INTRAPERSONAL FACTORS ASSOCIATED WITH CERVICAL CANCER SCREENING AMONG WOMEN IN FISHING COMMUNITIES OF ENTEBBE MUNICIPALITY, WAKISO DISTRICT. A CROSS-SECTIONAL STUDY.

Emily Keneema[a], Mathias Lwenge[a], Zaitune Nanyunja[b,a,*], Barbara Kawoozo[c], Ampeire Immaculate[d], Ali Ssetaala, Juliet Mpendo[c], Brenda Okech[c], Daniel Okodan[e]

[a] *Faculty of Health Sciences, Uganda Martyrs University.*
[b] *Department of Biological Sciences, Kyambogo University.*
[c] *Uganda Virus Research Institute-International AIDs Vaccine Initiatives (UVRI-IAVI HIV Vaccine program).*
[d] *Ministry of Health as an assistant commissioner -UNEPI department.*
[e] *Pharmaceutical Product Development - Global Pharmaceutical Contract Research Organization.*

Abstract

Background

The chances of developing cervical cancer in Uganda continue to rise especially in the fishing communities due to the relatively higher prevalence of inter-related personal risk factors. This study aimed to examine the Intrapersonal Factors Associated with Cervical Cancer Screening Among Women in Fishing Communities of Entebbe Municipality, Wakiso District.

Methodology

A descriptive cross-sectional survey study was conducted among women in the fishing communities of Entebbe-Municipality Wakiso district in Central Uganda and utilized quantitative methods of data collection. Data were collected using a structured questionnaire with multiple-response questions. Data were analyzed using SPSS version 25, univariate, bivariate, and multivariate analysis were performed at 5% level significance.

Results

Of the 293 respondents that were interviewed, only 23.2% of women had ever been screened for cervical cancer. More than three-quarters of them knew that cervical cancer is not curable 234(79.9%). 150(51.2%) women mentioned that the age at the start of screening for cervical cancer in Uganda is 18 years and had 46% less prevalence of cervical cancer screening (cPR = 0.54 [0.33 - 0.90], p = 0.020). Among the perception attributes Cervical cancer screening prevalence was twice as high among women who agreed that cervical cancer is a curse from God (cPR = 2.43 [CI = 1.49 - 3.97], P = 0.000) compared to those who disagreed.

Conclusion

The intrapersonal factors associated with cervical cancer screening among women in the fishing communities of Entebbe municipality were mainly; marital status, employment status, knowledge of age at the start of the screening, and perceptions of the relevance of screening.

Recommendation

Communication and education should focus on awareness creation about the fact that even in a marriage where not much risky sexual behavior may be present, the risk of HPV infection remains apparent, for instance from sexually transmitted infections within the couple.

1. Background of the study

Cervical cancer screening is one of the preventive measures to combat cervical cancer disease among the women population. Women living in fishing communities experience the highest burden of the disease and therefore screening efforts are critically needed. However, according to Keneema *et al.*, (2022), the prevalence of cervical screening in the fishing communities is still insufficient to revert the burden of cervical cancer morbidities and deaths in Uganda.

However, the main obstacles inherent to this intervention are the intra-personal factors, A review of the literature on the intrapersonal factors associated with cervical cancer screening revealed that characteristics including; knowledge, stigma and embarrassment, education, socioeconomic status, age, fear of screening procedure and pain, parity, misconceptions about cancer. as a disease, marital status, health system distrust, religion, perceptions, and priorities are important.

The effect of knowledge about cervical cancer on cervical cancer screening has been one of the most studied factors associated with screening (Kirubarajan et al., 2021; Annan et al., 2019; Alwahaibi et al., 2017; Ogbonna et al., 2017; Okoeki et al., 2016; Jayasinghe et al., 2016; Pan et al., 2014; Isabirye et al., 2020; Idehen et al., 2020; Gele et al., 2017; Grandahl et al., 2015; Akhagba et al., 2017; Addawe et al., 2018; Andersen et al., 2020).

Kirubarajan et al., 2021; Roux et al., 2021; Andersen et al. (2020), Idehen et al. (2020), Gele et al. (2017) Grandahl et al. (2015), Addawe et al. (2018), and Akhagba et al. (2017) found that the lack of knowledge about cervical cancer and cervical cancer screening to be the greatest barriers to screening. Limited knowledge about CC has also been associated with minimal chances of attending CCS in some studies. Roux et al. (2021) however found a lack of awareness about the role and availability of CCS services that affected screening.

---
*Corresponding author.

Email address: nanyunjazai@gmail.com (Zaitune Nanyunja)

On the other hand, adequate knowledge and awareness about cervical cancer screening were found to be protective of screening (Annan et al., 2019; Alwahaibi et al., 2017; Ogbonna et al., 2017; Okoeki et al., 2016; Jayasinghe et al., 2016; Pan et al., 2014). Consistently, Isabirye et al. (2020) found being more knowledgeable about cervical cancer and screening to be associated with twice the odds of being screened. Tekle et al. (2020) found a fivefold chance of being screened for cervical cancer among women who had good knowledge of cervical cancer.

Idehen et al. (2020) also found that women's high understanding of cervical cancer screening increased the chance of cervical cancer screening.

In some studies, the stigma surrounding cervical cancer screening was found to be the most important barrier to cervical cancer screening (Lee et al., 2017; Ogbonna et al., 2017; Pan et al., 2014). In the study by Lee et al. (2017) women reported that the shame of visiting a gynecologist's office prevented them from screening for CC. Chua et al. (2021) found that some women in their study had not been screened because of the supposed embarrassment that comes with being screened. In other studies, embarrassment and discomfort linked to body exposure during a CCS test were found to have a negative influence on CCS (Grandahl et al., 2015; Olsson et al., 2014; Akhagba et al., 2017; Addawe et al., 2018)

New-Aaron et al. (2020) and Chua et al. (2021), found a positive relationship between educational level completed and cervical cancer screening. Tekle et al. (2020) also found that women with a university degree/diploma were 5.2 times as likely to screen for cervical cancer. Gallo et al. (2017) and Møen et al. (2017) found a negative relationship between education and cervical cancer screening. Being unemployed was found to be negatively related to cervical cancer screening (Hertzum- Larsen et al., 2019; Idehen et al., 2018). A similar relationship was found between low-income and cervical cancer screening (Hertzum-Larsen et al., 2019; Møen et al., 2017).

