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# INFLUENCE OF KNOWLEDGE ON CERVICAL CANCER SCREENING AMONG WOMEN OF REPRODUCTIVE AGE: A CASE STUDY OF RUNYENJES, EMBU KENYA

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## Abstract

**Introduction:** As it occurs in other parts of the world, cervical cancer carries high mortality in Kenya. It is the second leading cancer and the number one cause of cancer-related mortality among women in Kenya. Most of the vulnerable women in Kenya have never been screened and their knowledge on the risk factors associated with cervical cancer remains low.

**Objective:** To assess the influence of knowledge cervical cancer screening among women of reproductive age in Runyenjes sub-county, Embu County.

**Methods:** A cross sectional study design was used, adopting both quantitative and qualitative approaches, through Interviewer administered questionnaires. A total of 297 respondents were interviewed and their recruitment was through stratified random sampling technique.

**Results**: A proportion of 45.5% (135) had performed a Pap smear test as at the time of the research. 51.5% (162) of respondents correctly defined Cervical Cancer. The results indicated that there is low awareness and knowledge (ranging from 25% to 61%) about cancer of cervix, its signs and symptoms, its risk factors and methods of prevention among women of reproductive age in the study area.

**Conclusion**: Uptake of cervical cancer screening services and knowledge about cancer of cervix is low in Runyenjes sub-county, Embu County. There is a significant association between knowledge of cervical cancer and uptake of cervical cancer screening.

**Recommendation**: The Ministry of Health as well as other governmental and non governmental organizations focusing on reproductive should conduct campaigns to increase knowledge on cervical cancer.

**Key Words**: Knowledge, Cervical Cancer Screening, Reproductive Age

## Introduction

Cervical cancer is the commonest genital tract malignancy in females and second overall to breast cancer in the developing world. Cervical cancer poses a serious public health threat to women in many low and medium resource countries in South and Central America, sub-Saharan Africa, South and Southeast Asia where it is still the leading type of cancer among women. Worldwide, about 500,000 new cases are diagnosed every year, and nearly 90% of deaths from cervical cancer each year are of women living in low and middle income countries. The highest regional incidence and mortality rates are seen in Africa, where the rates are 7–10 times higher than in the western world (Chrysostomou, Stylianou, Constantinidou& Kostrikis, 2018).

Scientific studies have established that cervical cancer is caused by the sexually transmitted Human Papillomavirus (HPV), which is the most common viral infection of the reproductive tract. HPV infection is the most common sexually transmitted disease and can result in Cervical Intraepithelial Neoplasia (CIN) which refers only to a lesion that may progress to invasive carcinoma. Studies have also established that almost all sexually active individuals will be infected with HPV at some point in their lives; and some may be repeatedly infected. The peak time for infection is shortly after becoming sexually active. Cervical cancer screening is the testing for pre-cancerous and cancerous cells amongst women who are exposed, most of whom will be without symptoms.

At a minimum, screening is recommended for every woman 30–49 years of age at least once in a life time. The majority of HPV infections resolves spontaneously and do not cause symptoms or disease. However, persistent infection with specific types of HPV (most frequently, types 16 and 18) may lead to precancerous lesions (Gana & Oche, 2016). If untreated, these lesions may progress to cervical cancer.

Knowledge on the causes, benefits, screening and prevention methods for cervical cancer is low in developing countries. In a study conducted in India, Manikandan, Behera and Debata (2019) found that 69.39% of the professional college female students were not aware of cervical cancer, 94.9% were not aware of the risk factors and causes of cervical cancer, and 97.96% were not aware of PAP smear testing. In Botswana, Tapera, Manyala and Mbongwe (2017) found that Pap smear screening uptake was low amongst University of Botswana female students and only 14% of the female students had good level knowledge of cervical cancer (in terms of risk factors, vulnerability, signs and symptoms, ways of prevention, and ways of screening).

