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# Predictors Influencing Uptake of Cervical Cancer Screening Among Women of Reproductive Age in Mara Region

Monica Julius<sup>1\*</sup> and Fabiola Vincent Moshi<sup>1</sup> | \*Corresponding author MJ: Email Addresses: monicaginabai@yahoo.com

## ABSTRACT

**Introduction:** Despite the national target of 80% cervical cancer screening for all women from 30 to 50 years old by 2020, Mara Region screened only 4% of all eligible women in a year. Regarding these reasons, client-based factors for low uptakes of cervical cancer screening were investigated and reported in present paper.

**Methodology:** This cross-sectional study included 296 randomly selected women of reproductive age, 18-49 years, from three district councils in Mara region. Data on uptake of cervical cancer screening were generated through an interviewer-administered questionnaire. Health Belief Model and self-determination theory were used to guide the study. Descriptive analysis was employed to establish the status of uptake of cervical cancer screening. Likewise, bivariate and multivariate logistic regression models were used to establish predictors of cervical cancer screening uptake.

**Results:** This study found that, 68.2% (n=202) of all respondents were not screened for cervical cancer. The multivariate logistic regression by adjusting for confounders, indicate that awareness, marital status and occupation were associated with cervical cancer screening. The odds of cervical cancer screening were low among those unaware compared to those aware [Unaware (Adjusted Odds Ratio (AOR)=0.52 (95%CI: 0.31-0.88), p=0.01)], being married compared with single [married AOR=0.51 (95%CI: 0.28-0.91, p=0.02)] and being employed compared with not employed [employed (AOR=0.16 (95%CI: 0.04-0.68), p=0.01) were significantly associated with cervical cancer screening uptake

**Conclusions:** Cervical cancer screening uptake in Mara region was found to be very low, whereby those women who were not aware, married and employed were less likely to participate in cervical cancer screening, suggesting introduction of integrated health education to create awareness among the population.

**Key words:** cervical cancer, screening uptake, women of reproductive age, Mara region

## INTRODUCTION

Cervical cancer is a malignant lesion which affects the cervix uteri [1]. Globally, it is estimated that about 570,000 new cases are detected and 273,000 deaths due to cervical cancer occur worldwide each year [2]. Most of these deaths occurred in low and middle-income countries [2].

Statistics show that 16 out of 20 Sub-Saharan African countries (SSA) suffer acute problems of cervical cancer [3]. Approximately, 80% records of cancer and 85% of mortality are a result of cervical cancer that occurs in SSA [4,5] country and the human development index. The 5-year global cancer prevalence is estimated to be 28.8 million in 2008. Close to half of the prevalence burden is in areas of very high human development that comprise only one-sixth of the world's population. Breast cancer continues to be the most prevalent cancer in the vast majority of countries globally; cervix cancer is the most prevalent cancer in much of Sub-Saharan Africa and Southern Asia and prostate cancer dominates in North America, Oceania and Northern and Western Europe. Stomach cancer is the most prevalent cancer in Eastern Asia (including China). East Africa has the highest number of deaths related to cervical cancer worldwide [6]. The region

accounts for 42.7 cases per 100,000 women [7]. Tanzania is 2<sup>nd</sup> in the region with the age-standardized incidence rate (ASR) of 54.9 per 100,000 women after Kenya, which has 40.1 per 100,000 [7].

Currently, about 9,772 new cases are diagnosed in Tanzania each year and nearly 7,000 women die each year due to cervical cancer [6]. Risk factors for cervical cancer are sexual intercourse at a young age, high parity, multiple sexual partners, and co-infection with HIV [6].

The World Health Organization (WHO) urges all sub-Saharan African countries to perform VIA approach for cervical cancer screening among women of reproductive age (WRA), to ensure timely detection of precancerous signs and symptoms of cervical cancer for timely treatment [8]. VIA is an attractive alternative to cytology-based screening in low and middle income countries, like Tanzania [8]. In Tanzania, cervical screening services are provided from all hospitals, health centers and some selected dispensaries, where healthcare providers are trained and capacity strengthened to offer the service [9].

Several studies appreciated that majority of the women get screened when healthcare providers encouraged them. Very few visit health facilities for cervical cancer screening. However,

some WRA fail to access the service because of many factors; one being lack of knowledge to the appropriate method, place and its availability of the service [13]. Being aware of the service is also a crucial predictors to cervical screening services utilization [11]. Other factors include sociodemographic and reproductive related variables such as residence, education, number of children the woman has [14,15] and working status of the woman (employed or not employed) [16,17]. Individual behavior towards taking healthy desired actions is another possible factor regarding uptake of cervical cancer screening [18,19].