Like knowledge, age has also been widely studied, although with mixed findings. New-Aaron et al. (2020) found a positive relationship between

younger age and cervical cancer screening, while Tekle et al. (2020) found that women aged 30 to 34 years were 7 seven times more likely to screen, compared to those aged 45 to 49 years. A similar association was noted in the study by

Idehen et al. (2018), Gallo et al. (2017) and Møen et al. (2017). On the contrary, Comparetto et al. (2017), Gallo et al. (2017), and Møen et al. (2017) found that older age was associated with higher screening attendance.

Al-Shaikh et al. (2014) and Pan et al. (2014) found the fear of side effects to be a barrier to cervical cancer screening. In studies by Agboeze et al. (2018) and Okoeki et al. (2016), fear of possible CC diagnosis was reported as being a barrier. Adewumi et al. (2021) on the other hand found the fear of pain to be a barrier to CC screening. That is in agreement with findings from other studies (Addawe et al., 2018; Olsson et al., 2014; Azerkan et al., 2015) where the fear of a cancer diagnosis was found to matter. Kirubarajan et al. (2021) similarly found that women who negatively perceived the cervical cancer screening test were less likely to be screened for cervical cancer. In other studies (Grandahl et al., 2015; Akhagba et al., 2017; Møen et al., 2018; Olsson et al., 2014), the fear of the screening procedure itself was found to be a screening deterrent.

Darj et al. (2019) reported that among the women they sampled, a belief that cervical cancer cannot be prevented affected screening behavior. Some women have been reported as having the perception that CC can neither be prevented nor cured and that screening is therefore not necessary (Olsson et al., 2014). Addawe et al. (2018) on the other hand found that the belief that cervical cancer incidence is God's will prevents screening attendance.

Parity and pregnancy were also considered factors influencing CCS participation, but also with conflicting results (Azerkan et al.,2015; Idehen et al., 2017; Møen et al., 2017). Quantitative data suggests that having no children is associated with lower attendance of screening among migrants from either Western and Nonwestern countries (Hertzum-Larsen et al., 2019).

A qualitative study offers a nuanced perspective on the influence of pregnancy in the use of screening. Younger women stated that the desire to get pregnant encouraged them to take the screening test as cervical cancer was a dangerous disease that could compromise pregnancy. Conversely, since pregnancy is a period marked by frequent contact with healthcare professionals, some women felt that they could monitor their health without doing the screening test. Additionally, after giving birth priorities change and CCS is not a priority (Azerkan et al., 2015).

Marital status is of significance in determining cervical cancer screening, with some studies findings being married as being protective of screening (Gallo et al., 2017; Idehen et al., 2018; Barrera-Castillo et al., 2019; Hertzum-Larsen et al., 2019). Azerkan et al. (2015), Barrera-Castillo et al. (2019), and Akhagba et al. (2017) found the effect of marital status to be related to the spousal support received from a partner. Some studies have found married women to be less likely to be screened for cervical cancer (Azerkan et al., 2015; Møen et al., 2017; Idehen et al., 2017).

In some other studies, distrust in a country's health system was found to be a barrier to CCS (Gele et al., 2017; Addawe et al., 2018; Olsson et al., 2014; Akhagba et al., 2017). Simply not finding time for cervical cancer screening was also found to be a barrier to cervical cancer screening (Addawe et al., 2018; Azerkan et al., 2015; Møen et al., 2018). Healthcare service providers who participated in studies by Møen et al. (2018), Addawe et al. (2018), Azerkan et al. (2015), and Olsson et al. (2014).

Muslim women have been reported to be less likely to be screened for CC as that is considered to be taboo (Grandahl et al., 2015; Gele et al., 2017; Olsson et al., 2014). In Pakistani and Somalia both of which are Muslim nations, women believed their belief protects them from disease and so they do not need to be screened (Gele et al., 2017). In other Muslim communities, the cervical cancer screening procedure is considered to be so invasive that they breach religious norms (Addawe et al., 2018).

Studies by Abdikarim et al. (2017); Devarapalli et al. (2018), Mbaka et al. (2018), Miri

et al., (2018), Solomon et al. (2019), Erku et al. (2017), and Bukirwa et al. (2015) found high perceptions of susceptibility to cervical cancer and high perceptions of positive benefits of screening to be protective of positive screening behavior. Perceived benefits were also found to be protective in a study by Miri et al. (2018). In agreement, Kalkidan et al. (2019), Wanyenze et al. (2017), Delgado et al. (2017), Solomon et al. (2019), Erku et al. (2017), Bukirwa et al. (2015) found significant relationships between perceptions towards cervical cancer and cervical cancer screening behavior.

The Socio-ecological model is one of the most used health promotion theories (Poux, 2017; Sallis et al., 2008), and it provides five levels of influence on behavior, including, the intrapersonal level, the interpersonal level, the societal level, the institutional level and at the policy level. In the current study, as informed by findings from previous studies, the study adopted two of those five constructs, one of which was the individual characteristics and the other being institutional characteristics. According to Bronfrenbrenner (1979), the individual construct includes an individual's personal various traits like knowledge, perceptions, attitudes, and socio-demographic characteristics like age, marital status, and religion, all of which are hypothesized as influencing a person's volition and behavior. In this study, the individual constructs were chosen as intrapersonal characteristics or Factors Associated with Cervical Cancer Screening Among Women in Fishing Communities of Entebbe Municipality, Wakiso District which the study aimed at examining.

