International Journal of Health Sciences and Research
Vol.12; Issue: 7; July 2022
Website: www.ijhsr.org
Original Research Article *ISSN: 2249-9571*

Determinants of Cervical Cancer Screening Utilization Among Women of Reproductive Age in Machakos County, Kenya

Henry Kilemi Mitheu[1], Rose Ndila Mutuku[1]

[1]Machakos Cancer Care and Research Center, Machakos level 5 Hospital, P.O Box 1223 – 90100, Machakos, Kenya

Corresponding Author: Henry Kilemi Mitheu

DOI: https://doi.org/10.52403/ijhsr.20220713

ABSTRACT

Background: Cancer of the cervix is currently the second most occurring cancer in Kenya for women and it is also the first most occurring carcinoma in ladies of reproductive age, yet it can be recognized early and be stopped from advancing further.
Objective: To determine client related factors affecting cervical cancer screening utilization among women of reproductive age in Machakos county, Kenya.
Methodology: This was a descriptive cross-sectional study using quantitative method. A questionnaire was used to collect data. The sample size was 202 respondents. Stratified simple random sampling was used to select the study participants. Data analysis was done using SPSS version 24.
Results: Majority of the respondents, 53% (n=53) were between age 26-35 years with a mean age of 30 years. Single women are five times less likely to utilize cancer screening services compared to married women [OR= 5.143, 95% CI: (2.249-11.763), P<0.001]. Women with university education were ten more times likely to utilize cancer screening services compared to women with informal education [OR=10.5, 95% CI: (1.161-94.925), P=0.036]. Women from the rural part of the county had a lower chance to utilize cancer screening services compared to women from urban area [OR=0.402, 95% CI: (0.22-0.734), P=0.003]. Women who are self-employed [OR=7.213, p<0.001] had seven times increased chance to utilize cancer screening services compared to casual laborers. Over half of the respondents, 56.4% (n=114) reported that cervical cancer screening services were affordable. Majority, 57.4% (n=116) of the respondents had not been screened for the cervical cancer.
Conclusion: There is low utilization of cervical cancer screening services in Machakos County at 42%. Patients factors such age, marital status, education level and area of residence had an impact on the utilization of the cervical cancer screening services.

Key Words: Cervical cancer; Cervical cancer Screening; Women of reproductive age

INTRODUCTION

Cervical tumor develops when irregular cells develop in an uncontrolled way on the cervix, leading in a cauliflower-like shape that quickly bleeds upon touch. Slow-growing cervical cancer starts in women's cervix, occurring mainly in women over 30 years of age(1). Approximately 570 000 women worldwide in the year 2018 were diagnosed with cancer of the cervix, and an estimate of 311 000 people died from the illness. The median age-standardized prevalence of cervical tumor was about 13 cases in every 100 000 females worldwide and ranged widely across countries, varying from under 2 to 75 per 100 000 women(2).
Patients' demographic characteristics such as age, marital status, socio-cultural and

economic factors affect the utilization of the cervical cancer screening. Women above 45 years have a higher chance to have tested for cancer of the cervix in contrast to under 40 females(3). Young age has been associated with non-adherence to Pap smear screening(4). Education is a key determinant in the utilization of health services. Women with secondary school education and above have a higher chance of seeking cervical cancer screening services compared to those with primary school education and below(5). Education is the primary enhances the individual; household autonomy, knowledge and decision-making ability to be screened(6). Single, separated and windowed have a lower chance for them to be screened than the women living with a spouse(7). Another study showed that married women or had a spouse, had an increased chance to have the screening done in contrast to those who were unmarried or widowed (8).

Socio-cultural factors such as misconceptions/beliefs of sickness and science, lack of women's trust and decision-making skills, lack of social support have low uptake of the cervical cancer screening services(9). Many men have been shown to play a vital role in deciding women access to cervical cancer screening(10). Women have developed a negative screening outlook due to the stigma related with female genital mutilation in a study done in Somali among the females in Camden London(11). Many cultural differences can lead to negative screening opinions like reservations about the visibility of sections of the private body. Societal perceptions and attitudes towards gender can affect the uptake of cervical cancer(12). Majority of older women reported being dissuaded from screening cervical cancer because the screening health workers were young like their children(7). In contrast another study found that some women preferred female physicians to male physicians(13).