Healthy behaviors can be explained by the use of theories and models. The Health Belief Model (HBM) is one such theory that has served as one of the most widely used models for examining health-related behavior. The main components of the HBM are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action. According to this model, perceived susceptibility is an indicator to individual ability to taking the desired behavior such as undertaking a cervical cancer screening using VIA [20]. The HBM suggests that the perception of an individual health behavior, threat is influenced by at least three elements; general health values, which include interest and concern about health; specific health beliefs about vulnerability to a particular health threat; and beliefs about the consequences of the health problem. If an individual perceives a threat to their health, is consecutively cued to action, and their perceived benefits outweigh the perceived barriers, then they are likely to undertake the recommended preventive health action [20].

The Health Sector Strategic Plan 2015 – 2020 (HSSP IV) documented that by 2020, 80% of women between 30 and 50 years should be screened for cervical cancer, in Tanzania [9]. However, despite government efforts and commitments, the uptake of cervical cancer screening in Mara region remained low. Therefore, the aims of using Health Belief Model (HBM) in this study was to determine predictors influencing uptake of cervical cancer screening among women of reproductive age in Mara region.

## METHODOLOGY

### The Study Area

This study was conducted in rural and urban areas of Mara region. The region is among 26 regions of Tanzania Mainland. It has 30,150 square kilometers and an estimated population of 1,743,830 of which 840,020 (48.2%) are male and 903,810 female (51.8%) (21). A total of 515,596 (57.0%) are women of reproductive age [9].

### Design and Study population

This was a cross-sectional study that included all women of the reproductive age, between 18-49 years, attending the Reproductive and Child Health (RCH) clinic in Mara Region between April and

July 2020. Three district councils, among seven were selected by using simple randomly sampling method. One district hospital, one health center, and one health dispensary were randomly selected from each of the three district councils. A total of 9 health facilities was selected.

### Data Collection Procedures

This study used a structured questionnaire to obtain information regarding the factors influencing uptake of cervical cancer screening among women of reproductive age attending the RCH clinics in the Mara region. This included demographic information about level of education, occupation, marital status and residence. Other questions covered issues related to health seeking behaviours, reproduction (parity) knowledge about cervical cancer and about cervical cancer screening. Research assistants were recruited and oriented about the aim and objectives of the study as well as ethical issues related to data collection procedures. Data collection tools were pretested and piloted for validation purposes. The pilot survey was conducted in a community with similar characteristics to the study area. The questionnaire was written in English and translated into Kiswahili, the national language and back translated into English. The Kiswahili version was checked for accuracy and preservation of meanings. The information collected were discussed and used to improve the questionnaire.

### Data Analysis and Management

Questionnaires were checked for completeness. The available data were cleaned, validated, and analyzed using Statistical Package for Social Science (SPSS) Version 20. The outcome variable was cervical cancer screening. Cervical cancer screening was measured in terms whether respondents underwent any cervical cancer-screening test ever. Explanatory variables including: age, place of residence, marital status, parity, knowledge about cervical cancer and cervical cancer screening. Chi-square tests were used to determine the relationship between the independent variable and dependent variables. Values with p-value of less than 0.05 are considered statistically significant for this study. Then explanatory variables (factors) which odds ratio (OR) p-values were less than 0.05 during the Chi-square tests were included in the binary logistic regression model to adjust for confounding variables that could bias or in one-way influence the outcome. The adjustment aimed at determining the likelihood predictors (adjusted odds ratio, AOR) that were independently associated with low uptake of screening services. Odds ratio were reported with accompanying 95% confidence intervals

### Ethical Consideration

The study received ethical approval from the University of Dodoma. Regional and district administrative and health authorities endorsed the study objectives and methodology. Written informed consent was obtained from each participant prior to interview. Confidentiality was maintained and questionnaires were securely stored.

## RESULTS

### Socio- Demographic Characteristics

The study included 296 women of reproductive age. The majority (n=158, 53.4%) of respondents were aged 20-29 years old, married (n=193, 65.2%) and living in rural areas (n=169, 57.1%). Other demographic characteristics of participants are as presented in Table 1.