2. Methodology

2.1. *Study setting and Study design*

The study was conducted in Entebbe Municipality, Wakiso district, Central Uganda. Entebbe municipality has two of the major landing sites in Uganda, that is, the Kigungu and Kasenyi landing sites. Kigungu is located past Entebbe international airport, in Kigungu central parish, Kigungu LC1with a population of close to 8000 people of which 4640 are women. Kasenyi landing site is on

the other hand located in South East of Abayita abibiri, and situated in Nkumba parish, Bendegere L.C.I, Katabi Sub County, Busiiro County hosting about 26,575 fisher folks, of which 14059 are female and is known to have a substantial FSW population. The study employed a cross-sectional survey design and a quantitative approach to collect data from women in fishing communities in Entebbe Municipality – Wakiso district. Close-ended questionnaires were used to capture data in a quantifiable manner (Keneema *et al.*, 2022).

2.2. *Study population*

The target population of the survey was particularly women aged between 26-65 years living in fishing communities. The fishing communities of Wakiso district were considered because they constitute the majority of the women living with HIV associated with highly risky sexual behaviors predisposing them to cervical cancer.

2.3. *Eligibility criteria*

Women in fishing communities who had spent at least 6 years while residents therein, because that period not only covers two screening intervals globally allowed for but also makes one possibly realize their risk of infection and possibly change behavior. That is in addition to the fact that such a period makes one to be a bona fide member of a given community, meaning that the responses they provide can be entirely reflective of the fishing community they are in.

The study excluded; Women in fishing communities who had a total hysterectomy or trachelectomy done due to any prior obstetric complications as those are ineligible for cervical cancer screening and, Women who may have been vaccinated for HPV, during their teen ages were also excluded as they also do not have to screen for cervical cancer.

2.4. *Sample size calculation*

The sample size of 293 women was calculated using Krejcie and Morgan formula for sample size determination (Krejcie and Morgan, 1970). The

formula considers the proportion (P) to be a constant (50%) and only requires the substitution of the target sample size (N), which the study could obtain. The formula is given by;

s = X2NP (1- P) / d2 (N -1) + XP (1-P) Where;

s = required sample size.

X2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N = the population size = estimated number of women aged between 30 and 65 years at Kigungu and Kasenyi landing sites = 1229 women

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05). Therefore;

s = $\frac{1.962 \times 1229 \times 0.5 (1- 0.5)}{0.052 (1229 -1) + 1.962 \times 0.5 (1 - 0.5)}$

s = $\frac{3.841 \times 1229 \times 0.25}{0.0025 (1228) + 0.9604}$

s = $\frac{1180.3}{3.07 + 0.9604}$

s = 293 women living in fishing communities.

2.5. *Sampling procedures*

The study used purposive sampling since the two distinct fishing villages; Kigungu and Kasenyi fishing communities are home to more than 2000 women. At the same time Convenience sampling of study, participants was employed on each household and, to determine the number of women who were required from each of the fishing communities at the two landing sites, proportioning according to size was done using the formula below.

NWRPV = NAWPV / NTNWPV x n Where;

N_{WRPV} = Number of women required from a given village N_{AWPV}=Available number of women in a given village

N_{TNWPV} = Total number of women in all the sampled villages ≈ 1229 n = Sample size

2.6. *Data collection and Analysis*

Data were collected through structured interviews using Structured questionnaires designed with multiple choice questions with a set of predetermined responses from which a respondent had to select what applies to them. The questionnaire assessed the socio-demographic characteristics of respondents and the cervical cancer screening status of participants and the questionnaire was administered by the interviewer. Data was the analyzed using SPSS version 25, and descriptive analysis was run for all data that had been collected. The descriptive analysis yielded frequencies and valid percentages, from which the main study objective was achieved since it required the establishment of the intra-personal factors affecting cervical cancer screening.

2.7. *Quality control*

For validation purposes, Validity in this study was measured using the content Validity Index (CVI) and reliability was determined using the alpha coefficient Cronbach, 1951. In testing the reliability of the tool, a pretest was conducted among 10% of the sample size, using the same tool in a similar setting of the Gaba landing site, in Kampala district 45km away from the main study sites to avoid contamination, it also has fishing communities with women who are at risk of HPV infection and hence ought to be screened. The establishment of whether or not the tool had high internal consistency was done following the scale below;

The actual test for reliability using the Cronbach alpha revealed that the alpha was 0.743, which according to the table above is the range of $0,7 \leq \alpha < 0,9$ that indicates internal consistency.

2.8. *Ethical considerations*

The study was approved by the Uganda Martyrs university faculty of Health Sciences ethics committee. Permission to conduct the study was then obtained from the local councils where Kigungu and Kasenyi landing sites are located. Informed consent by each respondent was also sought; all participants were comprehensively informed about the study and all its procedures and made an informed decision of whether or not they would participate in the study. When engaged in

Table 1: N$_{TNWPV}$ = Total numberof women in all the sampled villages ≈ 1229 n= Sample size

Fishing village	NAWPV	NTNWPV	n	NWRPV = NAWPV / NTNWPV x n
Kigungu	520	1229	293	124
Kasenyi	669	1229	293	169

Table 2: Quality control

Cronbach's Alpha Coefficient	Interpretation of Cronbach's Alpha Coefficient
≥ 0,9	The internal consistency of the scale is high,
0,7 ≤ α < 0,9	The scale has internal consistency,
0,6 ≤ α < 0,7	The internal consistency of the scale is acceptable,
0,5 ≤ α < 0,6	The internal consistency of the scale is weak,
α ≤ 0,5	The scale has no internal consistency.

Source: (Cronbach,1951)

Table 3: Reliability Statistics

Cronbach's Alpha	N of Items
0.743	32

Reliability Statistics

interviews, it was ensured that privacy was observed as well; no third party (person) was allowed within hearing distance of the interview with each woman. No full names or names were captured on the questionnaire or consent forms of the respondents as a way of observing confidentiality and following each interview, all filled questionnaires were kept with the principal investigator.

