Determinants Of Screening Patterns For Invasive Cervical Cancer Among Patients Attending Kenyatta National Hospital, Kenya

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ABSTRACT

Background: Early diagnosis and improved therapeutic interventions are the two-fold most acclaimed management options for cervical cancer. Screening patterns are different from developing countries, Kenya included where limited access to oncology screening facilities and stigma associated with cancer influence disease reporting and management. **Objective:** To examine the determinants of screening and diagnosis among cervical cancer patients attending Kenyatta National Hospital, the largest referral health facility in Kenya with radiotherapy treatment clinic. **Methods:** A cross-sectional study design among 320 patients randomly selected from Cancer Registry records and purposively selected hospital staff. A structured questionnaire was used to collect data. Secondary data was sourced from medical records. Chi-square tests were used for significance at $P<0.05$. **Results**: Lack of knowledge on cervical cancer (75.3%) was significantly associated with late diagnosis *($P=0.0023$)*. Preponderance (83.1%) had no knowledge on screening tests prior to diagnosis while only 16.9% were aware of Pap smear test. Education level was significantly associated with late diagnosis ($P<0.0001$). Health system factors; delayed referral by local health facilities, delayed diagnosis at KNH, long waiting patient list and conditions for accessing treatment compounded the problem. **Conclusion:** Routinely coordinated mechanism for delivering cervical cancer information should be infused into screening and reproductive health programmes.

Key Words: Social Determinants, Cancer screening, Cancer diagnosis, health care systems

1. INTRODUCTION

Cancer is on the rise in Africa exacerbated by rising HIV-associated malignancies and exposure to environmental carcinogens. The burden of cancer is expected to increase rapidly in the next few years, largely due to adoption of western life styles and nutrition transition and an increasing proportion of elderly people. According to the World Health Organization (WHO, 2006), 12.5% of all deaths worldwide are caused by cancer, more than from HIV/AIDS, TB and Malaria combined, yet at least one-third of all new cases of cancer every year can be prevented. In 2010, WHO reported that 70% of cancer-related deaths occur in the developing world with most of the patients being diagnosed late leading to the high mortality statistics.

Cervical cancer is ranked the third most common cancer in women globally, and the seventh overall. It is a major cause of death in developing countries where more than 85% of the global burden occur accounting for 13% of all female cancers (Ferlay, Shin, (2010). According to the International Agency for Research on Cancer, the incidence of cervical cancer in Africa is highest in eastern and southern Africa (30 – 40 per 100,000 females) (GLOBOCAN, 2010). The rest of sub-Saharan Africa has a lower incidence (20 – 30 per 100,000 females), and northern Africa has the lowest incidence at 12 per 100,000 females on average (Parkin, & Nambooze, (2010). In Uganda, cervical cancer is the most common in women with age standardized rates increasing at an

average of 3% a year, currently at 52.4 per 100,000 in 2002 -2006 (Parkin et al., 2010). These varying prevalence rates suggest that environmental and demographic characteristics have a bearing on cervical cancer prevalence.

According to GLOBOCAN (2014), Kenya has a population of 10.32 million women aged 15 years and older who are at risk of developing cervical cancer and every year, an estimated 2,354 women are diagnosed with the this cancer while about 1,676 die from the disease as shown on (Ttable 1)

Table1: Rates of cervical cancer in Kenya

Burden/ rates of cervical cancer in Kenya (estimates for 2012)	
Women at risk for cervical cancer (Female population aged >=15 yrs)	12.92M
Annual number of cervical cancer cases	4802
Annual number of cervical cancer deaths	2451
Crude incidence rates per 100,000 population and year	22.4
Age-standardized incidence rate per 100,000 population	40.1
Cumulative risk (%) Ages 0 – 74 years	4.4

Source: IARC GLOBOCAN, 2014

Diagnosis of Cervical Cancer often involves a series of tests. Pre-cancerous changes of the cervix may lead to cancer in some women. The process may take several years but can sometimes happen in less than a year. For most women, pre-cancerous cells remain unchanged and are self-limiting. Persistent pre-cancers can be treated, thus, effectively preventing cervical cancerand therefore early detection through screening is crucial. Women suspecting cervical cancer should report to health facilities early, receive prompt screening and appropriate diagnostic process so as to receive appropriate therapy before metastasis or complications occurs. Cervical cancer can be diagnosed through the following methods:

The Papanicolaou's Smears (*Pap Smear) screening test:* This is a simple test that can reveal cervical abnormalities long before they progress into cancer. Pap smear and treatment of precancerous lesions can reduce invasive cervical cancer by up to 90% (Alliance for Cervical Cancer Prevention. 2003).

