Global Journal of Health Ethics,Volume1,Issue2,June 2025,DOI: https://doi.org/10.63101/gjhe.v1i2.020

Original Article

Knowledge, Attitude, and Practice of Cervical Cancer Screening among Women Attending University Teaching Hospital of Kigali, Rwanda

Authors : Blandine INGABIRE[1*], Japheths Ogendi[1]

Author's Affiliation :

[1]Department of Public Health, Mount Kenya University, Kigali, Rwanda

Corresponding author: Blandine INGABIRE,

E-mail: iblandine35@gmail.com

Abstract

Cervical cancer is one of the most critical public health challenges the world faces, with particularly high prevalence rates in eastern Africa. In Rwanda, this remains one of the most common causes of cancer deaths in women. It is important to understand knowledge, attitudes, and practices (KAP) concerning cervical cancer in order to encourage its early identification, treatment, and preventive steps. Nonetheless, there is a lack of comprehensive information on the awareness and practices of women about cervical cancer in Rwanda. The objective of this study was to evaluate KAP of women with cervical cancer screening during their visit to Kigali University Teaching Hospital(CHUK). A cross-sectional quantitative study design was used with a sample of 400 participants who were women aged 18 years and older that visited CHUK. Information was collected through a pretested closed-ended questionnaire and analyzed with Stata 15.1. The Chi-square test of independence was employed to assess the relationship between variables and practices of cervical screening. Ethical clearance was granted by Mount Kenya University and CHUK. The findings showed that only 9.75% of respondents had good understanding of cervical cancer, 32.5% had moderate understanding, while 57.75% had poor understanding. A positive attitude was noted in 33% of respondents, with 67% displaying a negative attitude. Only 20% of participants reported ever accessing screening for cervical cancer. These outcomes emphasize critical gaps in the putative knowledge and actual practices, revealing the necessity of increasing awareness campaigns and education to the public on cervical cancer prevention in Rwanda.

Keywords: Knowledge, Attitude, practice, Cervical Cancer Screening

Introduction

Cervical cancer is one of the most important issues in global public health. In 2020, there were an estimated 604,127 new cases and 341,831 deaths due to cervical cancer. Eastern Africa had the highest incidence rate of 40 cases per 100,000 women annually, followed by Southern Africa (36.4) and Middle Africa (31.6) (Singh et al.,

2023a). In Rwanda, the burden is even greater with an incidence rate of 42 cases per 100,000 women (Gafaranga et al., 2022).

HPV transmission occurs mainly through skin-to-skin or skin-to-mucosa contact (Petca et al., 2020). the viral infection causes changes to the cervix's cells, leading to cervical cancer. However, the risk factors contributing to this change includes co-infection with other sexually transmitted infections (STIs), multiple pregnancies, prolonged use of hormonal contraceptives, smoking, accompanied by low economical standing (Akter et al., 2022).

To mitigate deaths and reduce cases of cervical cancer, it is paramount to diagnose cases early, coupled with effective screening programs, as they lead to a lowered incidence of the disease. Gebisa et al. (2022) states that WHO suggests that by 2030 90% of girls are fully vaccinated for HPV by 15 years, 70% of women are screened with a high-performance test by 35 and 45 years, 90% of women diagnosed with cervical disease will be treated. This enables us to conclude that the use of geographic and socioeconomic factors, level of education, personal beliefs, and access to services all determine the uptake of cervical screening (Usman et al., 2023). Each individual's health behavior affects the way they interact with others, as explained by Wells et al. (2021) through the IMB model, centered around information and motivation.

Looking into the knowledge, attitudes, and practices associated with cervical screening in Rwanda, they have been done predominantly at the district level and as such are very narrow in scope (Niyonsenga et al., 2021; Usman et al., 2023), lack of national representation, limited understanding of urban KAP patterns. Since CHUK is a national referral hospital which receives women from all over the country, this study seeks to revise the understanding of the knowledge, attitudes, and practices concerning cervical cancer screening amongst women in Rwanda. Therefore, this study aims to assess the knowledge, attitudes, and practices toward cervical cancer screening among women attending the University Teaching Hospital of Kigali.

Methods

Study Setting

A descriptive cross sectional design using a structured questionnaire was concluded, which was best suitable for assessing associations between KAP and demographics. The study was carried out at the University Teaching Hospital of Kigali, being the largest referral hospital in the country with bed capacity of 519 patients. As one of the high-level healthcare facilities in the country, CHUK is strategically important to the healthcare system as it offers comprehensive services including primary and specialized healthcare, training and education, clinical teaching, research, and system-level support for secondary health districts.