The participants were informed about the voluntariness of participation in this study; and therefore, they were allowed to withdraw from the study at any time without any repercussions whatsoever. Since the study was conducted during the coronavirus disease 19 (COVID-19) pandemic, the right to protection from harm was also observed. All the standard operating procedures (SOPs) (social distancing, putting on face masks, and hand washing where necessary) for COVID-19 prevention were observed when engaging the interviewees. At the end of the interview participants were allowed to ask a question regarding cervical cancer.

2.9. Dissemination plan

A copy of the report was provided to the university and then a community dissemination forum was also organized at both landing sites and, publication of the findings in one of the available health journals has been made

3. Results

The study results indicate that only 23.2% of women interviewed had ever been screened for cervical cancer. Among the women who participated in this survey, more than a third of the women were between the ages of 26 - 36 years 153(52.2%) and more than half of them were not currently married 156(53.2%) and, 78 (50.0%) had separated from their relationships, while the majority had been educated to secondary level or higher 178 (60.8%) and 149 (50.9%) were currently employed as in the casual activities around the site (see Table 1).

The bivariate results (chi-square results) indicate that Women who were currently married exhibited 78% less prevalence of cervical cancer

screening (cPR = 0.22(0.12 - 0.40), P = <0.001) compared to those who were not married. The Anglican had 65% less prevalence of cervical cancer screening (cPR = 0.345 [CI= 0.191 - 0.623], P = <0.001), compared to the born again. Women who were currently employed were twice as likely to screen for cervical cancer (cPR = 2.02 [1.28 - 3.18], P = 0.002) compared to those who were not employed.

Besides the socio-demographic characteristics that have been described in table 1, the other descriptive findings on knowledge attributes in table 2 indicate that more than three-quarters of them know that cervical cancer is not curable 234(79.9%). About half of the women mentioned that the age at the start of screening for cervical cancer in Uganda is 18 years 150(51.2%) and had 46% less prevalence of cervical cancer screening (cPR = 0.54 [0.33 - 0.90], p = 0.020) compared to those who reported that the age at the start of screening was 30 years (see Table 2).

In table 3, perception attributes about cervical cancer show that Almost half of the women strongly agree that the cervical cancer screening procedure is painful 137 (46.8%), and the majority of them had given birth to two children at the time 177(60.4%). Nearly two-thirds of the women 183(62.5%) disagreed that cervical cancer is not that fatal, one can be cured from it 131(44.7%), and nearly half of them strongly disagreed that cervical cancer is a curse from God 137 (46.8%), but nearly half of them agreed that cervical cancer screening can be embarrassing 137 (46.8%). More than half of the women sampled mentioned that they had trust in Uganda's health system and that it can accurately screen for cervical cancer 167 (57.0%). However, slightly more than a third of the women disagreed that CCS would be beneficial to a woman who resides in a fishing community 101 (34.5%) and more than half 171(58.4%) disagreed that they were not at risk for cervical cancer as a woman in the fishing communities of Entebbe. Almost a third of the women agreed that they had other things they were focusing on right now, cervical cancer screening was not that important 88 (30.0%).

Cervical cancer screening prevalence was twice as high among women who agreed that CC is not that fatal, one can be cured from it (cPR = 2.357[CI = 1.46 - 3.79], p = 0.000), compared to those who disagreed. It was also twice as high among women who agreed that cervical cancer is a curse from God (cPR = 2.43 [CI = 1.49 - 3.97], P = 0.000) compared to those who disagreed. Women who reported that they had other things they were focusing on right now, that cervical cancer screening was not that important, exhibited 66% less prevalence of cervical cancer screening (cPR = 0.341 [0.18 - 0.63, p = 0.001) compared to those who strongly disagreed to that (See table 3).

Bivariable analysis

4. Discussion

The socio-ecological model suggests that one of the levels of influence on health-related behavior like cervical cancer screening is the intrapersonal dual level. The findings of this study are in agreement with the theory; a total of 6 intrapersonal factors were found to be of statistical significance. One of those was the perception that cervical cancer was a curse from God, for which women who were undecided about that perception were found to be nearly thrice as likely to screen for cervical cancer.

This finding implies that the perception of cervical cancer being a curse from God was protective of screening, contrary to findings by Addawe et al. (2018). Being undecided about a perception such as cervical cancer being or not being a curse from God has two possible implications, one of which is that the undecided respondent doesn't know the exact etiology (Cause) of cervical cancer. That assertion is premised on the fact that when one knows the exact cause of cervical cancer, one cannot be undecided about the disease is a curse from God or not. They would know that a virus is the cause of the disease and not a curse, but, the mere fact that one is undecided about whether cervical cancer is a curse from God or not also implies such a person is more likely to agree with the assertion than in disagreement. Therefore, the undecided women were those who

Table 4: **social demographic characteristics and cervical cancer screening**

Variable	f	%	Cervical cancer screening status		cPR (95% CI)	P value
			Screened [n = 68]	Not screened [n = 225]		
Age of respondent						
26 - 36 years	153	52.2	50(32.7%)	103(67.3%)	0.871 (0.445 - 1.707)	0.688
37 - 47 years	124	42.3	12(9.7%)	112(90.3%)	0.258 (0.113 - 0.592)	0.001
48 - 58 years	16	5.5	6(37.5%)	10(62.5%)	1.000	
Currently married						
Yes	137	46.8	11(8.0%)	126(92.0%)	0.220(0.120 - 0.402)	<0.001
No	156	53.2	57(36.5%)	99(63.5%)	1.000	
Marital status						
Single	20	12.8	6(30.0%)	14(70.0%)	0.975 (0.462 - 2.059)	0.947
Cohabiting	58	37.2	27(46.6%)	31(53.4%)	1.513 (0.982 - 2.331)	0.060
Separated	78	50.0	24(30.8%)	54(69.2%)	1.000	
Level of education						
No formal education	18	6.1	6(33.3%)	12(66.7%)	1.319(0.654 - 2.656)	0.439
Primary	97	33.1	17(17.5%)	80(82.5%)	0.693 (0.420 - 1.143)	0.151
Secondary or higher	178	60.8	45(25.3%)	133(74.7%)	1.000	
Religious denomination						
Catholic	152	51.9	29(19.1%)	123(80.9%)	0.366 (0.220 - 0.609)	<0.001
Anglican	89	30.4	16(18.0%)	73(82.0%)	0.345 (0.191 - 0.623)	<0.001
Muslim	29	9.9	11(37.9%)	18(62.1%)	0.727 (0.396 - 1.336)	0.304
Born again	23	7.8	12(52.2%)	11(47.8%)	1.000	
Currently employed						
Yes	149	50.9	46(30.9%)	103(69.1%)	2.021 (1.284 - 3.180)	0.002
No	144	49.1	22(15.3%)	122(84.7%)	1.000	
Fishing community stayed in						
Kigungu	124	42.3	22(17.7%)	102(82.3%)	0.652 (0.415 - 1.024)	0.064
Kasenyi	169	57.7	46(27.2%)	123(72.8%)	1.000	