Poverty contributes to low consumption of the cervical cancer screening, as the cost of screening is costly. For example, the market-day conflict and the need for child care for clinical appointments were correlated with low screening(14). This is due to fact that they preferred to pay for child services than paying for the screening services then, the rest of their money use it at the market. Other barriers to screening were costly screening facilities(12). The wealthy are more likely to undergo disease tests, highlighting that it is only those that have the financial means to tackle the obstacles to health care. The wealthy are also more likely to have insurance cover.

MATERIALS AND METHODS

This was a health facility based descriptive cross-sectional study which utilized quantitative methods to assess determinants of cervical cancer screening. The study was carried out in 2 level 4 hospitals and one level 5 hospital in Machakos County. The study population consisted of women seeking reproductive health services including family planning services at Maternal and Child Health and gynecology clinic. A sample size of 202 women were selected to participate in the study. Data was collected using a questionnaire. Trained research assistants were engaged in data collection.

Statistical Analysis

Data entry and cleaning was done for data quality and to detect any errors of omissions. Data was analyzed using Statistical Package of Social Sciences (SPSS) version 25.0 at 95% confidence interval and a P-value of 0.05 or less was considered significant. Descriptive statistics derived from SPSS e.g., mean and median were used for data presentation. Descriptive statistics were presented using figures and tables. A Chi-Square test and logistics regression was performed to test the relationship between study variables.

RESULTS

Socio-Demographic Characteristics

A tally of 202 participants participated in this study, out of which 70.3% (n=142)

were married. Majority the respondents, 53% (n=53) were between age 26-35 years with a mean age of 30 years. On education level, the number of participants with secondary education was almost equal with that of primary at 39.6% (n=80) and 39.1% (n=79) respectively. Majority, 67.3% (n=136) of the respondents resided in the rural parts of the Machakos County while 32.7% (n=66) resided in the urban part of the county. The most common mode of transport to the health facilities was motorcycles commonly known as "boda-boda", 56.9% (n=115) followed by public transport known as "Matatus" at 23.3% (n=47).

Table 1 Participant's socio-demographic Information (n=202)

Variable	Category	Frequency(n)	Percentage (%)
Age	25-35 years	107	**53**
	36-45 years	42	20.8
	15-25 years	34	16.8
	> 45 years	19	9.4
Marital status	Married	142	**70.3**
	Single	48	23.8
	Divorced	8	4
	Widowed	4	2
Educational status	Primary education	79	39.1
	Secondary education	80	**39.6**
	University education	22	10.9
	Informal education	21	10.4
Residence	Urban Machakos	66	32.7
	Rural Machakos	136	**67.3**
Mode of transport	Motorcycle	115	**56.9**
	Private car	7	3.5
	Public Transport	47	23.3
	Foot	33	16.3

Other influencing factors

Concerning the occupation, the number of casual laborers was equal to the number of those employed or in their own businesses at 36.6% (n=74). More than half of the respondents, 60.4% (n=122), had a monthly income of between 10,001 to 50,000 Kenyan shillings. On the work schedule affecting the participants seeking of cervical cancer screening services, 75.7% (n=153) of the respondents' report that their working schedules did not affect the utilization of the screening.

Table 2 Monthly income and work schedule in relation to cancer screening (n=202)

Question	Category	Frequency (n)	Percentage (%)
Occupational status			
	Casual laborer	74	36.6
	Self-employed	74	36.6
	Formal employment	31	15.3
	Farming	23	11.4
Monthly income			
	10,001-50,000	122	60.4
	50,001-100,000	40	19.8
	>100,000	40	19.8
Does your work schedule hinder you for seeking screening services?			
	No	153	75.7
	Yes	49	24.3
Does the cost of cervical cancer affordable to you?			
	No	88	43.6
	Yes	114	56.4

Furthermore, more than half of the respondents, 56.4% (n=114) reported that cervical cancer screening services were affordable to them whereas 43.6% (n=88) reported that these services were not affordable to them. Transport costs did not hinder seeking of cervical cancer screening services as reported by 52% (n=105) of the

respondents. On the contrary, 48% (n=97) reported that the transport costs hindered them from seeking of the cervical cancer screening services [Table 2].