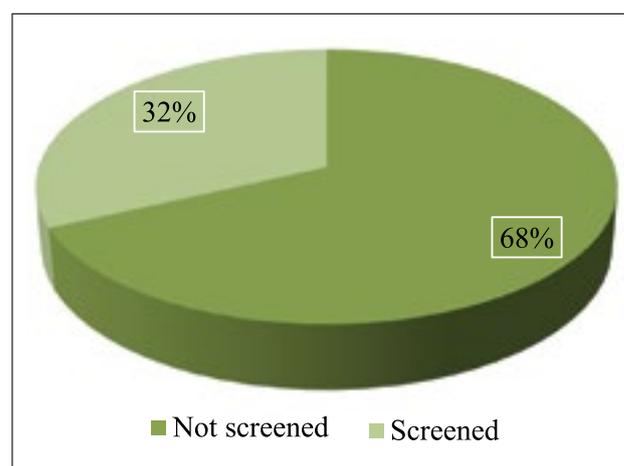
**Table 1: Social Demographic characteristics of respondents (n=296)**

Socio-demographic Characteristics	Frequency (n)	Percentage (%)
<b>Age group</b>		
<20	11	3.7
20-29	158	53.4
30+	127	42.9
<b>Marital status</b>		
Single	103	34.8
Married	193	65.2
<b>Residence</b>		
Rural	169	57.1
Urban	127	42.9
<b>Religion</b>		
Christian	223	75.3
Muslim	41	13.9
Pagan	32	10.8
<b>Education</b>		
Informal education	72	24.3
Primary education	131	44.3
Secondary education	93	31.4
<b>Occupation</b>		
Employed	10	3.4

Socio-demographic Characteristics	Frequency (n)	Percentage (%)
Unemployed	286	96.6
<b>Parity</b>		
Null parity	27	9.1
1-4	82	27.7
>5	187	63.2

### Uptake of Cervical Cancer Screening

The figure below presents the uptake of cervical cancer screening among women of reproductive age. Majority of respondents had not screened for cervical cancer (n=202, 68.2%).



*Figure: Women uptake of cervical cancer screening [you add information on age group, level of education, occupation, residence and marital status]*

### Association of explanatory variables with uptake of cervical cancer screening among women of reproductive age

Univariate analysis indicated that age group, marital status, parity, awareness and occupation to be associated with seeking screening for cervical cancer (data not shown). However, after controlling of confounders through binary regression model, those women who were not aware, married and employed were less likely to participate in cervical cancer screening. Not aware of cervical cancer and cervical cancer screening (48%) [AOR=0.52, (95% CI:0.31-0.88), p=0.01] had 0.52 lower odds of having screened for cervical cancer compared to those aware. Those women who were married (50%) [AOR=0.51, (95%CI: 0.28-0.91), p=0.02] had 0.51 lower odds of having screened for cervical cancer than single women. Employed women (84%) [AOR=0.16 (95%CI: 0.034-0.68), p=0.01] had 0.16 lower odds of having ever screened compared to unemployed women. Predictors of uptake of cervical cancer screening among women of reproductive age are as shown in Table 2.

**Table 2: Predictors of uptake of cervical cancer screening (n=296)**

Predictor	OR	95% CI		p-value	AOR	95% CI		p-value
		Lower	Upper			Lower	Upper	
Marital status								
Single (ref)	1				1			
Married	0.494	0.286	0.855	0.012	0.505	0.281	0.907	0.022
Occupation								
Unemployed (ref)	1				1			
Employed	0.187	0.05	0.74	0.01	0.16	0.04	0.68	0.01
Awareness								
Aware (ref)	1				1			
Not aware	2.286	1.39	3.76	0.00	0.52	0.31	0.88	0.01
Age								
<20(ref)					1			
20-29	0.30	0.04	2.38	0.01	0.48	0.56	4.14	0.50
>30	0.140	0.02	1.12		0.24	0.27	2.15	0.20
Parity								
Null Para (ref)	1				1			
1-4	0.75	0.25	2.26	0.02	1.11	0.35	3.57	0.86
>=5	0.38	0.14	0.05		0.77	0.25	2.33	0.64
Residence								
Rural (ref)	1				1			
Urban	1.32	0.80	2.18	0.28	1.08	0.63	1.85	0.79
Knowledgeable (ref)								
Less Knowledgeable	0.73	0.45	1.20	0.21	1.32	0.78	2.25	0.31
Perceived susceptibility								
Low (ref)	1				1			
High	0.91	0.55	1.53	0.73	0.96	0.55	1.65	0.87
Perceived related								
Low (ref)	1				1			
High	1.849	1.128	3.032	2.055	1.560	0.888	2.742	0.122

## DISCUSSION

The current study adapted Health Belief Model (HBM) to determine predictors influencing uptake of cervical cancer screening among women of reproductive age in Mara region. It was revealed that only less than a half (32%) of the study participants could access cervical screening services in Mara region. Other key findings include not being aware of cervical cancer and cervical cancer screening, being in marriage and being employed were the predictors of low cervical cancer screening uptake. However, none of the HBM variables adapted in this study were significantly associated with uptake of cervical cancer screening.