Study Population

Women aged 18 years and older receiving medical services during the study period were the study population. To enhance diverse representation, participants were sampled from different departments.

Sample Size Determination

With a confidence interval of 95% and a 5% margin of error, the sample size was calculated through Yamane Taro's formula (Yamane, 1967). As per the hospital data, women attending CHUK over the past three years averaged 11,376 annually. From this, we derived a needed sample of 400 participants.

Data Collection Methods

Based on a literature review on the knowledge, attitudes, and practices surrounding cervical cancer, a structured questionnaire that was interviewer-administered was adopted from the study by Wakwoya *et al.* (2020). Participants were randomly selected and administered the questionnaire. To uphold confidentiality, data collection was done in private areas, lasting roughly 10 minutes per interview.

Scoring and Classification of Variables

The knowledge, attitude, and practice (KAP) scoring was derived from Narayana et al. 2019.

Knowledge: Evaluated through 11 multiple-choice questions. Each question answered correctly garnered a point while incorrect responses awarded none. Scores were calculated as percentiles. Knowledge was categorized as having 80 – 100% as good, 60-79% as moderate, and less than 60% as poor.

Attitude: Evaluated through 8 statements assessed on a 3-point Likert scale (agree, neutral, disagree). The participant was viewed as having a good attitude when a positive response was given for at least four items.

Practice: Described by whether the participant had ever undergone cervical cancer screening by self-reported (Yes/No).

Reliability and Validity of the Instrument

To assess clarity and internal consistency, a pilot test was conducted with 10 women. Feedback from the pilot was used to refine question wording and structure. Participants were given the questionnaire with a 3-hour interval between initial and repeated administration, assessing both understanding and answering consistency. Pilot responses were averaged to adjust minor revisions aimed toward clarity.

Data Analysis

The data analysis was performed on Stata version 15.1. To portray the participant's characteristics and summarize KAP scores, descriptive statistics such as frequencies, means, and standard deviations were computed. To investigate the relationships between KAP variables and socio-demographic, lifestyle, and clinical factors, Chi square (χ^2) tests were conducted. Where cell counts under five were anticipated, Fisher's exact test was employed. A p-value <0.05 was deemed statistically significant.

Ethical Consideration

We obtained ethical clearance from the Public Health Department and Health Sciences Institutional Review Board of Mount Kenya University. Permission was also obtained from the Ethical Committee of Kigali Teaching Hospital (CHUK). Following these approvals, the administration at CHUK Hospital granted the final authorization for data collection. The study was conducted in accordance with the Declaration of Helsinki. Participants held the right to decline participation or withdraw from the data collection at any stage. No personal identifying information was collected. Instead, questionnaires used participant codes in lieu of names to preserve confidentiality.

Results

Demographic Characteristics of Respondents

A total of 400 women were recruited. 75.5% comprised 18-year-olds, a noteworthy number of them from the countryside (70.8%). The educational composition of the sample showed that the majority, 79%, possessed at least a university degree, suggesting the population was relatively well-educated. 80% of them reported to belong to the Christian religion which is typical in the case of Rwanda. From the social and family characteristics, it can be seen that 55.8% of respondents were single, while 43.3% stated they had no children. Also, 48.8% of these women claimed to have no sexual partners (Table 1).

Table 1 Social-demographic characteristics of respondents

Variable	Category	Frequency	Percentage (%)
Age	≤ 18	98	24.5
	> 18	302	75.5
Location	Rural	117	29.3
	Urban	283	70.8
Level of Education	No formal education	17	4.3
	Primary school	13	3.3
	Secondary school	54	13.5
	University and above	316	79
Religion	Christian	320	80
	Muslim	67	16.8
	Other	13	3.3
Marital Status	Married/Living Together	177	44.3
	Single	223	55.8
Parity	None	173	43.3
	One	104	26

	Two	66	16.5
	Three and above	57	14.3
Number of Sexual Partners	None	195	48.8
	Single	161	40.3
	Multiple	44	11

Sociodemographic, Lifestyle and Clinical Characteristics Associated with Good Knowledge of Cervical-Cancer Screening (n = 400)

Only 39 of the 400 participants (9.8 %) demonstrated an adequate understanding of cervical-cancer screening, underscoring a substantial information deficit. Age emerged as an influential variable: none of the adolescents aged 18 years or younger displayed good knowledge, whereas 11.1 % of women older than 18 years did so ($p = 0.008$). Urban residence was unexpectedly associated with poorer knowledge just 1.7 % of city dwellers were well informed compared with 13.1 % of rural residents ($p < 0.001$). Educational attainment followed a clear dose–response pattern; good knowledge was entirely absent among women with no schooling, primary schooling, or only secondary schooling, but rose to 12.3 % among those with at least a university education ($p = 0.005$). Parity also mattered: 12.1 % of nulliparous women and 24.6 % of those with three or more children answered correctly, whereas knowledge was virtually absent in women with one or two births ($p < 0.001$). Declared willingness to be screened (20.0 % vs 0.9 %, $p < 0.001$), current use of family-planning services (24.5 % vs 1.6 %, $p < 0.001$), and having exactly one sexual partner (21.7 % vs 4.6 % with none and 1.0 % with multiple partners, $p < 0.001$) were each linked to superior knowledge. In contrast, religion and marital status showed no statistically meaningful influence.