Awareness on Cervical Cancer Screening and utilization

Majority, 91.6% (185) of the respondents heard about cervical cancer screening. Many, 41.1% (83) of ladies who were cognizance of the cervical tumor screening had learnt it from the media and 31.2% (63) from health care providers. Majority, 57.4% (116) of the participants had not been screened for the cervical cancer and of those who were screened, only 11.6% (10) had impressions of cancer and referred to the appropriate facilities for further follow-up and management [Table 3].

On the awareness of whether cervical tumor is preventable, 56.9% (115) reported that cervical tumor can be preventable while 19.8% (n=40) reported that it cannot be prevented whereas 23.3% (47) had no idea of whether it is preventable or not. Also, 47% (95) of the respondents believed that screening for cervical cancer was beneficial while 23.8% (48) believed that there were no benefits. Some of the benefits enumerated by the respondents were early diagnosis and early treatment. However, all the respondents stated that their religious beliefs and teachings did not prohibit cervical cancer screening in any way and that screening of the cervical cancer was culturally acceptable.

Table 3 Level of awareness on cervical tumor screening and utilization among participants

Question	Category	Frequency (n)	Percentage (%)
Have you heard of cervical screening			
	No	17	8.4
	Yes	185	91.6
How did you know about cervical tumor Screening?			
	Media	83	41.1
	Community	36	17.8
	Family member	20	9.9
	Health care provider	63	31.2
Have you been screened for Cervical Cancer			
	No	116	57.4
	Yes	86	42.6
Outcome of the Screening			
	Cancer impression	10	11.6
	No cancer	76	88.4
Is cervical cancer screening beneficial?			
	No	107	53.0
	Yes	95	47.0
Is cervical cancer preventable?			
	No	87	43.1
	Yes	115	56.9

Inferential statistics

Socio-demographical factor associated with utilization of cancer screening services

Chi square analysis was conducted to determine the factors associated with the utilization of cancer screening services. The analysis showed that all the socio-demographic variables were significantly associated with cancer screening service utilization among women. Age showed statistically significant association with cancer screening service utilization ($X2=132.963$, $P<0.001$), marital status ($X2= 76.445$, $P<0.001$), educational level ($X2 =175.874$, $P<0.001$) and residence of participants ($X2= 132.226$, $P<0.001$) revealed statistically significant association with cancer screening utilization. Similarly, mode of transport ($X2= 146.753$, $P<0.001$) showed significant association with cancer screening service utilization among participants. Other influencing factors (occupation and monthly income) also showed significant association with cancer screening services utilization [Table 5].

Table 5 Association between socio-demographic variables and cancer screening service utilization

		Have you been screened for Cervical Cancer			
Variable	**Category**	**No**	**Yes**	**X^2**	**p**
Age				42.586	0.001*
	26-35 years	39(36.4)	74(63.6)		
	36-45 years	36(85.7)	6(14.3)		
	15-25 years	28(82.4)	6(17.6)		
	> 45 years	13(68.4)	6(31.6)		
Marital status				22.493**	0.001*
	Married	68(47.9)	74(52.1)		
	Single	41(85.4)	7(14.6)		
	Divorced	5(62.5)	3(37.5)		
	Widowed	2(50)	2(50)		
Educational status				63.917	0.001*
	Primary education	18(22.8)	61(77.2)		
	Secondary education	65(81.3)	15(18.7)		
	University education	17(77.3)	5(22.7)		
	Informal education	16(76.2)	5(23.8)		
Residence				36.456	0.001*
	Urban Machakos	18(27.3)	48(72.7)		
	Rural Machakos	98(72.1)	38(27.9)		
Mode of transport				71.808**	0.001*
	Motorcycle	94(81.7)	21(18.3)		
	Private car	1(14.3)	6(85.7)		
	Public Transport	8(17)	39(83)		
	Foot	13(39.4)	20(60.6)		
Occupational status				52.398	0.001*
	Casual laborer	18(24.3)	56(75.7)		
	Self-employed	56(75.7)	18(24.3)		
	Formal employment	24(77.4)	7(22.6)		
	Farming	18(78.3)	5(21.7)		
Monthly income				37.595	0.001*
	10,001-50,000	49(40.2)	73(59.8)		
	50,001-100,000	34(85)	6(15)		
	>100,000	33(82.5)	7(17.5)		

Note: *= p<0.001 and ** Fisher's Exact Test Used

Socio-demographical factors associated with cancer screening services awareness

Table 6 showed the association between socio-demographic variables and cancer screening awareness. The analysis showed that all the variables showed statistically significant association with cancer screening awareness [Table 6].

