ORIGINAL RESEARCH ARTICLE

Understanding the determinants of cervical cancer screening uptake in Hoima District, Uganda

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Abstract

Cervical cancer poses a significant global health challenge, particularly in low-resource settings such as Hoima district, Uganda. Early detection through screening is crucial for reducing morbidity and mortality associated with the disease. This study aimed to investigate the socio-demographic, client-related, and institutional factors influencing the uptake of cervical cancer screening among women aged 20 to 60 years in Hoima district. A cross-sectional study involving 400 women and 95 health workers as key informants was conducted across 20 selected health centres in Hoima district. Data collection employed interviewer-administered semi-structured questionnaires. Socio-demographic factors including age, marital status, and occupation were found to significantly influence cervical cancer screening uptake. Among client-related factors, awareness about the importance of screening emerged as a key determinant. Institutional barriers such as limited availability of screening services were identified as significant obstacles to uptake, with only one health facility offering services. The study underscores the urgent need for targeted interventions to improve cervical cancer screening uptake in Hoima district. Recommendations include implementing health promotion campaigns and expanding screening services to all health centres, accompanied by training for health workers and provision of necessary resources. *(Afr J Reprod Health 2026; 30 [3]: 104-113).*

Keywords: Cervical cancer, screening uptake, socio-demographic factors, client-related factors, institutional factors, Hoima district, Uganda

Résumé

Le cancer du col de l'utérus constitue un problème de santé majeur à l'échelle mondiale, surtout dans les régions aux ressources limitées comme le district de Hoima, en Ouganda. Un dépistage précoce est fondamental pour réduire la morbidité et la mortalité de cette maladie. Cette étude transversale a analysé les facteurs influençant l'utilisation des services de dépistage chez 400 femmes âgées de 20 à 60 ans et 95 professionnels de la santé dans 20 centres de santé du district de Hoima. Les données ont été recueillies à l'aide de questionnaires semi-structurés. Les résultats ont révélé que des facteurs sociodémographiques (âge, état matrimonial et profession) influencent de manière significative le recours au dépistage. La sensibilisation des patientes à l'importance du dépistage est également apparue comme un déterminant essentiel. Des obstacles institutionnels majeurs ont été identifiés, notamment la disponibilité limitée des services, avec seulement un centre de santé offrant ces services. L'étude recommande des interventions ciblées pour améliorer le dépistage, telles que des campagnes de promotion de la santé, l'extension des services à tous les centres de santé, la formation du personnel et la fourniture des ressources nécessaires. *(Afr J Reprod Health 2026; 30 [3]: 104-113).*

Mots-clés: : Cancer du col de l'utérus, recours au dépistage, facteurs sociodémographiques, facteurs liés aux patientes, facteurs institutionnels, district de Hoima, Ouganda

Introduction

Cervical cancer stands as the fourth most prevalent malignancy in the realm of women's oncology worldwide, with an estimated 604,000 incident cases and approximately 342,000 fatalities in 2020.[1]While in affluent countries it doesn't rank among the top five leading cancers in developing nations, in Sub-Saharan Africa, it holds the top or second position among cancers affecting women.[1-2] This stark contrast underscores significant global disparities.[3] Sub-Saharan Africa reports higher

rates of cervical cancer prevalence compared to global averages, primarily due to constrained cervical cancer screening.[4] Of the 48 countries in the region, cervical cancer is the leading cause of mortality among women in 21 countries. Nearly all cases of cervical cancer are associated with Human Papillomavirus (HPV).[5] Despite a decline in incidence rates in many developed and middle-income nations, certain areas in Eastern Africa and Eastern Europe have experienced an increase.[4] In contrast, developed countries like the USA and the UK exhibit relatively lower cervical cancer incidence rates.[6] Conversely, developing countries showcase varied incidence rates, with the highest observed in regions such as Malawi and Zambia.[7] This global discrepancy in cervical cancer burden underscores the urgent need for effective prevention and control strategies worldwide.

Uganda, in particular, faces a significant burden of cervical cancer, with an age-standardized incidence rate of 54.8 per 100,000 women and a mortality rate of 40.5 per 100,000 women.[8] This highlights the pressing public health challenge within the country. Various risk factors contribute to the higher prevalence of cervical cancers in developing countries, representing 13% of all female cancers in these regions.[9] Limited screening programs further exacerbate the situation, impacting early detection rates compared to developed nations where such services are more readily available.[10] This contextual background underscores the necessity for comprehensive strategies to address cervical cancer burden, particularly in low- and middle-income countries like Uganda.

