmly established, as demonstrated by Walboomers et al, international multicenter study, 1999, and further synthesized by Schiffman et al, United States, 2007.[8,9] Limited knowledge of HPV may hinder acceptance of vaccination and adherence to primary prevention strategies.

Regarding warning signs, fewer than half of the participants were aware that cervical cancer may present with clinical symptoms, and 24% were unable to identify any signs. Similar findings were reported by Dakenyo et al, Cameroon, 2018, and Nani et al, Morocco, 2018, both of whom documented insufficient recognition of symptoms.[4,7] However, as emphasized by Schiffman et al, United States, 2007, cervical cancer is frequently asymptomatic in its early stages, reinforcing the importance of organized screening rather than reliance on symptom onset.[8] Concerning screening, 87% of participants were aware that cervical cancer can be detected through screening;nevertheless, 47% were unable to identify any specific screening method. This gap between theoretical awareness and practical knowledge has also been described by Shrestha et al, 2018, and Dakenyo et al, Cameroon, 2018.[6,7] International recommendations supported by FIGO (FIGO, 2020) advocate for an integrated approach combining vaccination, screening, and early treatment.[3] Limited knowledge of screening modalities—such as VIA, Pap smear, or HPV testing—may reduce effective utilization of available services. Lack of awareness regarding HPV vaccination emerged as one of the most concerning findings: 86.5% of participants were unable to name any HPV vaccine. Similar proportions were reported by Dakenyo et al, Cameroon, 2018, and confirmed in the systematic review by Shrestha et al, 2018.[6,7] In contrast, countries that have widely implemented HPV vaccination programs have demonstrated significant reductions in HPV infections and precancerous lesions, as shown by Drolet et al, international multicenter study, 2019.[10] The limited awareness observed in our setting may reflect insufficient dissemination of vaccination-related information or inadequate integration of the vaccine into national immunization programs.

Finally, overall knowledge was insufficient in 44.5% of participants. A statistically significant association was found between professional sector and knowledge level ($p<0.001$), with women working in the healthcare sector demonstrating predominantly satisfactory knowledge. This finding aligns with the results of Afoukou Obossou et al, Benin, 2021, and Nani et al, Morocco, 2018, who reported that professional background in the medical field and higher educational attainment positively influence cervical cancer knowledge.[1,4] The systematic review by Shrestha et al, 2018, further confirms the role of socioeconomic determinants in access to information and screening services.[6] Overall, our findings highlight persistent gaps in knowledge regarding cervical cancer, particularly with respect to its viral etiology and vaccination. Strengthening targeted health education campaigns—especially among women outside the healthcare sector—appears essential to enhance the effectiveness of preventive strategies and support efforts toward cervical cancer elimination.

Strengths and limitations

This study provides relevant local data on the level of cervical cancer knowledge in Madagascar, with an adequate sample size and a standardized assessment method enabling meaningful analytical comparisons. However, the cross-sectional design precludes the establishment of causal relationships, hospital-based recruitment may limit the generalizability of the findings to the broader population, and the use of self-reported data may introduce social desirability bias. Despite these limitations, the findings offer a valuable foundation for strengthening cervical cancer prevention strategies.

CONCLUSION

This study highlights substantial gaps in knowledge regarding cervical cancer among women aged 25 years and above attending Soavinandriana Hospital. Although the majority of participants reported being aware of the disease, a considerable proportion demonstrated insufficient understanding of its definition, viral etiology, screening methods, and particularly HPV vaccination. Overall knowledge was inadequate in nearly half of the participants, with significant disparities observed across professional sectors.

These findings underscore that mere exposure to information does not ensure accurate and actionable

knowledge. Limited understanding of HPV infection and vaccination may hinder adherence to both primary and secondary prevention strategies.

There is therefore a clear need to strengthen targeted health education programs, with particular emphasis on viral etiology, HPV vaccination, and practical screening modalities. Structured, continuous, and culturally adapted awareness campaigns—especially directed toward women outside the healthcare sector—could enhance knowledge levels and improve participation in preventive programs.

Greater visibility and systematic integration of HPV vaccination into national public health policies should also be prioritized to support cervical cancer elimination efforts.

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