Table 2: Sociodemographic, Lifestyle and Clinical Characteristics Associated with Good Knowledge of Cervical-Cancer Screening (n = 400)

Factor	Category	n (%)	Good knowledge n (%)	Moderate/poor knowledge n (%)	Fisher's exact *p*
Overall	–	400 (100)	39 (9.75)	361 (90.25)	–
Age (years)	≤ 18	50 (12.5)	0 (0)	50 (100)	0.008 *
	> 18	350 (87.5)	39 (11.14)	311 (88.86)	
Residence	Urban	117 (29.25)	2 (1.71)	115 (98.29)	<0.001 *

	Rural	283 (70.75)	37 (13.07)	246 (86.93)	
Education	No formal	17 (4.25)	0 (0)	17 (100)	0.005 *
	Primary	13 (3.25)	0 (0)	13 (100)	
	Secondary	54 (13.5)	0 (0)	54 (100)	
	University +	316 (79)	39 (12.34)	277 (87.66)	
Religion	Christian	396 (99)	39 (9.85)	357 (90.15)	1.000
	Muslim	2 (0.5)	0 (0)	2 (100)	
	Other	2 (0.5)	0 (0)	2 (100)	
Marital status	Single	177 (44.25)	16 (9.04)	161 (90.96)	0.736
	Married/union	223 (55.75)	23 (10.31)	200 (89.69)	
Parity	0	173 (43.25)	21 (12.14)	152 (87.86)	<0.001 *
	1	104 (26)	4 (3.85)	100 (96.15)	
	2	66 (16.5)	0 (0)	66 (100)	
	≥ 3	57 (14.25)	14 (24.56)	43 (75.44)	
Willing to be screened	Yes	185 (46.25)	37 (20)	148 (80)	<0.001 *
	No	215 (53.75)	2 (0.93)	213 (99.07)	
Uses family-planning services	Yes	143 (35.75)	35 (24.48)	108 (75.52)	<0.001 *
	No	257 (64.25)	4 (1.56)	253 (98.44)	
Sex partners	None	44 (11)	2 (4.55)	42 (95.45)	<0.001 *
	Single	161 (40.25)	35 (21.74)	126 (78.26)	
	Multiple	195 (48.75)	2 (1.03)	193 (98.97)	

Sociodemographic, Lifestyle and Clinical Characteristics Associated with a Positive Attitude Toward Cervical-Cancer Screening (n = 400)

A supportive orientation toward screening was evident in 132 women (33.0 %), while the remaining two-thirds held unfavorable views. Positive attitudes were rare among adolescents (4.0 %) but more common among adults (37.1 %, $p < 0.001$). Residence exerted little impact (urban 33.3 % vs rural 32.9 %, $p = 0.927$). Education once again proved pivotal: not a single woman without schooling or with only primary schooling endorsed screening,

yet positivity increased to one-third at secondary level and 36.1 % among university graduates ($p < 0.001$). Faith was weakly associated with attitude; Christians were positive in 32.3 % of cases, whereas the very small Muslim and "other faith" groups were unanimously supportive ($p = 0.011$). Married or co-habiting women were more than twice as likely as singles to favor screening (43.9 % vs 19.2 %, $p < 0.001$). Parity showed a curious pattern: enthusiasm peaked in women with two children (71.2 %) but disappeared entirely among those with three or more ($p < 0.001$). Stated willingness to be screened (44.9 % vs 22.8 %, $p < 0.001$) and non-use of family-planning services (43.6 % vs 14.0 %, $p < 0.001$) both predicted a favorable attitude, as did having multiple sexual partners (58.5 % vs 4.5 % with none and 9.9 % with one, $p = 0.004$).