*Variables without ratios and p values computed are those that have a null integer in their cross tabulation

March 25, 2023

Table 5: **Unadjusted relationship analysis between knowledge attributes and cervical cancer screening**

Variable	f	%	Cervical cancer screening status		cPR (95% CI)	P value
			Screened [n = 68]	Not screened [n = 225]		
Knowledge attributes						
Cervical cancer is curable						
Yes	59	20.1	11(18.6%)	48(81.4%)	0.765 (0.429 - 1.365)	0.365
No	234	79.9	57(24.4%)	177(75.6%)	1.000	
Age at start screening for cervical cancer in Uganda						
At 18 years	150	51.2	2(19.3%)	121(80.7%)	0.544 (0.326 - 0.907)	0.020
At 25 years	98	33.4	23(23.5%)	75(76.5%)	0.660 (0.388 - 1.123)	0.126
At 30 years	45	15.4	16(35.6%)	29(64.4%)	1.000	
Fear the cervical cancer screening procedure, it is like childbirth						
Agree	36	12.3	0(0.0%)	36(100.0%)		
Disagree	84	28.7	12(14.3%)	72(85.7%)		

*Variables without ratios and p values computed are those that a null integer in their cross tabulation.

were more inclined to agree that cervical cancer was a curse, and hence a very severe disease that is incurable. They, therefore, had higher severity perceptions of cervical cancer, which is protective of screening.

Marital status was also found to be a significant predictor of screening; the prevalence of cervical cancer screening was less than 87% among women who were currently married (aPR = 0.232 [0.127 - 0.425], p = <0.001) compared to those who were not married. This finding implies that married women screened less than their non-married counterparts, contrary to what was reported by Azerkan et al. (2015), and Akhagba et al. (2017) found the effect of marital status to be related to the spousal support received from a partner. However, consistent results were reported by Møen et al. (2017) and Idehen et al. (2017). In the context of fishing communities, being an adult who is unmarried or not married is associated with higher odds of having multiple sexual partners or being in unstable relations (Kwena et al., 2020).

Such behavior, increases risk perception (Oharume, 2020), which in the context of cervical cancer has been found to increase the odds of cervical cancer screening (Abdikarim et al., 2017; Devarapalli et al., 2018; Mbaka et al., 2018; Miri et al., 2018; Solomon et al., 2019; Erku et al., 2017). The opposite can be true among married and perhaps sexually faithful women who many perceive themselves as being at a lower risk of infection with HPV and even HIV, and perceive a less benefit of being screened for cervical cancer.

The marital status could be related to the effect of employment status on cervical cancer screening; the findings showed that women who were currently employed had twice the odds of cervical cancer screening (aPR= 2.805 [1.475 - 5.333], p = 0.002) compared to those who were not employed. Compared to married women who in most cases depend on spousal support and are hence less likely to be employed, unmarried women without such support tend to be employed. That alone can be economically empowering and an enabler of access to cervical cancer screening services wherever they may be located. Secondly, female employment comes with the merit of autonomy in

Table 6: **Unadjusted relationship analysis between perception attributes and cervical cancer screening**

| Variable | f | % | Cervical cancer screening status | | cPR (95% CI) | P value |
			Screened [n = 68]	Not screened [n = 225]		
Perception attributes						
CCS procedure is painful						
Agree	40	13.7	17(42.5%)	23(57.5%)	2.357(1.466 - 3.789)	0.000
Undecided	70	23.9	18(25.7%)	52(74.3%)	1.426(0.861 - 2.360)	0.168
Disagree	183	62.5	33(18.0%)	150(82.0%)	1.000	
Cervical cancer is a curse from God						
Strongly agree	92	31.4	21922.8%)	71(77.2%)	1.421(.831 - 2.430)	0.199
Agree	64	21.8	25(39.1%)	39(60.9%)	2.433 (1.490 - 3.971)	0.000
Disagree	137	46.8	22(16.1%)	115(83.9%)	1.000	
Trust Uganda's health system, that they can accurately screen for cervical cancer						
Yes	167	57.0	37(22.2%)	130(77.8%)	0.901 (0.593 - 1.367)	0.623
No	126	43.0	31(24.6%)	95(75.4%)	1.000	
CCS would be beneficial to a woman who resides in a fishing community						
Agree	103	35.2	26(25.2%)	77(74.8%)	1.378(0.843 - 2.252)	0.201
Undecided	59	20.1	18(30.5%)	41(69.5%)	1.665 (0.982 - 2.824)	0.058
Disagree	131	44.7	24(18.3%)	107(81.7%)	1.000	
I am not at risk for cervical cancer as a woman in the fishing communities						
Agree	74	25.3	29(39.2%)	45(60.8%)		
Undecided	48	16.4	0(0.0%)	48(100.0%)		
Disagree	171	58.4	39(22.8%)	132(77.2%)		
Have other things focused on right now, screening is not that important						
Strongly agree	41	14.0	11(26.8%)	30(73.2%)	0.671 (0.368 - 1.222)	0.192
Agree	88	30.0	12(13.6%)	76(86.4%)	0.341 (0.184 - 0.632)	0.001
Undecided	42	14.3	6(14.3%)	36(85.7%)	0.357 (0.159 - 0.802)	0.013
Disagree	67	22.9	17(25.4%)	50(74.6%)	0.634 (0.376 - 1.070)	0.088
Strongly disagree	55	18.8	22(40.0%)	33(60.0%)	1.000	

*Variables without ratios and p values computed are those that a null integer in their cross tabulation

March 25, 2023

a household, the lack of which has been reported to be one of the barriers to healthcare services utilization among women (Tiruneh et al., 2017; Melka et al., 2015).