In Tanzania, Moshi and Bago (2019) indicate that only 10.4% of the women were knowledgeable about cervical cancer, 66.2% were aware of cervical cancer screening, and only 7.9% had undergone cervical cancer screening. A low level of knowledge was associated with poor uptake of screening services, highlighting the need for integrating health education pertaining to cervical cancer and screening when providing reproductive health care in Tanzania. In Isiolo and Tharaka Nithi counties in Kenya, Gatumo, Gacheri and Sayed (2018) found that eighty percent of the women were aware of cervical cancer, 25.6% of whom had previously undergone a cervical screening examination, and 44.4% had above-average knowledge of risk factors of cervical cancer.

**Statement of the problem**

Cervical cancer is the second most common cancer among women, after cancer of breast (Korir et al., 2015). Current estimates show that 2354 new cases of cervical cancer are reported every year; and 1676 women die from the disease annually (Nthiga, 2014). Further projections indicate that by the year 2025, the number of new cases of cervical cancer will reach 4261 per year (Globocan 2008). This is a large number that calls for an immediate preventive action in order to eliminate the highly projected morbidity and mortality in future. On a positive note, cancer of cervix can be prevented through early screening and treatment, once the abnormal cells are detected early enough, before they become cancerous. Studies show that only about 5% of women in developing countries undergo cervical cancer screening. This is a low percentage as compared to over 40% in the developed countries.

Screening services are available in Kenyan public and private health facilities and in spite of this, utilization of screening services still remains low. In fact, it has been noted that although cancer of cervix can be easily prevented and controlled through behavior change, screening, early detection and treatment of pre-cancerous lesions, most of the eligible women of reproductive age in Kenya have never been screened. In Kenya, research findings indicate that only 3.2 % of women aged 18-69 years have been screened in any three year period. This is a worrying trend and there was therefore a need to investigate the factors that hinder women from participating in the cervical screening tests. This study may help to curb the threat of high prevalence of morbidity and mortality rates that are related to cancer of cervix in Kenya. The objective of the study was to assess the influence of knowledge of women on cervical cancer screening among women of reproductive age in Runyenjes sub-county, Embu County.

**Knowledge on Cervical Cancer Screening**

Knowledge in this study is familiarity, awareness or understanding of cancer of cervix. It concerns the facts, information and descriptions offered in relation to the disease. It is the state of knowing, the perception of fact or truth, clear and certain mental apprehension of cervical cancer screening. Knowledge about cancer of cervix can be acquired through experience or education by perceiving, discovering or learning.

Knowledge is considered as empowering and it has a lot of influence on the actions that we take. In fact, Burak and Meyer (1997), in their study, highlighted that lack of knowledge about HPV and cervical cancer may influence beliefs about the seriousness or consequences of the conditions. This is because people have different perceptions in relation to causative agents and the risk factors for cancer of the cervix.

A study by Rosser et al., (2015) found that the most common perceived patient barrier to cervical screening was lack of knowledge. This concurred with the findings of Fylan (1998) whereby, lack of awareness of the test's

indications and benefits was among the reasons for women's non-participation in the cervical cancer screening Programmes. In this study, some participants were found to have very little understanding of an abnormal cervical smear. It is therefore important for women understand the meaning of a cervical smear result and know that it does not necessarily mean that presence of cancer of cervix. Sensitizing women on the actual meaning of the concept would positively influence their decision to participate in cervical screening Programmes.

According to Mukakalisa et al. (2014), Health literacy plays a major role in prevention of cervical cancer. It involves provision of health education in relation to understanding cancer of cervix, the screening process and the preventive measures. This agrees with the recommendation of Chekuri (2012) that "….If the scourge of cervical cancer is to be adequately addressed, especially in low-resourced countries, then mass educational Programmes on HPV, cervical cancer prevention, including screening and early detection and treatment of pre-cancerous lesions of the cervix, must be given high priority".

Gannon and Dowling (2008) concurred with Mukakalisa, Bindler, Allen and Dotson (2014) findings and argued that education and knowledge about cervical screening is positively linked with screening attendance. General knowledge about cancer of the cervix and its preventive measures amongst women are very vital predictors about the decision to participate in the cervical screening interventions. On realization of this, a study done by Wong, Lin & Shuib (2019) suggested ways in which knowledge can be impacted on women and this included education, communication and reassurance to overcome the barriers that hindered the health seeking behaviours.