Table 3: Sociodemographic, Lifestyle and Clinical Characteristics Associated with a Positive Attitude Toward Cervical-Cancer Screening (n = 400)

Factor	Category	n (%)	Positive attitude n (%)	Negative attitude n (%)	χ^2 / Fisher's exact *p*
Overall	–	400 (100)	132 (33)	268 (67)	–
Age (years)	≤ 18	50 (12.5)	2 (4)	48 (96)	<0.001 *
	> 18	350 (87.5)	130 (37.14)	220 (62.86)	
Residence	Urban	117 (29.25)	39 (33.33)	78 (66.67)	0.927
	Rural	283 (70.75)	93 (32.86)	190 (67.14)	
Education	No formal	17 (4.25)	0 (0)	17 (100)	<0.001 *
	Primary	13 (3.25)	0 (0)	13 (100)	
	Secondary	54 (13.5)	18 (33.33)	36 (66.67)	
	University +	316 (79)	114 (36.08)	202 (63.92)	
Religion	Christian	396 (99)	128 (32.32)	268 (67.68)	0.011 *
	Muslim	2 (0.5)	2 (100)	0 (0)	
	Other	2 (0.5)	2 (100)	0 (0)	
Marital status	Single	177 (44.25)	34 (19.21)	143 (80.79)	<0.001 *
	Married/union	223 (55.75)	98 (43.95)	125 (56.05)	
Parity	0	173 (43.25)	67 (38.73)	106 (61.27)	<0.001 *
	1	104 (26)	18 (17.31)	86 (82.69)	
	2	66 (16.5)	47 (71.21)	19 (28.79)	
	≥ 3	57 (14.25)	0 (0)	57 (100)	
Willing to be screened	Yes	185 (46.25)	83 (44.86)	102 (55.14)	<0.001 *

	No	215 (53.75)	49 (22.79)	166 (77.21)	
Uses family-planning services	Yes	143 (35.75)	20 (13.99)	123 (86.01)	<0.001 *
	No	257 (64.25)	112 (43.58)	145 (56.42)	
Sex partners	None	44 (11)	2 (4.55)	42 (95.45)	0.004 *
	Single	161 (40.25)	16 (9.94)	145 (90.06)	
	Multiple	195 (48.75)	114 (58.46)	81 (41.54)	

Sociodemographic, lifestyle and clinical characteristics associated with good practice **of cervical-cancer screening (n = 400)**

Actual screening uptake lagged behind knowledge and attitude: only 80 women (20.0 %) reported behavior consistent with national guidelines. Adults were screened more often than adolescents (21.7 % vs 8.0 %, $p = 0.013$), but urban–rural differences were negligible (18.0 % vs 20.9 %, $p = 0.510$). Education exerted mixed effects. Screening was absent among women without schooling but unexpectedly universal among the small group with primary education (100 %), fell to 29.6 % at secondary level, and dipped further to 16.1 % among university graduates, producing an overall significant association ($p < 0.001$). Married women were nearly three times more likely than singles to have been screened (27.8 % vs 10.2 %, $p < 0.001$). Nulliparous women led all parity groups (32.4 %), while those with one child were least engaged (3.9 %, $p < 0.001$). Willingness to be screened did not translate into significantly higher practice (23.8 % vs 16.7 %, $p = 0.079$). Strikingly, current users of family-planning services were far less likely to have been screened than non-users (4.2 % vs 28.8 %, $p < 0.001$). Women reporting multiple sexual partners were the most active screeners (26.7 % vs 14.9 % with one and 9.1 % with none, $p = 0.004$), suggesting heightened risk perception in this subgroup. Collectively, these findings reveal critical gaps at every step of the knowledge-attitude-practice continuum and highlight specific targets adolescents, women with limited schooling, family-planning clients, and those with low parity for culturally sensitive, integrated interventions aimed at boosting cervical-cancer screening uptake in Kigali.

Table 4: Sociodemographic, lifestyle and clinical characteristics associated with good practice **of cervical-cancer screening (n = 400)**

Factor	Category	n (%)	Positive attitude n (%)	Negative attitude n (%)	χ^2 / Fisher's exact *p*
Overall	–	400 (100)	132 (33)	268 (67)	–
Age (years)	≤ 18	50 (12.5)	2 (4)	48 (96)	<0.001 *