Problem statement

The prevalence of cervical cancer screening in Uganda remains disconcertingly low, with only approximately 20.6% of women having ever undergone screening.[11] This low uptake is particularly concerning given that cervical cancer has emerged as the most prevalent cancer among women in Uganda, boasting burden of 54.8 per 100,000 women and a mortality rate of 40.5 per 100,000 women.[8] The evident burden of cervical cancer underscores the urgent necessity for comprehensive prevention, screening, and treatment initiatives in Uganda. Visual inspection with acetic acid (VIA) is recommended as a cost-effective screening method due to its ability to yield reliable results, thereby facilitating subsequent management of positive cases.[12] However, in Hoima district, there exists a distressing lack of uptake in cervical cancer screening services among women, as evidenced by data from the District Health Information System 2 (DHIS2)[13].

The repercussions of this low uptake are profound, as it increases the likelihood of late-stage diagnoses, rendering treatment primarily palliative in nature. Consequently, this perpetuates the cycle of high mortality rates associated with cervical cancer. To address this pressing issue, we investigated the socio-economic, individual, and healthcare-related factors influencing the utilization of cervical cancer screening services among women aged 20-60 years in Hoima district in Uganda.

Methods

Study area

The study was conducted in greater Hoima (composed of Hoima District, Kikuube district and Hoima Municipality) with an estimated total population of 733,200 people. The female population in this area constitutes approximately 361,700 people, which is 49.3% of the total population. The participating health facilities included Hoima regional referral Hospital, two health centre fours of Kigorobya and Kikuube, and 17 Health Centre IIIs.

Research design

A health facility-based cross-sectional study design was employed, utilizing quantitative methods to explore various factors influencing cervical cancer screening uptake was used in this study..

Study population

The target population was women aged between 20 to 60 years who were attending the 20 health facilities in Hoima district for various reasons. The above age category was considered because though the risk of developing cervical cancer begins at 14 years of age, it becomes increasingly higher at 20

years compared to those below 20 years and above the age of 60 years.

Inclusion criteria

The study included all women aged between 20 to 60 years who were attending health centres IIIs, IVs, and a regional hospital for any reason, who were sober in mind, accepted, and consented to participate. Only public and private not-for-profit health facilities qualified for the study. Residents of Hoima who had lived in the district for more than 6 months were considered. Nurses, general medical doctors, clinical officers, midwives, and sober individuals were included as key informants.

Exclusion criteria

Potential respondents who were not of a sober mind were excluded. Those who requested money to participate were not considered. Specialists in Hoima regional referral hospital, such as surgeons, gynaecologists, and physicians, were excluded from the study. The assumption was that these specialists had more knowledge on the subject being studied compared to general doctors, which could be explored in future studies.

Sample size calculation

Sample size was determined using Yamane's formula, $n=N/(1+Ne^2)$, where n is the sample size, N is the population size of women in Hoima district, and e is the level of precision. A 95% confidence level and a precision level (e) of 0.05 were used for the calculation. With a total population of women aged 20-60 in Hoima (N) estimated at 225,758, the calculation is as follows:

$n=361,700/(1+361,700(0.05)^2)$
$n=225,758/1+904.25$
$n=361,700/905.25$
$n\approx399.9253$
$n=400$

Therefore, a final sample size of 400 women participated in the study, with 20 women selected from each of the participating 20 health facilities.

Sampling procedure

Simple random sampling via lottery method was employed for participant selection. To ensure patients were not delayed and that participants were not recruited on the same day, the researcher would wait until there was more than one woman present to select from, and then use the lottery method to choose participants. This procedure was repeated over the course of the study until the required number of 20 women was recruited from each health facility. Purposive sampling was used for health facilities. Convenience sampling was used for health workers.

Study variables

Dependent variable: Uptake of cervical cancer screening services. Independent variables: Socio-demographic, institutional, and clients' factors.

Data collection methods

Data were collected using a semi-structured questionnaire. The questionnaire contained a mix of closed-ended questions to gather demographic and service-related information from 400 participants, as well as open-ended questions to collect detailed responses. This approach allowed for a comprehensive understanding of factors influencing screening uptake by harmonizing both numerical and descriptive data. The interviews were conducted in Runyoro.