Table 6 Association between socio-demographic variables and cancer screening awareness

		Have you heard of cervical screening			
Variable	**Category**	**No**	**Yes**	**X^2**	***p***
Age				55.726**	***0.001****
	26-35 years	0(0.0)	107(100.0)		
	36-45 years	5(11.9)	37(88.1)		
	15-25 years	0(0.0)	34(100.0)		
	> 45 years	12(63.2)	7(36.8)		
Marital status				78.57**	***0.001****
	Married	0(0.0)	142(100.0)		
	Single	5(10.4)	43(89.6)		
	Divorced	8(100.0)	0(0.0)		
	Widowed	4(100.0)	0(0.0)		
Educational status				87.289**	***0.001****
	Primary education	0(0.0)	79(100.0)		
	Secondary education	0(0.0)	80(100.0)		
	University education	0(0.0)	22(100.0)		
	No formal education	17(81.0)	4(19.0)		
Residence				9.008	***0.003***
	Urban Machakos	0(0.0)	66(100.0)		
	Rural Machakos	17(12.5)	119(87.5)		
Mode of transport				13.702**	***0.002***
	Motorcycle	17(14.8)	98(85.2)		
	Private car	0(0.0)	7(100.0)		
	Public Transport	0(0.0)	47(100.0)		
	Foot	0(0.0)	33(100.0)		

Table 6: Continued….					
Occupational status				81.347**	***0.001****
	Casual laborer	0(0.0)	74(100.0)		
	Self-employed	0(0.0)	74(100.0)		
	Formal employment	0(0.0)	31(100.0)		
	Farming	17(73.9)	6(26.1)		
Monthly income				12.674**	***0.001****
	10,001-50,000	17(13.9)	105(86.1)		
	50,001-100,000	0(0.0)	40(100.0)		
	>100,000	0(0.0)	40(100.0)		

Note: ** Fisher's exact test used, ** = significant at p<0.001

Cancer screening utilization predictors using logistic regression

To predict socio-demographic variables related with cancer screening services, logistic regression was conducted after dummy coding was done. With regards to age, the analysis showed that women ranging 26-35 years had more probability of using cancer screening services compared to those women within the age range of 15-25 years [OR=0.404, 95% CI: (0.179-0.911), P<0.029]. Furthermore, on marital status, women who are single are five times less likely to utilize tumor screening services compared to married women [OR= 5.143, 95% CI: (2.249-11.763), P<0.001]. Similarly, women with university education were ten more likely to utilize cancer screening services compared to women with informal education [OR=10.5, 95% CI: (1.161-94.925), P<0.036]. The analysis showed that women from the rural part of the county had a reduced probability to utilize cancer screening services against ladies from urban area [OR=0.402, 95% CI: (0.22-0.734), P<0.003]. Also, on the mode of transport, those women who used public transport had a reduced probability to attend cancer screening services against those who used motorcycles as mode of transport [OR= 0.385, 95% CI: (0.207-0.829), p<0.013].

Table 7 Factors associated with cancer screening services utilization among participants (n=202)