However, these findings differed with those of Mutyaba, Mmiro and Weiderpass (2006) who from their study found that despite knowledge of the gravity of cervical cancer and its prevention by screening using a pap smear amongst their respondents; some of them still had negative attitudes and practices towards screening.

The findings of another study by Ombech, Muigai and Wanzala (2012) agreed with Mutyaba et al., 2006. According to them, there was no correlation between awareness of cervical cancer risk factors and practice of Pap smear testing. From their findings, knowledge of the phenomenon did not translate into action and therefore, the researchers concluded that there would be more underlying reasons as to why women do not go for cervical screening Programmes despite knowing its benefits. This shows that there is therefore a need for further research to understand the major root cause for lack of participation in cervical screening Programmes and identify possible interventions to address them. This would possibly increase uptake of the screening services.

Rahman and Kar (2015) conducted a study on knowledge on cervical cancer screening among Sikkimese nursing staff in India. A predesigned, pretested, self -administered multiple responses questionnaire survey was conducted among staff nurses' working in various hospitals of Sikkim. The study found that only 16.6% nurses, who were aware of a Pap smear. Most common reason offered for not undergoing Pap smear test were, they felt they were not at risk (41%), uncomfortable pelvic examination (25%) and fear of a bad result (16.6%).

Wong, Lin and Shuib (2019) examined Knowledge and awareness of cervical cancer and screening among Malaysian women who have never had a pap smear. In-depth interviews were conducted with 20 Malaysian women aged 21-56 years and who have never had a Pap smear test. A lack of knowledge on cervical cancer and the Pap smear test was found among the respondents. Many women did not have a clear understanding of the meaning of an abnormal cervical smear and the need for the early detection of cervical cancer. Many believe the purpose of the Pap smear test is to detect existing cervical cancer, leading to the belief that Pap smear screening is not required because the respondents had no symptoms.

Nyamambi, Murendo, Sibanda and Mazinyane (2020) carried out a study on the knowledge on cervical cancer screening among women in Chegutu rural district of Zimbabwe. A cross-sectional questionnaire survey was conducted among 156 women aged 15–50 years in Chegutu district. About 5.8% of women had undergone screening and (41%) had poor knowledge regarding risk factors, groups, symptoms and prevention. Over 66% of women knew how the disease was transmitted and which women are at risk. Women, in particular, the less educated and non-Christians had low level of knowledge on cervical cancer and its symptoms and signs.

Gana and Oche (2016) conducted a study on the effect of an educational program on awareness of cervical cancer and uptake of Pap smear among market women in Niger State, North Central Nigeria. The study used a quasi-experimental design and found that women's awareness about cervical cancer and uptake of Pap smear

were comparable between both groups at pre-intervention. Post-intervention, there was a statistically significant difference in awareness about cervical cancer with a marginal increase in uptake of Pap smear test in the intervention group as compared to the control group.

Ndejjo, Mukama and Kiguli (2017) carried out a study on knowledge on cervical cancer screening among women in Uganda. The study used a focus group discussions and key informant interviews. The knowledge of women about cervical cancer causes, signs and symptoms, testing methods and prevention was poor. Many women attributed the cause of cervical cancer to use of contraception while some believed it was as a result of witchcraft.

**Conceptual Framework**

Figure 1 shows the relationship between the independent variables and the dependent variable.