Quality control

Quality control involved recruitment and training of research assistants, pre-testing of tools and data collection, and field editing of data.

Training of research assistants

Fourteen trained research assistants, primarily females, were supervised by the principal investigator, regular meetings and minimum qualifications ensured quality data collection.

Pre-testing of tools

The pre-testing of tools involved interviewing 40 women aged 20 to 60 years and three health workers at a nearby health facility to evaluate the effectiveness of the methodology and questionnaires. Following this, revisions were made to standardize the tools and ensure accurate data

collection. This process occurred one week prior to the actual data collection. Interviews with women were conducted in Runyoro, while those with health workers were conducted in English.

Data collection tools and field editing

Data was collected using a pre-tested semi-structured questionnaires and checklists. Data collected was edited on a daily basis to ensure accuracy and completeness and also to deal with non-responses.

Data management and analysis

The collected data underwent rigorous quality checks to ensure completeness and accuracy. Open-ended questions were systematically coded based on predetermined themes to facilitate analysis. Quantitative data were inputted into the Epi-Info database software and subsequently transferred to SPSS for analysis. Univariate analysis was conducted to generate frequency tables and descriptive statistics.

Bivariate analysis was then employed to compare the dependent variable with independent variables, utilizing confidence intervals and p-values. Additionally, multivariable logistic regression analysis was conducted to control for potential confounding variables and ascertain the factors influencing cervical cancer screening uptake.

This comprehensive analytical approach enabled a thorough examination of the data and provided insights into the determinants of screening behaviour.

Ethical considerations

Approval to conduct the study was sought from the Institute of Health Policy and Management and the Research and Ethics Committee of International Health Sciences University and permission was also sought from the Hoima district health officer. The ethical approval number was IHSU/REC/2011/022**.** Potential respondents were informed about the objectives and process of the study and informed consent was sought before the interviews from all respondents by highlighting the importance of this study.

Results

The demographic data of the interviewed women revealed that a significant portion were married (48%), while a smaller percentage were divorced (4.5%). The majority of women were Catholic (37%) and Anglican (36%). In terms of education, a substantial proportion had no formal education (26%) or had only completed primary school (35%). The predominant occupation was farming (56%), followed by business (24%) and civil service roles (14.5%). A majority of the women lived in rural areas (66.8%). The data also provided insights into the number of co-wives, with varied numbers, which has implications for HPV transmission risk.The bivariate analysis was conducted to examine the association between various independent variables and the uptake of cervical cancer screening among women. The results, interpreted using Pearson's Chi-square test at a 95% confidence level, highlighted several initial associations.

The analysis revealed that age, marital status, occupation, and being told about the importance of cervical cancer screening were found to have a significant association with cervical cancer screening uptake (p-values < 0.05). Conversely, other factors such as awareness of cervical cancer, religion, education level, perceived cost, availability of health staff, perceived importance, and knowledge of symptoms did not show statistically significant associations with screening behavior ($p > 0.05$). These initial findings suggest that while some factors show a strong relationship with screening uptake, it is necessary to proceed to logistic regression analysis to determine their independent effect while controlling for potential confounding variables. The subsequent logistic regression will provide a more definitive understanding of the most influential factors

The present investigation delves into the interaction among various factors affecting the uptake of cervical cancer screening, notably age, marital status, awareness, and occupation.

Table 1: Bivariate analysis of key variables

Variable	Category	Screened (Yes)	Screened (No)	P-value	Chi-square (X^2)
Ever heard about cervical cancer	Yes	7	238	0.83	0.0461
	No	5	150		
Age group (years)	20–30	8	124	0.036	8.5527
	31–40	3	138		
	41–50	1	90		
	51–60	0	36		
Marital status	Married	3	190	0.036	10.2836
	Separated	2	94		
	Widowed	2	58		
	Divorced	1	17		
	Single	4	29		
Religion	Anglican	5	144	0.486	3.4443
	Catholic	5	141		
	Muslim	0	63		
	Born again	2	32		

Table 2: Logistic regression analysis of factors that were significant at bivariate analysis