That Muslims also had a low prevalence of screening consistent with findings by Grandahl et al. (2015), Gele et al. (2017), Olsson et al. (2014), and Addawe et al. (2018) Those studies were however conducted in Muslim-aligned countries, in which citizens share similar religious beliefs of being less likely to have a vaginal examination done without a purpose of childbirth. Unlike Muslim communities, the catholic and Anglican churches do not embrace polygamy or sexual immorality at all and have cardinal resolutions to that effect.

Therefore, it is possible that women in the fishing communities, who subscribed to the Catholic and Anglican were either married or not engaging in promiscuity and hence possibly perceived themselves as being at very low risk of infection. That reduced the perceived benefit of screening and reduced their odds of screening (Abdikarim et al., 2017; Devarapalli et al., 2018; Mbaka et al., 2018; Miri et al., 2018; Solomon et al., 2019).

The same cognitive effect certainly happened among women who were undecided on whether or not they had other things they are focusing on right now, cervical cancer screening is not that important and exhibited 90% fewer chances of cervical cancer screening (aPR = 0.103 [0.026 - 0.409], p = 0.001) compared to those who strongly disagreed. Being undecided on whether or not cervical cancer screening is important can imply that one has chosen to agree on screening is unimportant to them. Such a standpoint can be taken by women who have both a low perceived risk of infection and minimal perceived benefits of screening, which are proven barriers to screening (Devarapalli et al., 2018; Mbaka et al., 2018).

Consistent with many studies that have found relationships between knowledge about cervical cancer and screening behavior (Kirubarajan et al., 2021; Roux et al., 2021; Andersen et al., 2020; Idehen et al., 2020; Gele et al., 2017; Annan et al., 2019; Idehen et al., 2020a), this study also found relationships between the two variables. It was shown that the prevalence of cervical cancer screening was less by 95% among women who mentioned that, the age at start screening for cervical cancer in Uganda is 18 years (aPR = 0.051 [0.016 -0.163], p = <0.001) compared to those who reported that it was at 30 years. This finding shows that the women who were not aware of the age at which screening should be started had fewer chances of being screened. When one reports that screening starts at 18 years, yet one is older implies that they may think that they could be beyond the age for eligibility for screening. Such a mindset, based on non-awareness of the age at the start of screening may also reduce perceived benefits of screening, and create inflexibility to screening for cervical cancer

4.1. Conclusion

The intrapersonal factors associated with cervical cancer screening among women in the fishing communities of Entebbe municipality are four in number and they included; marital status, employment status, knowledge of age at the start of the screening, and perceptions of the relevance of screening.

4.2. Recommendation

Behavior change communication preferably using the intrapersonal channel on issues related to the participant's need for screening, especially for women at a high risk of HIV infection or those living with the virus, and those who are in marriage will suffice in elevating uptake. Communication and education should focus on awareness creation about the fact that even in a marriage where not much risky sexual behavior may be present, the risk of HPV infection remains apparent, for instance from sexually transmitted infections within the couple. With the communication and education will come increments in awareness about screening eligibility and perceived benefits of screening to the extent that the women will be able to prioritize screening even with their busy schedules.

March 25, 2023

ACOG	American College of Obstetricians and Gynecologists,
CC	Cervical Cancer
CCS	Cervical Cancer Screening
DSF	Disease Free Survival
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
HPV-DNA	Human Papilloma Virus – Deoxyribose Nucleic Acid
NCD	Non-Communicable Diseases
SEM	Socio Ecological Model
TPB	Theory Of Planned Behavior
TTI	Triadic Theory of Influence
UCI	Uganda Cancer Institute
UN	United Nations
UNAIDS	United Nations Joint Program on HIV
VIA	Visual Inspection with Acetic Acid
WHO	World Health Organization
WLHIV	Women living with HIV

5. List of Abbreviations.

5.1. *S ource of funding*.

Not applicable

5.2. *Conflict of interest*:

The authors declare that they have no competing interests.

6. Publisher details:

References

[1] C. Comparetto, C. Epifani, M. C. Manca, A. Lachheb, S. Bravi, F. Cipriani, Uptake of cervical cancer screening among the migrant population of Prato Province, Italy, Int J Gynecol Obstet 136 (3) (2017) 309–323.

[2] A. Kirubarajan, S. Leung, X. Li, M. Yau, M. Sobel, Barriers and facilitators for cervical cancer screening among adolescents and young people: a systematic review, BMC women's health 21 (1) (2021) 122–122.

[3] E. E. Idehen, T. Korhonen, A. Castaneda, T. Juntunen, M. Kangasniemi, A. M. Pietilä, Factors associated with cervical cancer screening participation among immigrants of Russian, Somali and Kurdish origin: a population-based study in Finland, BMC Public Health 17 (19) (2017) 1–10.

[4] E. E. Idehen, P. Koponen, T. Härkänen, M. Kangasniemi, A. M. Pietilä, T. Korhonen, Disparities in cervical screening participation: a comparison of Russian, Somali and Kurdish immigrants with the general Finnish population, International journal for equity in health 17 (1) (2018).

[5] G. K. Al-Shaikh, E. M. Almussaed, A. A. Fayed, F. H. Khan, S. B. Syed, A.-T. Tn, H. N. Elmorshedy, Knowledge of Saudi female university students regarding cervical cancer and acceptance of the human papilloma virus vaccine, Saudi Med J 35 (10) (2014) 1223–1223.