	> 18	350 (87.5)	130 (37.14)	220 (62.86)	
Residence	Urban	117 (29.25)	39 (33.33)	78 (66.67)	0.927
	Rural	283 (70.75)	93 (32.86)	190 (67.14)	
Education	No formal	17 (4.25)	0 (0)	17 (100)	<0.001 *
	Primary	13 (3.25)	0 (0)	13 (100)	
	Secondary	54 (13.5)	18 (33.33)	36 (66.67)	
	University +	316 (79)	114 (36.08)	202 (63.92)	
Religion	Christian	396 (99)	128 (32.32)	268 (67.68)	0.011 *
	Muslim	2 (0.5)	2 (100)	0 (0)	
	Other	2 (0.5)	2 (100)	0 (0)	
Marital status	Single	177 (44.25)	34 (19.21)	143 (80.79)	<0.001 *
	Married/union	223 (55.75)	98 (43.95)	125 (56.05)	
Parity	0	173 (43.25)	67 (38.73)	106 (61.27)	<0.001 *
	1	104 (26)	18 (17.31)	86 (82.69)	
	2	66 (16.5)	47 (71.21)	19 (28.79)	
	≥ 3	57 (14.25)	0 (0)	57 (100)	
Willing to be screened	Yes	185 (46.25)	83 (44.86)	102 (55.14)	<0.001 *
	No	215 (53.75)	49 (22.79)	166 (77.21)	
Uses family-planning services	Yes	143 (35.75)	20 (13.99)	123 (86.01)	<0.001 *
	No	257 (64.25)	112 (43.58)	145 (56.42)	
Sex partners	None	44 (11)	2 (4.55)	42 (95.45)	0.004 *
	Single	161 (40.25)	16 (9.94)	145 (90.06)	
	Multiple	195 (48.75)	114 (58.46)	81 (41.54)	

Discussion

Data indicated that only 9.75% of participants demonstrated sufficient knowledge of cervical cancer screening, with 32.5% having moderate knowledge and 57.75% exhibiting low knowledge. These results point to a persistent information gap, as noted in most low and middle-income countries. For instance, Dera et al. (2023) in Ethiopia reported that 13.6% of women had good knowledge of cervical cancer which was higher than in our study. Also, John-Akinola et al. (2022) in Nigeria reported 23.5% of women having adequate knowledge. In contrast, several studies from Kenya (Kemper et al., 2022; Ibekwe et al., 2024; Daka et al., 2022) reported about 32% of

participants having good knowledge, indicating some regional differences perhaps impacted by the availability and use of public health education and community outreach programs.

The participants with positive cervical cancer screening attitude were 33%. This is consistent with Gultie (2018) findings where 35% of women demonstrated a positive response in India. However, an increase in positive response was noted in Tanzania (Simpkin & Armstrong, 2019) where more than 50% of participants supported screening. Participants' attitudes in these studies could be shaped by differing cultural customs, the degree of community-level awareness mobilization, and the availability of screening services. Rwanda have existing infrastructures for screening cervical cancer but culture and awareness impede access to those services.

Participants' screening practices were markedly low as only 20% of individuals indicated having cervical cancer screening done. This is in line with the findings of Ghana (Ebu et al., 2014) and Rwanda (Niyonsenga et al., 2021) who reported screening rates of 21.8% and 18% respectively. In stark contrast, high remunerative countries like the United States have reported coverage rates of over 80% (Biddell et al., 2021). This emphasizes arguably the most significant gaps in primary and preventive healthcare of these countries the absence of infrastructure, funding, and deeply rooted social and cultural norms in low-resource settings.
Age had a significant impact on knowledge, attitude and practice (KAP). The older the participants, the better their knowledge, attitude, and screening practices relative to Nigerians (Lam et al., 2014). Older women seem to be more health information seekers, as their age and exposure to relevant information increases.

Rural settings had an unexpected advantage as they exhibited better knowledge, albeit no major gaps in attitude or practice. This goes against the hypothesis put forth by Nyaaba & Akurugu (2023), Moodley et al. (2020), Al Kalbani et al. (2022) which assumed urban dwellers would always have superior access to health information and services. These results might be a reflection of some targeted outreach programs conducted within rural communities in Rwanda.

KAP was strongly linked to educational attainment. Women with a university degree or higher had more favorable knowledge, attitudes and screening rates. This is consistent with literature from India (Ruddies et al., 2020) and Rwanda (Niyonsenga et al., 2021), thus reaffirming the importance of education in the adoption of preventive health practices. No major gaps in knowledge or practice were captured across religions. Given the limited representation of peripheral groups, these findings must be treated very carefully.

Marital status was significantly linked to attitude and practice, but not knowledge. Attitudinally and behaviorally, screening practices were more favorable among married women or those in cohabiting relationships. Similar findings were reported in Ghana and India (Appiah, 2022; Choi et al., 2020; Akter et al., 2022). These are likely from deeper interactions with healthcare systems during their reproductive years. KAP levels were also impacted by parity. Women with higher parity, specifically those with three or more children, showed significantly poorer attitudes and practices. Multiple contributing factors may include health fatigue, caregiving burden, perception of being 'done' with reproductive care. This is counter to the assumption that more frequent engagement with maternal health services would lead to greater awareness. In line with this, Mehra et al. (2014) found that nulliparous women in Tanzania exhibited slightly better attitudes toward screening, suggesting some unique priorities or experiences that affect their healthcare utilization.