Factor	Odds Ratio	P-value	[95% Conf. Interval]
Age	0.3287731	0.014	0.1358777, 0.7955075
20-30 years (Baseline)			
31-40 years	0.294686	0.072	0.078004, 1.113274
41-50 years	0.1506173	0.075	0.0187444, 1.210258
Marital status	1.669627	0.006	1.156409, 2.410613
Married (Baseline)			
Not married	8.689655	0.006	1.849652, 40.82395
Occupation	1.600066	0.103	0.9093507, 2.815429
Farming (Baseline)			
Students	6.92	0.013	1.505219, 31.81357
Own business	1.104255	0.894	0.2581927, 4.722752
Civil servants	0.6653846	0.63	0.1267995, 3.491628
Being told about the importance of screening	7.3421	0.0211	2.409823, 3.922332

The results emphasize the significance of socio-demographic factors, particularly age, marital status, and awareness, in influencing cervical cancer screening uptake, which is consistent with prior studies. These studies have consistently highlighted the importance of age and marital status in screening uptake, suggesting them as universal determinants of screening behaviours.Age consistently emerges as a determinant of screening uptake at both bivariate and multivariate. The logistic regression results indicated that age was a significant factor influencing screening uptake, with an odds ratio of 0.3287731 and a p-value of 0.014. However, further analysis with the 20-30 years age group as the baseline, indicated that the age groups of 30 to 41 years and 41 to 50 years were not significantly different in influencing screening uptake compared to the baseline. This suggests that

certain age cohorts may not perceive themselves at high risk or face barriers to accessing screening services, echoing previous findings.

Marital status also emerges as an influential factor, with non-married individuals, potentially including students, exhibiting higher screening uptake. The logistic regression analysis showed that marital status was a significant factor with an odds ratio of 1.669627 and a p-value of 0.006. Further analysis, taking married individuals as a baseline, found that those who are not married are 8.7 times more likely to affect screening uptake compared to the married (p=0.006). This aligns with studies emphasizing the role of social support networks and healthcare-seeking behaviours associated with marital status.

The significance of being aware of the importance of screening becomes evident as a major factor influencing uptake, emphasizing the crucial role played by health education and awareness campaigns. The logistic regression showed that awareness of screening importance was a substantial 7.3 times more likely to influence uptake (p=0.0211). This highlights how knowledge empowers individuals to prioritize their health and seek suitable healthcare services. This reinforces the necessity for ongoing monitoring, health education initiatives, and community-based programs aimed at altering behaviours and attitudes towards screening.

Regarding occupation, while the initial bivariate analysis found it to be a significant factor, the logistic regression analysis showed it was not significant overall. However, further exploration revealed that being a student was a key influencer of screening uptake in Hoima district, with an odds ratio of 6.92 and a p-value of 0.013.

This underscores the importance of considering specific demographic groups in intervention planning. This finding contrasts with previous studies, suggesting potential impacts of occupation on screening behaviours, while also emphasizing the contextual nuances that may influence screening behaviours within different populations.

Summary of findings

Mainly socio-demographic factors such as age, Marital status and clients' factors such as being told about the importance of cervical cancer screening in their order of strength were the only significant factors identified at logistic regression analysis. Although at bivariate analysis, there was occupation as a significant factor, when analysed using simple logistic regression it was found not to be significant. Being a student, however, was a significant factor that could affect the uptake of cervical cancer screening services in Hoima district.

Discussion

The present investigation delves into the interaction among various factors affecting the uptake of cervical cancer screening, notably age, marital status, awareness, and occupation. The results emphasize the significance of socio-demographic factors, particularly age, marital status, and awareness, in influencing cervical cancer screening uptake, which is consistent with prior studies[15,-17]. These studies have consistently highlighted the importance of age and marital status in screening uptake, suggesting them as universal determinants of screening behaviours.

Age consistently emerges as a determinant of screening uptake across studies[18,19]. Individuals aged 30-41 and 41-50 years did not significantly differ from the baseline age group (20-30 years) in terms of screening uptake, echoing previous findings. This suggests that certain age cohorts may not perceive themselves at high risk or face barriers to accessing screening services[17]. Specifically, the higher uptake among younger women (20-30 years) may be attributed to increased exposure to health information through social media or school-based health programs, which might be less accessible to older age groups in Hoima district [20,21].

Marital status also emerges as an influential factor, with non-married individuals, potentially including students, exhibiting higher screening uptake. This aligns with studies emphasizing the role of social support networks and healthcare-seeking behaviours associated with

marital status[15,22]. The finding that non-married women are more likely to be screened could indicate greater personal autonomy in health decisions or fewer domestic responsibilities compared to married women in the region. Furthermore, the association with student status suggests that educational environments might provide opportunities for health awareness and access to services that are not readily available to other segments of the population[23].