The observed low uptake of cervical screening among women of reproductive age in our study was relatively higher than the findings of a study done in Kenya, which reported a prevalence of 19% (12). The observed difference between our study and that conducted in Kenya could be due to approach used to reach more women; requesting them to get screened, while for our case, they came voluntarily. Other possible reasons might be due to study areas' variations; as our study was conducted in both rural and urban while the study in Kenya was conducted only in urban areas only. The other difference was on the study population in which our study involved women of reproductive age between 18 and 49 years, while that of Kenya involved women who were on ARVS treatments. According to a study conducted in Uganda, the prevalence was extremely low (4.8%) which was almost 7 times lower than the one reported in our study which was contributed by challenges related to healthcare providers behavior and individual perceptions regarding cervical cancer screening [11]. However, the findings of the current study were contrary to that revealed from the study conducted in Nigeria among female students which reported prevalence of 67% [13]. The observed difference could be related to social demographic differences, as other studies documented that education level and marriage could affect the uptake of cervical cancer screening [14,15] cervical cancer is a leading cause of morbidity and mortality among women diagnosed with cancer. In this study, we describe the burden of risk factors for cervical cancer among women of reproductive age in five East African countries. Regarding socio-demographic characteristics of participants, our study revealed that marital status and occupation of women significantly influenced uptake of cervical cancer screening in the study area. For example, married women were less likely to have adequate uptake of cervical cancer screening compared to their counterparts. The findings of our study was not in line with findings reported in the study conducted in Jordan, which showed a positive association between being in marriage, where a married woman was five time more likely to have adequate uptake of cervical cancer screening [10]. However, the observed disparity might be due to analysis modal dissimilar. The current study employed multiple regression analysis (AOR), while the quoted study ended at univariate analysis (OR), to determine the association. We noted that being employed reduced the Odds of cervical cancer screening uptake. Our findings differ significantly with other studies. According to a study conducted

elsewhere in Ethiopia, those women with low monthly pay were less likely to undergo cervical cancer screening [16]. Another contradictory finding was observed in a study from the same country, which appreciated that employed women were more than three times likely to attend cervical cancer screening services with ease compared to those who were not [17]. The differences observed might be associated with socio-demographic characteristics of the participants involved and geographical dissimilarity.

We also found that being not aware with cervical cancer screening services reduced the chances of getting screened. Similar to our findings, the study conducted by Ndejjo and colleagues [11] inadequate access to effective screening for cervical cancer often contributes to the high morbidity and mortality caused by the disease. The largest burden of this falls mostly on underserved populations in rural areas, where health care access is characterized by transport challenges, ill equipped health facilities, and lack of information access. This study assessed uptake of cervical cancer screening and associated factors among women in rural Uganda.

**METHODS:** This descriptive cross sectional study was carried out in Bugiri and Mayuge districts in eastern Uganda and utilised quantitative data collection methods. Data were collected using a semi-structured questionnaire on cervical cancer screening among females aged between 25 and 49 years who had spent six or more months in the area. Data were entered in Epidata 3.02 and analysed in STATA 12.0 statistical software. Univariate, bivariate and multivariate analyses were performed.

**RESULTS:** Of the 900 women, only 43 (4.8%) in rural Uganda, revealed that, those women who were aware of the place where

cervical screening conducted, had the increased odds of getting screened contrary to those who were not. Being knowledgeable about cervical cancer screening also increases the probability of getting screened, with reference to a study conducted in Ethiopia [17].

## CONCLUSIONS

This study observed that cervical cancer screening uptake in Mara region was low. Factors attributed to low rate of uptake were level of knowledge which might be associated with negative perception of cervical cancer as incurable. It was also found that marital status, occupation of the women and awareness was significantly associated with the low uptake of cervical cancer screening in the region. Therefore, basing on these findings, integrated initiatives should be designed and implemented to increase community awareness with special program to women of reproductive age regarding cervical cancer screening with the aim of unblocking the predictors that negatively affect the uptake of screening practices.