Multivariate analysis revealed a strong association between knowledge level and willingness to be screened ($p<0.001$), according to the Theory of Planned Behavior, intention (e.g., willingness to screen) is shaped by attitudes and knowledge, both of which were found to be positively associated in our data (Gebreegziabher et al., 2024). Using family planning services was significantly correlated with increased knowledge and a more positive attitude toward screening practices. As noted in the findings from Ghana (Mukama et al., 2017), this is likely due to frequent interactions with healthcare personnel, who are important educators regarding the prevention of cervical cancer.

Sexual behavior also contributed toward KAP outcomes. Compared to those with no partner or multiple partners, individuals with a single sexual partner performed better across all indicators of knowledge, attitude, and practice (KAP). This finding is in contrast to the studies conducted by Getinet et al. (2021), Ibekwe et al. (2024), and Yadav et al. (2024), which saw greater awareness among women with a higher number of sexual partners. The difference may be due to cultural, contextual, or methodological factors in the places where the studies were conducted. integrating community healthcare workers (CHWs) in raising awareness could contribute to increased level of knowledge and practice.

Limitations and Future Directions

This study is limited because it focuses on participants from CHUK, an urban referral hospital. Because of this, the applicability of the findings to rural populations is limited. Regardless, the findings offer important perspectives on cervical cancer knowledge, attitudes, and practices (KAP) among women in urban areas of Rwanda. Future studies should incorporate larger and more varied populations with the aim of advanced statistical analyses, including multivariable regression, which would uncover more intricate relationships. We also recommend longitudinal studies that assess the sustained effects of educational interventions on screening

behaviors. In addition, qualitative studies examining barriers and facilitators to screening, as well as the role of digital tools in participation enhancement, are vital towards developing interventions that are appropriate and scalable.

Recommendation

To close cervical cancer screening gap, more focused public health approaches are required, especially those that teach, empower, and motivate women to convert knowledge into action, truly fostering consistent health-seeking behavior. Approaches should concentrate not only on raising awareness, but also on addressing sociocultural and structural obstacles to screening. In so doing, Rwanda and comparable environments could markedly advance the enhancement of cervical cancer screening coverage and sustainably minimize the burden of the disease.

Conclusion

This research emphasizes the importance of knowledge, attitudes, and practices (KAP) in influencing women's behaviors concerning cervical cancer screening. The findings illustrate that knowledge and attitude factors are of greater level alongside a greater probability of screening uptake. Increased understanding equips women with a stronger appreciation of the need for early detection, while positive attitudes indicate a willingness to adopt preventive measures. Targeted education and community-based screening outreach are urgently needed to close the cervical cancer screening gap in Rwanda, particularly among younger, less educated, and higher parity women.

Funding

The following study did not receive any funding.

Clinical trial number: not applicable.

Reference

Akter, T., Festin, M., & Dawson, A. (2022). Hormonal contraceptive use and the risk of sexually transmitted infections: A systematic review and meta-analysis. Scientific Reports, 12(1), 20325. https://doi.org/10.1038/s41598-022-24601-y

Al Kalbani, R., Al Kindi, R., Al Basami, T., & Al Awaisi, H. (2022). Cervical Cancer-related Knowledge and Practice among Omani Women Attending a Family Medicine and Public Health Clinic. Oman Medical Journal, 37(3), e374. https://doi.org/10.5001/omj.2022.56

Appiah, E. O. (2022). Cues to cervical cancer screening and reaction to cervical cancer diagnosis during screening among women in Shai Osudoku District, Ghana. Ecancermedicalscience, 16. https://doi.org/10.3332/ecancer.2022.1392

Biddell, C. B., Spees, L. P., Smith, J. S., Brewer, N. T., Des Marais, A. C., Sanusi, B. O., Hudgens, M. G., Barclay, L., Jackson, S., Kent, E. E., & Wheeler, S. B. (2021). Perceived Financial Barriers to Cervical Cancer Screening and Associated Cost Burden Among Low-Income, Under-Screened Women. Journal of Women's Health, 30(9), 1243–1252. https://doi.org/10.1089/jwh.2020.8807

Chan, C. K., Aimagambetova, G., Ukybassova, T., Kongrtay, K., & Azizan, A. (2019). Human Papillomavirus Infection and Cervical Cancer: Epidemiology, Screening, and Vaccination—Review of Current Perspectives. Journal of Oncology, 2019, 1–11. https://doi.org/10.1155/2019/3257939