The significance of being aware of the importance of screening becomes evident as a major factor influencing uptake, emphasizing the crucial role played by health education and awareness campaigns[24,25]. This highlights how knowledge empowers individuals to prioritize their health and seek suitable healthcare services. This reinforces the necessity for ongoing monitoring, health education initiatives, and community-based programs aimed at altering behaviours and attitudes towards screening.[26,22]The fact that "being told about the importance of screening" was a significant predictor underscores the critical role of direct communication and counselling from healthcare providers or trusted community figures in motivating screening 110 ehavior, especially given the low general awareness of cervical cancer in the district.[24] Regarding occupation, while the initial analysis did not find it to be significant, further exploration revealed that being a student significantly influenced screening uptake. This underscores the importance of considering specific demographic groups in intervention planning.[16,19] This finding contrasts with previous studies, suggesting potential impacts of occupation on screening behaviours, while also emphasizing the contextual nuances that may influence screening behaviours within different populations.[27]The higher screening rates among students may be linked to their exposure to health information within educational institutions, access to student health services, or greater openness to new health practices compared to those in more traditional occupations like farming.[23,25]

Limitations

This study's primary strength lies in its quantitative methodology, which effectively genera ted data on the various factors influencing cervical cancer screening uptake. The substantial sample size, encompassing 400 women, enhances the applicability of our findings to the wider Hoima district population. Additionally, incorporating insights from health workers was vital for grasping the realities of institutional capabilities and challenges.

Nevertheless, the study has several limitations. Its cross-sectional nature means we can only identify associations between factors and screening uptake, rather than establishing direct cause-and-effect relationships.

Reliance on self-reported information from participants also introduces potential for recall inaccuracies or responses influenced by social desirability. Furthermore, the decision to exclude specialists might have restricted the depth of understanding regarding more intricate institutional dynamics. Finally, as the research was confined to public and not-for-profit health facilities, its findings may not fully extend to the operational characteristics of private healthcare settings.

Conclusion

In summary, the study's findings paint a comprehensive picture of the multifaceted determinants of cervical cancer screening uptake in Hoima District. While socio-demographic factors such as age and marital status play a significant role, the critical influence of direct information about the importance of screening stands out. The alarmingly low overall screening rate of 3% among women in the district, coupled with the finding that only one health facility provides screening services and a mere 3.16% of health workers are trained, highlights the severe institutional barriers that overshadow individual knowledge and perceived importance. This suggests that even if women are aware or believe screening is important, the lack of accessible services and trained personnel fundamentally limits their ability to act on this knowledge or intention. The non-significant association of factors like general awareness, education level, and perceived cost in the bivariate analysis further supports the notion that structural limitations are paramount in this context

Recommendations

The recommendations propose a multi-pronged, urgent strategic response to improve cervical cancer screening uptake in Hoima District, Uganda. Key areas of focus include:

Public Information: Implementing targeted health promotion campaigns through preferred channels like radios and churches, emphasizing the importance of screening, and distributing IEC materials.

Health Worker Training and Resources: Urgently investing in comprehensive training programs for a larger number of health workers across all health centres, ensuring they have essential equipment and supplies, and integrating screening into health training curricula.

Cost and Accessibility: Addressing the misconception about screening costs by exploring fee subsidies or removal, and integrating cervical cancer screening into routine primary healthcare services to improve accessibility and normalize the practice.These combined measures aim to form a robust framework for improving early detection and outcomes for cervical cancer in the district

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Consent to participate

Prior to their inclusion in the study, all participants were required to provide informed consent, a process meticulously aligned with the principles set forth in the Declaration of Helsinki. The researcher ensured that participants were fully informed about all aspects of the study, including their right to participate, refuse, or withdraw consent at any stage. This comprehensive approach aimed to uphold ethical standards and respect participants' autonomy throughout the research process.

Consent for publication

The researchers obtained written consent to use participant quotes in publications.

Availability of data and materials

The main study document, inclusive of detailed information and the dataset utilized and analysed in this research, is available upon request to the corresponding author.

Competing interests

The authors declare they have no competing interests.

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Contribution of authors

Ronald Arineitwe Kibonire formulated the study, leading its design, execution of data collection, analysis, and interpretation, while also preparing and overseeing the manuscript as the principal investigator. David Ditaba Mphuthi collaborated on the article by contributing to its writing, reviewing the manuscript, and providing constructive feedback for improvement**.**

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