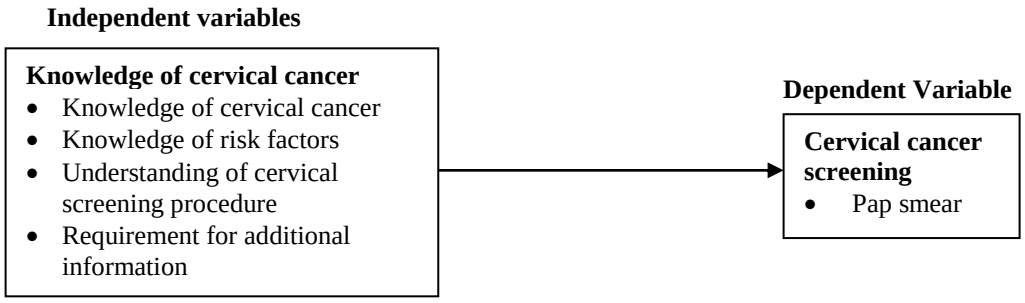


**Figure 1: Conceptual Framework**

**Research Methodology**

A cross sectional study design was used, which adopted both quantitative and qualitative approaches through Interviewer administered questionnaires. The study population included all women of reproductive age, residing in Runyenjes sub-county, Embu County and those who agreed to participate after giving their informed consent. Recruitment was done at the households' level within the community. It included all women of reproductive age (18-49 years) who had resided within Runyenjes sub-county, for at least 3 years and above. In addition, the population included all women of reproductive age (18-49 years) who gave signed informed written consent to participate in the study. The study excluded all women of reproductive age (18-49 years) who had not resided in Runyenjes sub-county for 3 years and above. In addition, all women of reproductive age that were considered to be psychologically unsound were excluded from in the study.

An appropriate sample size was calculated using statistical formula by Kothari (2004). It was based on 95% Confidence Interval (C.I), assuming the uptake of cancer of cervix screening of 25% based on data from a previous study on a similar population in Embu County (Nthiga (2014).

$$n = \frac{Z^2 pq}{e^2}$$

Where;

Z= standard variation (1.96) which correspond to 95% confidence interval

P= estimated prevalence=0.25

q=1-p =0.75

e = 0.05 (acceptable error margin or precision of measurement)

$$n = \frac{1.96^2 0.25 * 0.75}{0.05^2}$$

$$n = 288\, respondents$$

Runyenjes sub-county has 6 locations; namely Gaturi North, Kagaari South, Central, Kagaari North, Kyeni North and Kyeni South locations. Since the target population was homogeneous, stratified random sampling was applied. The 6 locations were considered to be the strata. Simple random sampling was used to get the participants from every stratum.

**Table 1: Sample Size**

| Location | Total number of women aged 18-49 years | Sample size |
|---|---|---|
| Gaturi North | 12199 | 49 |
| Kagaari South | 10213 | 41 |
| Central | 11800 | 48 |
| Kagaari North | 12476 | 50 |
| Kyeni North | 10773 | 44 |
| Kyeni South | 13719 | 56 |
| TOTAL | 71180 | 288 |

Four research assistants were recruited to assist in the data collection exercise. Interviewer administered questionnaires were used, with both open-ended and closed ended questions. A Pilot study was carried out on a representative sample of thirty (30) women of reproductive age (18-49 years), in Kithimu location in Embu County. This was done to test the appropriateness of the data collection tool in the last week of September, 2016. Kithimu has women of reproductive age (18-49 years) from the same cultural and socio-economic settings as those found in Runyenjes sub-county. The training of four research assistants was done for a period of one week i.e. the first week of Oct, 2016.

Quantitative data generated from the questionnaire was keyed into SPSS and data was analyzed using Statistical Package for Social Sciences (SPSS) version 22.0. Descriptive analysis was done by developing frequency tables and charts while inferential analysis was done using the binary logistic regression analysis to evaluate the relationship between the independent variables and the dependent variable. Test of significance was based on 95% confidence interval and P value of $< 0.05$. The results were presented in frequencies and percentages.

Cervical cancer is a very sensitive medical and psychosocial issue and women may feel like researchers and health workers take advantage of them to fulfill their personal agendas. It is therefore very important to observe ethical issues throughout the research process. These include confidentiality, respect, approval and informed consent. Confidentiality, anonymity and privacy was provided. In addition, study participants were assured of their confidentiality. The study subjects were also given the right to withdraw from the study at any point in time. Ethical approval to carry out the study was obtained from Moi University Institutional Research and Ethics Committee. Further clearance to carry out research was sought from the Runyenjes sub-county administrative authorities. There was no deception of participants.

## Results

The sample size of this study was 288 participants, out of which 297 responses were received. This gives a response rate of more than 100%. According to Norman and Streiner (2008), a response rate of 70% and above is excellent, 60% to 69% is good, while 50% and above is adequate for analysis and reporting.