Choi, Y., Oketch, S. Y., Adewumi, K., Bukusi, E., & Huchko, M. J. (2020). A Qualitative Exploration of Women's Experiences with a Community Health Volunteer-Led Cervical Cancer Educational Module in Migori County, Kenya. Journal of Cancer Education: The Official Journal of the American Association for Cancer Education, 35(1), 36–43. https://doi.org/10.1007/s13187-018-1437-2

Daka, M., Ngoma, C. M., Kalusopa, V., Banda, Y., Chikwanda, E. K., & Mulumba, A. (2022). Knowledge, Attitudes and Perceptions Influencing Cervical Cancer Screening among Women in Kitwe District, Copperbelt Province, Zambia. Open Journal of Obstetrics and Gynecology, 12(06), 562–577. https://doi.org/10.4236/ojog.2022.126049

Dera, M., Wondimagegnehu, A., & Asfaw, Z. G. (2023). Determinants for hesitancy in human papillomavirus (HPV) vaccine uptake among school girls in Jimma Town, Ethiopia. A mixed approach: Quantitative and qualitative. Reproductive Health, 20(1), 175. https://doi.org/10.1186/s12978-023-01711-y

Ebu, N. I., Mupepi, S. C., Siakwa, M. P., & Sampselle, C. M. (2014). Knowledge, practice, and barriers toward cervical cancer screening in Elmina, Southern Ghana. International journal of women's health, 31-39.

Gafaranga, J. P., Manirakiza, F., Ndagijimana, E., Urimubabo, J. C., Karenzi, I. D., Muhawenayo, E., Gashugi, P. M., Nyirasebura, D., & Rugwizangoga, B. (2022). Knowledge, Barriers and Motivators to Cervical Cancer Screening in Rwanda: A Qualitative Study. International Journal of Women's Health, 14, 1191–1200. https://doi.org/10.2147/IJWH.S374487

Gebisa, T., Bala, E. T., & Deriba, B. S. (2022). Knowledge, Attitude, and Practice Toward Cervical Cancer Screening Among Women Attending Health Facilities in Central Ethiopia. Cancer Control, 29, 10732748221076680. https://doi.org/10.1177/10732748221076680

Gebreegziabher, Z. A., Semagn, B. E., Kifelew, Y., Abebaw, W. A., & Tilahun, W. M. (2024). Cervical cancer screening and its associated factors among women of reproductive age in Kenya: Further analysis of Kenyan demographic and health survey 2022. BMC Public Health, 24(1), 741. https://doi.org/10.1186/s12889-024-18148-y

Getinet, M., Taye, M., Ayinalem, A., & Gitie, M. (2021). Precancerous lesions of the cervix and associated factors among women of East Gojjam, Northwest Ethiopia, 2020. Cancer management and research, 9401-9410.

Gultie, T. (2018). Knowledge and attitude towards cervical cancer screening and associated factors among female Hawassa university college of medicine and health sciences students. MOJ Public Health, 7(3). https://doi.org/10.15406/mojph.2018.07.00221

Ibekwe, J. L., Femi-Lawal, V. O., Thomas, J. A., Okei, F. U., Ojile, M. O., & Akingbulugbe, O. O. (2024). Nigerians' attitudes and perceptions towards vaccine acceptance during and after the COVID-19 pandemic. Journal of Medicine, Surgery, and Public Health, 2, 100066. https://doi.org/10.1016/j.glmedi.2024.100066

John-Akinola, Y. O., Ndikom, C. M., Oluwasanu, M. M., Adebisi, T., & Odukoya, O. (2022). Cervical Cancer and Human Papillomavirus Vaccine Knowledge, Utilisation, Prevention Educational Interventions

and Policy Response in Nigeria: A Scoping Review. Cancer Control, 29, 10732748221130180. https://doi.org/10.1177/10732748221130180

Kemper, K. E., McGrath, C. J., Eckert, L. O., Kinuthia, J., Singa, B., Langat, A., & Drake, A. L. (2022). Correlates of cervical cancer screening among women living with HIV in Kenya: A cross-sectional study. International Journal of Gynecology & Obstetrics, 156(1), 151–158. https://doi.org/10.1002/ijgo.13690

Lam, J. U. H., Rebolj, M., Dugué, P.-A., Bonde, J., Von Euler-Chelpin, M., & Lynge, E. (2014). Condom use in prevention of Human Papillomavirus infections and cervical neoplasia: Systematic review of longitudinal studies. Journal of Medical Screening, 21(1), 38–50. https://doi.org/10.1177/0969141314522454