							95% CI	
Variable	**Category**	**B**	**S.E.**	**Wald**	**Sig.**	**OR**	**Lower**	**Upper**
Residence	Urban	Ref						
	Rural	-0.912	0.307	8.818	***0.003****	0.402	0.22	0.734
Mode of Transport	Motorcycle	Ref						
	Private car	-0.955	0.789	1.466	0.226	0.385	0.082	1.806
	Public transport	-0.881	0.353	6.212	***0.013****	0.414	0.207	0.829
	Foot	-0.728	0.4	3.308	0.069	0.483	0.22	1.058
Age	15-25 years	Ref						
	26-35 years	-0.906	0.415	4.774	***0.029****	0.404	0.179	0.911
	36-45 years	0.298	0.507	0.346	0.556	1.348	0.498	3.644
	>45 years	0.036	0.615	0.003	0.954	1.036	0.311	3.458
Marital status	Married	Ref						
	Single	1.638	0.422	15.051	***0.001****	5.143	2.249	11.763
	Divorced	0.028	0.727	0.002	0.969	1.029	0.248	4.274
	Widowed	0.028	1.014	0.001	0.978	1.029	0.141	7.505
Educational Status	Informal education	Ref						
	Primary	-1.025	0.516	3.947	***0.047****	0.359	0.13	0.986
	Secondary	-0.288	0.516	0.311	0.577	0.75	0.273	2.062
	University	2.351	1.123	4.381	***0.036****	10.5	1.161	94.925
Employment status	Casual laborer	Ref						
	Self-employment	0.654	0.333	3.857	0.05	1.924	1.001	3.697
	Formal employment	1.976	0.542	13.28	***0.001****	7.213	2.492	20.875
	Farming	1.154	0.511	5.104	***0.024****	3.171	1.165	8.627
Monthly income	<10,000	Ref						
	10,001-50,000	-1.419	0.435	10.652	***0.001****	0.242	0.103	0.567
	50,001-100,000	-0.981	0.51	3.694	0.055	0.375	0.138	1.02

Note * =significant at P<0.05, ** = P<0.00

Finally, on the other influencing factors such as occupation or employment status, analysis showed that women who are self-employed [OR=7.213, p<0.001] were seven times more likely to utilize cancer screening services compared to casual laborers. Also,

those women who are farmers are three times more likely to use cancer screening services compared to casual laborers [OR=3.171, P<0.024]. On monthly income as an influencing factor, women with monthly income between 10,001-50,000 were less likely to use cancer screening services compared to those receiving monthly income of <10,000 [OR=0.242, P<0.001] [Table 7].

Personal factors associated with cancer screening utilization

On the personal factors associated with cancer screening utilization, participants who agreed that cancer screening is beneficial were more likely to utilize cancer screening services compared to those participants who did not agree [OR=0.173, 95% CI: (0.034-0.88), P=0.035]. On the source of information about cancer screening services, participants who were informed through the community and family member were less like to utilize cancer screening services compared to those who are informed through the media (B= -2.524, p=0.008) and (B= -5.406, p<0.001) respectively.

Table 9: Personal factors associated with cancer screening utilization

							95% CI	
Question	**Category**	**B**	**S.E.**	**Wald**	**Sig.**	**OR**	**Lower**	**Upper**
Does your work schedule hinder you for seeking screening services	No	Ref						
	Yes	20.62	10742.02	0	0.998	9.02E+08	0	.
Does the cost of cervical cancer affordable to you	No	Ref						
	Yes	-2.091	1.176	3.163	0.075	0.124	0.012	1.238
Is the cost of transport to health facility a hindrance for seeking cervical screening	No	Ref						
	Yes	-0.028	0.689	0.002	0.968	0.973	0.252	3.755
Have you heard of cervical screening	No	Ref						
	Yes	-0.556	0.702	0.627	0.428	0.574	0.145	2.27
Is cervical cancer screening beneficial?	No	Ref						
	Yes	-1.756	0.831	4.467	***0.035***	0.173	0.034	0.88
Is cervical cancer preventable?	No	Ref						
	Yes	0.849	0.698	1.476	0.224	2.337	0.594	9.186
How did you know about cervical Cancer Screening?	Media	Ref						
	Community	-2.524	0.945	7.141	***0.008***	0.08	0.013	0.51
	Family Member	-5.406	1.578	11.733	***0.001***	0.004	0	0.099
	Health care provider	-25.954	10742.02	0	0.998	0	0	.