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## AUTHORS DETAILS

<sup>1</sup>Department of Nursing and Midwifery, College of Health Sciences, the University of Dodoma, P.O. Box 259, Dodoma, Tanzania

## MUHTASARI

# Viashiria Vinavyoweza Kuathiri Utumiaji wa Huduma za Uchunguzi wa Saratani ya Mlango wa Shingo ya Kizazi kwa Wanawake Walio Katika Umri wa Kuzaa Mkoani Mara

Monica Julius<sup>1\*</sup> and Fabiola Vincent Moshi<sup>1</sup>

**UTANGULIZI:** Licha ya lengo la kitaifa la kupima saratani ya mlango wa shingo ya kizazi kwa asilimia 80 kwa wanawake wote wenye umri wa kuanzia miaka 30 hadi 50 ifikapo mwaka 2020, Mkoa wa Mara ulipima asilimia 4 pekee ya wanawake wote wanaostahili kwa kipindi cha mwaka. Kuhusiana na sababu hizi, makala hii inatoa taarifa ya utafiti wa sababu za msingi za mteja zinazosababisha kuwa na matumizi ya kiwango cha chini cha uchunguzi wa saratani ya shingo ya kizazi.

**MBINU:** Utafiti huu ulijumuisha wanawake 296 wenye umri wa kuzaa, miaka 18-49, kutoka halmashauri tatu za wilaya mkoani

Mara. Takwimu juu ya matumizi ya huduma ya uchunguzi wa saratani ya mlango wa shingo ya kizazi zilipatika kupitia dodoso kwa njia ya usaili. Ili kupata takwimu, njia ya kuelezea na kubaini mabadiliko ya tabia za watu kuhusiana na maamuzi ya huduma za afya (Health Belief Model) na nadharia ya mtu kujiamulia mambo mwenyewe ilitumika katika utafiti huu. Uchambuzi wa takwimu ulitumika ili kubaini hali ya utumiaji wa huduma ya uchunguzi wa saratani ya mlango wa shingo ya kizazi. Vivyo hivyo, uchambuzi wa kina ulifanyika ili kubaini viashiria vinavyoweza kuathiri utumiaji wa huduma za saratani ya mlango wa shingo ya kizazi.

**MATOKEO:** Utafiti huu uligundua kuwa, (n=202) asilimia 68.2 ya washiriki wote hawakuchunguzwa saratani ya mlango

wa shingo ya kizazi. Uchambuzi wa kina ambao ulidhibiti hali ambayo inaweza kuathiri uwiano halisi wa uhusiano wa viashiria, unaonyesha kuwa ufahamu, hali ya ndoa na kuwa mfanyakazi zilihusishwa na uchunguzi wa saratani ya kizazi. Hii ina maana kuwa wa uchunguzi wa saratani ya mlango wa shingo ya kizazi ulikuwa mdogo miongoni mwa wanawake wasiojua juu ya ugonjwa wa saratani ya mlango wa shingo ya kizazi ikilinganishwa na wale wanaofahamu [wasiojua (uwiano wa uhusiano uliorekebisha, Adjusted Odds Ratio (AOR))=0.52 (95%CI: 0.31-0.88), p=0.01], kuwa mwanamke aliyeolewa ikilinganishwa na wale wasio olewa [walioolewa AOR =0.51 (95%CI: 0.28-0.91, p=0.02)] na kuajiriwa ikilinganishwa na wanawake wasioajiriwa [walioajiriwa (AOR)=0.16 (95%CI: 0.04-0.68), p=0.01] zilihusishwa kwa kiasi kikubwa na matatumizi ya huduma ya uchunguzi wa saratani ya mlango wa shingo ya kizazi.

**HITIMISHO:** Upimaji wa saratani ya mlango wa shingo ya kizazi mkoani Mara umeonekana kuwa katika kiwango cha chini sana, ambapo wale wanawake ambao hawakuwa na ufahamu, walioolewa na kuajiriwa walikuwa na uwezekano mdogo wa kushiriki katika uchunguzi wa saratani ya mlango wa shingo ya kizazi. Hivyo ili kuogezwa idadi ya wanawake kupima saratani ya mlango wa shingo ya kizazi, inapendekezwa kuanzishwa kwa elimu ya afya jumuiishi ili kujenga uelewa kwa wananchi.

**MANENO MUHIMU:** saratani ya shingo ya kizazi, utumiaji wa huduma ya uchunguzi, wanawake wa umri wa kuzaa, mkoa wa Mara

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