### Proportion of Women Who Have Ever Had Cervical Cancer Screening

The participants were asked to indicate whether they had ever had a Pap smear test. The results, as shown in table 2, show that 54.5% (162) of the participants had never had a Pap smear test, which implies that they had never done cervical cancer screening. However, 45.5% (135) of the participants had had a Pap smear test. In addition, 66.3% (197) of the participants indicated that they knew someone who had cancer of the cervix. However, 33.7% (100) of the participants did not know of anyone who had cancer of the cervix.

**Table 2: Status of Cervical Cancer Screening**

| | Frequency | Percent |
|---|---|---|
| **Status of Pap smear test** | | |
| No pap smear test | 162 | 54.5 |
| Had pap smear test | 135 | 45.5 |
| **Total** | **297** | **100.0** |
| **Knowledge of anyone who has/ had cancer of cervix** | | |
| Yes | 197 | 66.3 |
| No | 100 | 33.7 |
| **Total** | **297** | **100.0** |

**Participants' Knowledge on cervical cancer**

The study assessed awareness and knowledge of Cervical Cancer. As indicated in table 3, 51.5% (153) of the respondents correctly defined Cervical Cancer whereas 48.5% (144) could not. In addition, 46.5% (138) of the participants associated Cervical cancer screening with pelvic examination, 23.9% (71) did not know what entailed cervical cancer screening whereas 29.6% (88) expressed that it involves scraping of the cells from the cervix.

**Table 3: Definition of Cervical Cancer**

| | Frequency | Percent |
|---|---|---|
| **Definition of Cervical cancer** | | |
| Correct definition | 153 | 51.5% |
| Incorrect definition | 144 | 48.5% |
| **Total** | **297** | **100%** |
| **Meaning of cervical cancer screening** | | |
| Pelvic exam | 138 | 46.5% |
| Scraping of cells from the cervix | 88 | 29.6% |
| I don't know | 71 | 23.9% |
| **Total** | **297** | **100%** |

The study assessed the knowhow by the respondents regarding the signs and symptoms of the cancer of the cervix. The proportion of those who indicated that they did not know ranged between 26% and 45%, suggesting a great need to create awareness campaigns/forums or trainings. Persistent vaginal discharge with unpleasant smell was considered to be most renowned sign by a proportion of 67% followed by the tendency to bleeding after intercourse, douching, or a pelvic examination; by a proportion of 61%. On the other hand, unexplained weight gain was pronounced as the least likely symptom with only 2% of the respondents recognizing it as a sign or symptom as provided in table 4.

**Table 4: Signs and symptoms of cancer of cervix**

| | Yes | No | Don't Know |
|---|---|---|---|
| Bleeding after menopause | 20.5 (61) | 39.4 (117) | 40.1 (119) |
| Burning sensation during urination | 10.8 (32) | 57.9 (172) | 31.3 (93) |
| Pain during sexual intercourse | 59.3 (176) | 14.8 (44) | 25.9 (77) |
| Blood in urine | 36.0 (107) | 34.3 (102) | 29.6 (88) |
| Bleeding after intercourse, douching, or a pelvic examination | 60.6 (180) | 9.4 (28) | 30.0 (89) |
| Persistent vaginal discharge with unpleasant smell | 66.7 (198) | 6.1 (18) | 27.3 (81) |
| Menstrual bleeding that is longer and heavier than usual | 35.7 (106) | 32.0 (95) | 32.3 (96) |
| Persistent lower back pain | 41.8 (124) | 27.9 (83) | 30.3 (90) |
| Blood spots or light bleeding between or following periods | 19.5 (58) | 45.8 (136) | 34.7 (103) |
| Unexplained weight gain | 2.0 (6) | 52.9 (157) | 45.1 (134) |

Assessment of knowledge about risk factors associated with the cancer of the cervix indicates low awareness ranging from 25% to 61%. Weak immune system was recognized as a risk factor by 65% of those interviewed, followed by those infected with HIV identified by 61% of the study participants. About half (49%) disapproved the view that high number of full term pregnancies would be a risk factor for the cancer of the cervix.