DISCUSSION

Availability and accessibility of the health care services is vital in the determining the extent of use over the same. The services could be available in a given area but gaps can exist that hinder the patients from utilizing the available services. Also, accessibility of the available services can be hindered by other factors beyond the client or the healthcare worker. In this study, despite the services being available in the three main hospitals the utilization of the same was low at 42% among the respondents. These findings compare with those of a similar study that showed 40% utilization of the cervical cancer screening (15). This further corroborated by the hospital records which showed that only 39.8% of the mothers visiting maternal child health clinic sought cervical cancer screening services in the facility. These findings could be attributed to the charges imposed on these services and the fact that these services had been recently launched in the two levels especially for the PAP smear screening.

Age was one of the great determinants on the utilization of the cervical tumor

screening services. In this study, 63.6% of those screened for cervical tumor before were aged between 26-35 years of age. These findings are contradicting those of a Nigerian study conducted by Ahmed that showed women aged 20-29 years their cervical tumor screening use was minimal. Although there are similar findings of a Nigerian study that revealed that women aged 21-35 years of age had a higher chance to take cervical tumor screening (16). This could be a result of the accessibility of the smart mobile phones among this group and are able to get more information from their devices.

Education increases the autonomy and one's decision-making ability in health matters. This study revealed that women with formal (primary, secondary and university) education had a higher probability to seek cervical tumor screening services in comparison to those with the informal education. There was direct correlation between increased education levels with the seeking of the cervical tumor screening services as shown by the chi square test (P=0.015). These findings compare with similar studies carried out in the past that showed women with primary or secondary school education level sought cervical tumor screening services against those who had no formal education (5,13,17). Educated people have a good access to health information which can assist them make good health decisions.

The married women had high use of the cervical tumor screening services compared to the single, divorced and the separated. Torre, 2015 also revealed that single females had a higher probability to seek cervical tumor screening services in comparison to the married. In this study this could be due to the support that the married women got from their spouses to seek the services (18). In the health facilities, couples are always given priority compared to women who come unaccompanied by their partners.

Casual laborers and the women on self-employment had an increased probability to seek cervical cancer screening services compared to those on formal employment. The findings are a contrast of a similar study by Walner, 2015(19) which showed that in this category are empowered financially to pay for the services they sought. This could be related to the low literacy level and education level in the county with the majority of the population lacking formal education. Also, these women have low income and in Kenya most of the people seeking health services from public hospitals are those of low socio-economic class. An equal number of the women who reported transport cost as a hindrance in seeking the services could be due to the poor road networks within the Machakos County.

In this study the respondents had high cognizance on the cervical tumor screening and hundred percent of the women who had been screened had heard about the cervical tumor screening programs. The findings differ with those of a Tanzanian study that revealed the awareness level to be 59.6% and out of these only 22.3% had been screened (20). These findings also compare with those of an Indian study that revealed high level of cognizance on the cervical tumor screening, causes and the treatment. The increased level of the awareness could be attributed to increased health education to the members of the public through the media and during their visits to the hospital to seek various services. The government has also conducted various medical camps for screening in an aim to increase the utilization of the services.

CONCLUSION

It points out that there exists low utilization of cervical cancer screening services nationally and in Machakos County at 40% and 42% respectively. Patients factors such age, marital status, education level and area of residence had an impact on the utilization of the cervical cancer screening services with low use among those above 36years, single and divorced/separated and those with informal education.

Acknowledgement

We acknowledge the Machakos County Government for granting permission to conduct the research and the Nairobi Hospital Ethics and Research Committee. Finally, we acknowledge all nurses working at the maternal child health clinics for their cooperation.