[6] O. M. Akhagba, Migrant women's knowledge and perceived sociocultural barriers to cervical cancer screening programme: a qualitative study of African women in Poland, Heal Psychol Rep 3 (3) (2017) 263–71.

[7] A. N. Roux, B. Kenfack, A. Ndjalla, J. Sormani, A. Wisniak, K. Tatrai, P. Vassilakos, P. Petignat, N. Schmidt, Barriers to cervical cancer prevention in rural Cameroon: a qualitative study on healthcare

providers' perspective, BMJ open 11 (6) (2021).

[8] T. Tekle, E. Wolka, B. Nega, W. P. Kumma, M. M. Koyira, Knowledge, Attitude and Practice Towards Cervical Cancer Screening Among Women and Associated Factors in Hospitals of Wolaita Zone, Southern Ethiopia, Cancer management and research 12 (2020) 993–1005.

[9] H. Y. Lee, M. H. Lee, Barriers to cervical cancer screening and prevention in young Korean immigrant women: implications for intervention development, J Transcult Nurs 28 (4) (2017) 353–62.

[10] K. Solomon, M. Tamire, M. Kaba, Predictors of cervical cancer screening practice among HIV positive women attending adult anti-retroviral treatment clinics in Bishoftu town, Ethiopia: the application of a health belief model, BMC Cancer 19 (1) (2019).

[11] A. S. Melka, T. T. Beyene, D. W. Tesso, Determinants of long acting and permanent contraceptive methods utilization among married women of reproductive age groups in western Ethiopia: a cross-sectional study, Pan Afr Med J 21 (2015).

[12] I. Abdikarim, W. Atieno, M. Habtu, Prevalence and Associated Factors of Cervical Cancer Screening among Somali Women in an Urban Settlement in Kenya, J Comm Pub Health Nursing 3 (2017) 3–159.

[13] F. S. Ogbonna, Knowledge, attitude, and experience of cervical cancer and screening among Sub- saharan African female students in a UK University, Ann Afr Med 16 (1) (2017) 18–18.

[14] M. Grandahl, T. Tydén, M. Gottvall, R. Westerling, M. Oscarsson, Immigrant women's experiences and views on the prevention of cervical cancer: a qualitative study, Health Expect 18 (3) (2015) 344–54.

[15] A. A. Gele, S. A. Qureshi, P. Kour, B. Kumar, E. Diaz, Barriers and facilitators to cervical cancer screening among Pakistani and Somali immigrant women in Oslo: a qualitative study, Int J Women's Health 9 (2017) 487–96.

[16] L. J. Cronbach, Coefficient alpha and the internal structure of tests, Psychometrika 16 (3) (1951) 297–334.

[17] Z. Kwena, S. Nakamanya, G. Nanyonjo, Understanding mobility and sexual risk behaviour among women in fishing communities of Lake Victoria in East Africa: a qualitative study, BMC Public Health 20 (2020) 944–944.

[18] Global strategy to accelerate the elimination of cervical cancer as a public health problem and its associated goals and targets for the period 2020 - 2030, United Nations General Assembly. Available (2020).

[19] Y. Jayasinghe, C. Rangiah, A. Gorelik, G. Ogilvie, J. D. Wark, S. Hartley, S. M. Garland, Primary HPV DNA based cervical cancer screening at 25 years: Views of young Australian women aged 16-28 years, J Clin Virol 76 (2016) 74–80.

[20] F. N. Tiruneh, K. Y. Chuang, Y. C. Chuang, Women's autonomy and maternal healthcare service utilization in Ethiopia, BMC Health Serv Res 17 (2017) 718–718.

[21] R. Hertzum-Larsen, S. K. Kjær, K. Frederiksen, L. T. Thomsen, Participation in cervical cancer screening among immigrants and Danish-born women in Denmark, Prev Med (Baltim) 123 (2019) 55–64.

[22] K. Adewumi, H. Nishimura, S. Y. Oketch, P. Adsul, M. Huchko (2021). [link].
URL https://doi.org/10.1007/s13187-020-01928-6

[23] G. J. Andersen, A. D. Shrestha, B. Gyawali, D. Neupane, P. Kallestrup, Barriers and facilitators to cervical cancer screening uptake among women in Nepal - a qualitative study, Women & health 60 (9) (2020) 963–974.

[24] F. Gallo, A. Caprioglio, R. Castagno, G. Ronco, N. Segnan, L. Giordano, Inequalities in cervical cancer screening utilisation and results: a comparison between Italian natives and immigrants from disadvantaged countries, Health Policy 121 (10) (2017) 1072–1080.

[25] U. Bronfenbrenner, The Ecology of Human Development: Experiments by Nature and Design, Harvard University Press, Cambridge. MA, 1979.

[26] E. Darj, P. Chalise, S. Shakya, Barriers and facilitators to cervical cancer screening in Nepal: A qualitative study, Sexual & reproductive healthcare: official journal of the Swedish Association of Midwives 20 (2019) 20–26.

[27] F. M. Annan, K. O. Asante, N. Kugbey, Perceived seriousness mediates the influence of cervical cancer knowledge on screening practices among female university students in Ghana, BMC Womens Health 19 (1) (2019) 1–8.

[28] J. F. Sallis, N. Owen, E. B. Fisher, Ecological models of health behavior, John Wiley & Sons, San Francisco, 2008.

[29] K. A. Møen, B. Kumar, S. Qureshi, E. Diaz, Differences in cervical cancer screening between immigrants and nonimmigrants in Norway: a primary healthcare register-based study, Eur J Cancer Prev 26 (6) (2017) 521–528.

[30] S. Kalkidan, M. Tamire, M. Kaba (2019). [link].
URL https://doi.org/10.1186/s12885-019-6171-6

[31] A. Isabirye, M. K. Mbonye, B. Kwagala, Predictors of cervical cancer screening uptake in two districts of Central Uganda, PLoS ONE 15 (12) (2020) 243281–243281.