**Table 5: Knowledge on Risk Factors of Cancer of Cervix**

| | Yes | No | Don't Know |
|---|---|---|---|
| Infection with Human Papilloma Virus (HPV) | 37.7 (112) | 1.7 (5) | 60.6 (180) |
| High number of full-term pregnancies | 24.2 (72) | 48.8 (145) | 26.9 (80) |
| Lack of regular cervical (pap smear) screening | 58.2 (173) | 14.8 (44) | 26.9 (80) |
| STIs and HIV infection | 57.6 (171) | 16.8 (50) | 25.6 (76) |
| Engaging in sex at an early age | 36.4 (108) | 35.4 (105) | 28.3 (84) |
| Long term use of OCPs | 35.7 (106) | 38.7 (115) | 25.6 (76) |
| Sexual promiscuity with multiple partners | 53.9 (160) | 14.1 (42) | 32.0 (95) |
| Weak immune system | 64.6 (192) | 3.4 (10) | 32.0 (95) |
| Family history and genetic factors | 47.5 (141) | 7.7 (23) | 44.8 (133) |
| Infection with HIV | 60.6 (180) | 14.8 (44) | 24.6 (73) |

The participants were asked to indicate whether cancer of the cervix can be prevented. According to the findings, 55.9% (166), cancer of the cervix can be prevented, 36.4% (108) had no idea and 7.7% (23) indicated that it was not preventable.

**Table 6: Prevention of cancer of cervix**

| | Frequency | Percent |
|---|---|---|
| Yes | 166 | 55.9 |
| No | 23 | 7.7 |
| Don't Know | 108 | 36.4 |
| **Total** | **297** | **100.0** |

The researcher assessed the knowledge of the participants on the prevention efforts towards the cancer of the cervix. A high proportion of individuals interviewed expressed lack of awareness ranging from 40% to 65%. On the other hand, routine screening and follow-up in case of an abnormal Pap smear result were considered to be the highly recognized efforts towards prevention of cancer of the cervix; each with a score of 56%. Other methods that the respondents felt could be employed to prevent cancer of cervix were condom use (51%), maintenance of one sexual partner (49%), vaccination with HPV Vaccine (29%).

**Table 7: How Cancer of the Cervix can be prevented**

| | Yes | No | Don't Know |
|---|---|---|---|
| Vaccination with HPV Vaccine | 29.3 (87) | 5.7 (17) | 65.0 (193) |
| Routine screening | 55.9 (166) | 4.0 (12) | 40.1 (119) |
| Maintenance of one sexual partner | 49.2 (146) | 8.1 (24) | 42.8 (127) |
| Avoidance of tobacco smoke | 24.9 (74) | 31.0 (92) | 44.1 (131) |
| Condom use | 50.8 (151) | 8.1 (24) | 41.1 (122) |
| Follow up in case of an abnormal pap smear result | 55.9 (166) | 4.0 (12) | 40.1 (119) |

## Discussion

### Proportion of Women Who Have Ever Had Cervical Cancer Screening

The study found that majority of the participants (54.5%) had never been screened for cervical cancer or never performed a Pap smear test in their life time. This implies that majority women of reproductive age (18-49 years) in Runyenje's sub-county have never had a Pap smear test. These findings agree with WHO (2010) whereby, cervical cancer screening coverage among all women aged 18-69 years in Kenya stands at 3.2%.

### Knowledge of someone who has / had cancer of cervix and the 'view' about it

This study found that 66.3% of respondents reported having knowledge of someone who had/ has cancer of cervix. On view of the condition, majority of respondents (54%) mentioned fear the condition and also associated it with death. Their response was "….cancer signifies death". These findings are similar to those of Lee (2000) who found out in his study that fear / fatalism was one of the psychological barriers to early screening for cervical cancer. Another 52% of the respondents said that "Patients suffering from cancer of cervix are labeled as prostitutes". This perception was also observed by Thomas *et al.* 2005 in their study whereby, some cultures were seen to consider promiscuity as a cause of cervical cancer.