Conflict of Interest: None

Source of funding: Self

Ethical approval: Approved

REFERENCES

1. Bruni L, Albero G, Serrano B, Mena M, Gómez D, Muñoz J, et al. Human Papillomavirus and Related Diseases in Kenya. Summary Report 17 June 2019. [Date Accessed]. ICO Inf Cent HPV Cancer (HPV Inf Centre). 2019;1(October):2–64.
2. WHO. Cervical cancer [Internet]. 2018. Available from: https://www.who.int/health-topics/cervical-cancer#tab=tab_1
3. Bruni L, Diaz M, Castellsagué X, Ferrer E, Bosch FX, De Sanjosé S. Cervical human papillomavirus prevalence in 5 continents: Meta-analysis of 1 million women with normal cytological findings. J Infect Dis. 2010 Dec;202(12):1789–99.
4. Varughese J, Richman S. Cancer care inequity for women in resource-poor countries. Rev Obstet Gynecol. 2010;3(3):122–32.
5. Ncube B, Bey A, Knight J, Bessler P, Jolly PE. Factors associated with the uptake of cervical cancer screening among women in Portland, Jamaica. N Am J Med Sci. 2015;7(3):104–13.
6. Finocchario-Kessler S, Wexler C, Maloba M, Mabachi N, Ndikum-Moffor F, Bukusi E. Cervical cancer prevention and treatment research in Africa: A systematic review from a public health perspective. BMC Womens Health. 2016 Jun;16(1):1–25.
7. Ng'Ang'A A, Nyangasi M, Nkonge NG, Gathitu E, Kibachio J, Gichangi P, et al. Predictors of cervical cancer screening among Kenyan women: Results of a nested case-control study in a nationally representative survey. BMC Public Health. 2018 Nov;18(S3):1221.
8. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer. 2015 Mar;136(5):E359–86.
9. Sylla BS, Wild CP. A million africans a year dying from cancer by 2030: What can cancer research and control offer to the continent? Vol. 130, International Journal of Cancer. Int J Cancer; 2012. p. 245–50.
10. Akarolo-Anthony SN, Ogundiran TO, Adebamowo CA. Emerging breast cancer epidemic: Evidence from Africa. Breast Cancer Res. 2010 Dec;12(SUPPL. 4):S8.
11. Macartney KK, Chiu C, Georgousakis M, Brotherton JML. Safety of human papillomavirus vaccines: A review. Vol. 36, Drug Safety. Drug Saf; 2013. p. 393–412.
12. Joura EA, Pils S. Vaccines against human papillomavirus infections: protection against cancer, genital warts or both? Vol. 22, Clinical Microbiology and Infection. Elsevier B.V.; 2016. p. S125–7.
13. Gan DEH, Dahlui M. Cervical screening uptake and its predictors among rural women in malaysia. Singapore Med J. 2013 Mar;54(3):163–8.
14. Rositch AF, Gatuguta A, Choi RY, Guthrie BL, Mackelprang RD, Bosire R, et al. Knowledge and Acceptability of Pap Smears, Self-Sampling and HPV Vaccination among Adult Women in Kenya. Medeiros R, editor. PLoS One. 2012 Jul;7(7):e40766.
15. Were E, Nyaberi Z, Buziba N. Perceptions of risk and barriers to cervical cancer screening at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. Afr Health Sci. 2011;11(1):58–64.
16. Idowu A, Olowookere SA, Fagbemi AT, Ogunlaja OA. Determinants of Cervical Cancer Screening Uptake among Women in Ilorin, North Central Nigeria: A Community-Based Study. 2016; Available from: http://dx.doi.org/10.1155/2016/6469240
17. Ekane GEH, Obinchemti TE, Nguefack CT, Nkambfu DM, Tchounzou R, Nsagha D, et al. Pap Smear Screening, the Way Forward for Prevention of Cervical Cancer? A Community Based Study in the Buea Health District, Cameroon. Open J Obstet Gynecol. 2015;05(04):226–33.

18. Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-Tieulent J, Jemal A. Global cancer statistics, 2012. CA Cancer J Clin. 2015 Mar;65(2):87–108.
19. Wagner M, Bennetts L, Patel H, Welner S, De Sanjose S, Weiss TW. Global availability of data on HPV genotype-distribution in cervical, vulvar and vaginal disease and genotype-specific prevalence and incidence of HPV infection in females. Infect Agent Cancer. 2015 Apr;10(1).
20. Lyimo FS, Beran TN. Demographic, knowledge, attitudinal, and accessibility factors associated with uptake of cervical cancer screening among women in a rural district of Tanzania: Three public policy implications. BMC Public Health. 2012 Dec;12(1):22.

How to cite this article: Henry Kilemi Mitheu, Rose Ndila Mutuku. Determinants of cervical cancer screening utilization among women of reproductive age in Machakos county, Kenya. Int J Health Sci Res. 2022; 12(7):93-102. DOI: *https://doi.org/10.52403/ijhsr.20220713*

******