[32] T. Mukama, R. Ndejjo, A. Musabyimana, A. A. Halage, Md, Women's knowledge and attitudes towards cervical cancer prevention: a cross sectional study in Eastern Uganda, BMC Womens Health 17 (9) (2017) 28137260–28137260.

[33] M. A. Addawe, B. Mburu, C. Madar, A, Barriers to cervical cancer screening: a qualitative study among Somali women in Oslo Norway, Heal Prim Care 2 (1)

(2018) 1–5.

[34] N. Y. Alwahaibi, N. M. Alramadhani, A. M. Alzaabi, W. A. Alsalami, Knowledge, attitude and practice of Pap smear among Omani women, Ann Trop Med Public Health 10 (2) (2017) 396–396.

[35] F. Azerkan, C. Widmark, P. Sparén, E. Weiderpass, P. Tillgren, E. Faxelid, When life got in the way: how danish and norwegian immigrant women in Sweden reason about cervical screening and why they postpone attendance, PLoS One 10 (7) (2015) 1–22.

[36] P. Mbaka, R. Waihenya, C. Oisebe, R. Lihana, Factors Affecting the Uptake of Cervical Cancer Screening in Mama Lucy Kibaki Hospital, Cancer Research Journal 6 (3) (2018) 106–111.

[37] X. F. Pan, Z. M. Zhao, J. Sun, F. Chen, Q. L. Wen, K. Liu, G. Q. Song, J. J. Zhang, Y. Wen, C. J. Fu, C. X. Yang, Acceptability and correlates of primary and secondary prevention of cervical cancer among medical students in southwest China: implications for cancer education, PLoS ONE 9 (10) (2014) 110353–110353.

[38] J. Delgado, L. Menacho, E. Segura, F. Roman, R. Cabello, Cervical cancer screening practices, knowledge of screening and risk, and highly active antiretroviral therapy adherence among women living with human immunodeficiency virus in Lima, International Journal of STD AIDS 28 (3) (2017) 290–293.

[39] E. . Keneema, M. . Lwenge, Z. Nanyunja, B. . Kawoozo, A. . Immaculate, . A. Ssetaala, J. . Mpendo, B. Okech, D. Okodan, Prevalence of Cervical Cancer Screening Among Women in Fishing Communities of Entebbe Municipality, Wakiso District. A Cross-sectional study. Student's, Journal of Health Research Africa 3 (12) (2022) 11–11.

[40] R. Ndejjo, T. Mukama, A. Musabyimana, D. Musoke, Uptake of Cervical Cancer Screening and Associated Factors among Women in Rural Uganda: A Cross Sectional Study, PLoS ONE 11 (2) (2016) 149696–149696.

[41] I. M. Oharume, Knowledge, sexual behaviours and risk perception of sexually transmitted infections among students of the polytechnic, Vol. 20, Ibadan, Oyo state, 2020.
URL https://doi.org/10.4314/ahs.v20i1.7

[42] K. A. Møen, L. Terragni, B. Kumar, E. Diaz, Cervical cancer screening among immigrant women in Norway- the healthcare providers' perspectives, Scand J Prim Health Care 36 (4) (2018) 415–437.

[43] E. E. Idehen, A. M. Pietilä, M. Kangasniemi, Barriers and Facilitators to Cervical Screening among Migrant Women of African Origin: A Qualitative Study in Finland, International journal of environmental research and public health 17 (20) (2020).

[44] M. New-Aaron, J. L. Meza, M. H. Goedert, S. M. Kibusi, M. L. Mkhoi, C. D. Mayengo, J. Charles, S. Shabani, K. M. Musil, A. Cheney, S. Sumba, Cervical Cancer Screening among Women Receiving Antiretroviral Therapy in a Resource-Limited Environment, Asian Pacific journal of cancer prevention 21 (7) (2020) 2035–2045.

[45] M. O. Okoeki, A. Steven, L. Geddes, Psychological factors affecting participation in cervical screening for young women: a qualitative study, Lancet 388 (2016) 82–82.

[46] J. Agboeze, M. Nwali, N. Ezeani, Cervical cancer screening knowledge and behavior among female undergraduate students in a Nigerian University, J Glob Oncol 4 (2018) 3–3.

[47] E. Olsson, M. Lau, S. Lifvergren, A. Chakhunashvili, Community collaboration to increase foreign- born women's participation in a cervical cancer screening program in Sweden: A quality improvement project, Int J Equity Health 13 (1) (2014) 62–72.

[48] A. Bukirwa, J. Mutyoba, B. Mukasa, K. Yvonne, M. Odiit, E. Kawuma, R. Wanyenze, Motivations and barriers to cervical cancer screening among HIV infected women in HIV care: A qualitative study, BMC Women's Health 15 (2015) 1–11.

Author biography

Emily Keneema She was an MPH-PRH student at UMU. She works at Uganda Virus Research Institute- IAVI HIV Vaccine Program as an Associate Trial Coordinator/ study clinician.

Mathias Lwenge He is a lecturer at the Faculty of Health Sciences, Uganda Martyrs University.

Zaitune Nanyunja She was an MPH-PRH student at UMU and currently is a PhD candidate in Biological Sciences at Kyambogo University.

Barbara Kawoozo She is a clinical trial coordinator at Uganda Virus Research Institute-IAVI HIV Vaccine program.

Ampeire Immaculate Works at the Ministry of Health as an assistant commissioner -UNEPI department.

Ali Ssetaala He is the Head of community studies at Uganda Virus Research Institute -IAVI HIV Vaccine Program (UVRI-IAVI HIV Vaccine Program) .

March 25, 2023

Juliet Mpendo She is a Medical Director at Uganda Virus Research Institute-International AIDs Vaccine Initiatives (UVRI-IAVI HIV Vaccine program).

Brenda Okech She is the Executive Director at Uganda Virus Research Institute-International AIDs Vaccine Initiatives (UVRI-IAVI HIV Vaccine program).

Daniel Okodan He is a Clinical Research Associate at Pharmaceutical Product Development - Global Pharmaceutical Contract Research Organization.