**Knowledge of cancer and its influence on cervical cancer screening**

Despite many media campaigns on cervical cancer in Kenya, cervical cancer still remains a reproductive health issue. This study reveals that a lot stills needs to be done in creation of awareness and increase of knowledge amongst the members of public about the condition. The question that remains unanswered is: Do these media campaigns ever reach those people who live in the rural and hard to reach areas of our country? In this regard, further studies need to be done to establish and/or evaluate effectiveness of media in cancer screening campaigns.

The study found that most of the women of reproductive age (18-49 years) in Runyenjes sub-county were not able to define cervical cancer. A study by (Rosser et al., 2015) found that the most common perceived patient barrier to cervical screening was lack of knowledge. This concurred with the findings of Fylan (1998) whereby, lack of awareness of the test's indications and benefits was among the reasons for women's non-participation in the cervical cancer screening Programmes.

In addition, this study found that most of the participants were not able to describe the meaning of the cervical cancer screening. These findings concur with those of Mukakalisa *et al.* (2003) and although some of the respondents were able to describe the procedure involved in cervical cancer screening, very few of them could identify the condition with HPV virus. However, amongst those who could accurately describe the procedure of cervical cancer screening were the 'married, those with higher educational level (Diploma and above) as well as those who were in some form of employment. Sensitizing women on the actual meaning of the concept would positively influence their decision to participate in cervical screening Programmes.

On the knowledge of signs and symptoms of cancer of cervix, a large proportion of women (ranging from 26% to 45%) did not know any of them. Majority of the women felt that the symptoms of cancer of the cervix include pain during sexual intercourse, bleeding after intercourse, persistent vaginal discharge with unpleasant smell and persistent lower back pain.

Low knowledge of the risk factors for cancer of cervix and its prevention measures was also observed. Majority of the participants indicated that the risk factors of the cancer of the cervix include lack of regular cervical (Pap smear) screening, STIs and HIV infection, Sexual promiscuity with multiple partners, weak immune system, family history and genetic factors and infection with HIV. These findings are contradict those of Ombech *et al.* (2012) whereby, there was no correlation between awareness of cervical cancer risk factors and practice of Pap smear testing.

However, majority of the participants had knowledge that cancer of the cervix was preventable. Prevention measures that came out strongly included routine screening, maintenance of one sexual partner, condom use and follow up in case of an abnormal pap smear test. These finding concur with Mukakalisa *et al.* (2014) argument that general knowledge about cancer of cervix and its preventive measures amongst women are very vital predictors about the decision to participate in the cervical screening interventions.

**Conclusions and Recommendations**

**Conclusion**

The study concludes that 54.5% (162) of the women of reproductive age in the study area had never been screened for cervical cancer. This was predominantly observed among women who had lower educational level, those who were married, divorced and those with less income/ unemployed. These are vulnerable populations and we cannot afford to ignore them. Results from this study also show that the highest proportion of respondents who had never done a Pap smear test were in the age-bracket of 20-38 years. These are among the country's most productive population and it is therefore to sensitize them on the important of taking care of their health and participating in cervical cancer screening programmes. This study also revealed that the widowed and the separated women attended screening services more often that the single women.

The study shows that there is low awareness and knowledge (ranging from 25% to 61%) about cancer of cervix, its signs and symptoms, its risk factors and methods of prevention among women of reproductive age in the study area. The study revealed a significant association between knowledge of cervical cancer and practice of cervical cancer screening.

**Recommendations**

1. Low knowledge about cervical cancer (51.5%) in the rural areas of Embu County is an impediment to utilization of cervical cancer screening services. The study therefore recommends that the Ministry of Health as well as other governmental and non governmental organizations focusing on reproductive should conduct campaigns to increase knowledge on cervical cancer.
2. Further research should be carried out in other counties in an effort to gain insight into the barriers of Pap smear tests in effort to get an insight into the most preferred ways of addressing the factors that are seen to hinder the uptake of cervical screening tests. This would help close the gap, therefore encouraging more women to take charge of their own health; hence actively participate in cervical screening tests.

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