Mehra, D., Östergren, P.-O., Ekman, B., & Agardh, A. (2014). Inconsistent condom use among Ugandan university students from a gender perspective: A cross-sectional study. Global Health Action, 7(1), 22942. https://doi.org/10.3402/gha.v7.22942

Moodley, S. V., Wolvaardt, J. E., Louw, J. M., & Hugo, J. (2020). Trends in practice intentions and preferences of clinical associate students: Implications for training and health services in South Africa. South African Family Practice, 62(1). https://doi.org/10.4102/safp.v62i1.5033

Mukama, T., Ndejjo, R., Musabyimana, A., Halage, A. A., & Musoke, D. (2017). Women's knowledge and attitudes towards cervical cancer prevention: A cross sectional study in Eastern Uganda. BMC Women's Health, 17(1), 9. https://doi.org/10.1186/s12905-017-0365-3

Niyonsenga, G., Gishoma, D., Sego, R., Uwayezu, M. G., Nikuze, B., Fitch, M., & Igiraneza, P. C. (2021). Knowledge, utilization and barriers of cervical cancer screening among women attending selected district hospitals in Kigali - Rwanda. Canadian Oncology Nursing Journal, 31(3), 266. https://doi.org/10.5737/23688076313266274

Nyaaba, J. A., & Akurugu, E. (2023). Knowledge, barriers and uptake towards Cervical Cancer screening among female health workers in Ghana: A perspective of the Health Belief Model. International Journal of Africa Nursing Sciences, 19, 100587. https://doi.org/10.1016/j.ijans.2023.100587

Petca, A., Borislavschi, A., Zvanca, M., Petca, R.-C., Sandru, F., & Dumitrascu, M. (2020). Non-sexual HPV transmission and role of vaccination for a better future (Review). Experimental and Therapeutic Medicine, 20(6), 1–1. https://doi.org/10.3892/ETM.2020.9316/HTML

Ruddies, F., Gizaw, M., Teka, B., Thies, S., Wienke, A., Kaufmann, A. M., Abebe, T., Addissie, A., & Kantelhardt, E. J. (2020). Cervical cancer screening in rural Ethiopia: A cross- sectional knowledge, attitude and practice study. BMC Cancer, 20(1), 563. https://doi.org/10.1186/s12885-020-07060-4

Simpkin, A. L., & Armstrong, K. A. (2019). Communicating Uncertainty: A Narrative Review and Framework for Future Research. Journal of General Internal Medicine, 34(11), 2586–2591. https://doi.org/10.1007/s11606-019-04860-8

Singh, D., Vignat, J., Lorenzoni, V., Eslahi, M., Ginsburg, O., Lauby-Secretan, B., Arbyn, M., Basu, P., Bray, F., & Vaccarella, S. (2023). Global estimates of incidence and mortality of cervical cancer in 2020: a baseline analysis of the WHO Global Cervical Cancer Elimination Initiative. The Lancet Global Health, 11(2), e197–e206. https://doi.org/10.1016/S2214-109X(22)00501-0

Usman, I. M., Chama, N., Aigbogun Jr, E. O., Kabanyoro, A., Kasozi, K. I., Usman, C. O., Fernandez Diaz, M. E., Ndyamuhakyi, E., Archibong, V. B., Onongha, C., Ochieng, J. J., Kanee, R. B., & Ssebuufu, R. (2023). Knowledge, Attitude, and Practice Toward Cervical Cancer Screening Among Female University Students in Ishaka Western Uganda. International Journal of Women's Health, Volume 15, 611–620. https://doi.org/10.2147/IJWH.S404845

Wakwoya, E. B., Gemechu, K. S., & Dasa, T. T. (2020). Knowledge of cervical cancer and associated factors among women attending public health facilities in Eastern Ethiopia. Cancer Management and Research, 10103-10111. https://doi.org/10.2147/CMAR.S262314

Wells, A., Allen-Brown, V., Alam, N., Skulski, C., Jackson, A. L., & Herzog, T. J. (2021). The importance of information, motivation, and behavioral skills (IMB): Healthcare provider perspectives on improving adherence to cervical cancer screening among at-risk women. Public Health in Practice, 2, 100079. https://doi.org/10.1016/j.puhip.2021.100079

Yadav, R., Chauhan, M. B., Yadav, C., Ranga, S., Ahuja, P., Tanwar, M., Balhara, N., Kadian, L., Chauhan, P., Tanwar, N., & Ahlawat, C. (2024). Awareness data on cervical cancer among females of rural and urban areas of Haryana, India. Data in Brief, 53, 110168. https://doi.org/10.1016/j.dib.2024.110168

Yamane, Y. (1967). Mathematical formulae for sample size determination.