Colposcopy Exam: This usually follows a positive finding from a Pap's smear screening test. A colposcopy is an in-office examination that allows the doctor to view the cervix more closely with a colposcope (a lighted instrument that magnifies the cervix).

Cervical Biopsy and Endocervical Curettage: This involves removing small amount of cervical tissue to be examined under a microscope. Depending on the findings during the colposcopy, a few areas of the cervix may be biopsied.

Cone Biopsy and Loop Electrosurgical Excision Procedure *(LEEP):* This is done both for diagnosis to remove larger tissue for histological examination and as treatment to remove the pre-cancerous tissue.

Visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI): These are other promising screening alternatives to the Pap smear. They require simple vinegar or iodine solutions and the eye of a trained health provider to spot abnormal tissue. Another diagnostic process involves testing women for the presence of HPV on their cervices.

Cervical cancer screening using Pap smear and other methods have significantly reduced the rates of cervical cancer in high and middle income countries but are still very poorly applied in Africa. Okonofua (2007) observes that reasons for the low acceptance of secondary prevention services for cervical cancer in Africa include the lack of awareness of cervical cancer and the role of screening, inappropriate health seeking behavior by women, poor organization of health services and low priority accorded to women's health by policymakers.

More importantly for this paper, cancer screening and diagnosis in Kenya is faced by a multiplex of problems including lack of necessary equipment for screening and managing the disease. This is despite that cervical cancer is largely preventable through routine screening tests such as Pap's smears, visual inspection with acetic acid (VIA), HPV-DNA tests and treatment of precancerous lesions (Heard, 2009). Although these preventive approaches have been noted to have reduced the burden of cervical cancer in developed countries (Sankaranarayanan et al., 2004), the disease remains an important public health problem in poor-resource settings. Inadequate coverage and quality of screening services have been largely blamed (Gakidou, Nordhagen & Obermeyer, 2008).

Although lack of facilities accounts for the larger portion of low screening and diagnosis of cancer in Kenya, other significant determinants may include social and environmental factors. There is need for continuous examination of these determinants to develop comprehensive frameworks policy formulation and practice to reduce mortality. The objective of this study was to establish the determinants of screening patterns for Invasive cervical cancer among patients attending Kenyatta National Hospital (KNH), Kenya.

2. METHODOLOGY

A cross-sectional study was conducted among 320 cervical cancer patients attending the Hospital's radiotherapy clinic and selected hospital staff. A researcher-administered structured questionnaire and patient's medical records were used to collect data. Both qualitative and quantitative data was gathered. Information extracted from patient's medical records included; type of cervical cancer, date of first visit to the clinic, stage at diagnosis and the treatment the patient had received since diagnosis. While ensuring anonymity, informed consent and confidentiality, a unique patient identification number was provided to each patient with the aim of capturing the reporting behavior and stage of cervical cancer. Ethical clearance to conduct the study was sought and granted from the KNH Ethics and Research Committee. The secondary data for the same patients interviewed were obtained from their personal medical files. This was for purposes of documenting morphology as per

laboratory test reports in the files, staging of the disease and dates of appointments. The variables of study were Demographic and socio-economic details, cultural factors; Fear of stigmatization, beliefs and practices and orientation to alternative medicine, personal factors such as; health seeking behavior, attitudes and perceptions, knowledge and awareness level, fear of diagnostic procedure, fear of confirmation of diagnosis and expectations of doctor/patient. Health system factors included; availability of diagnostic tests, promptness of referral, proximity to diagnostic centre, accessibility, duration of diagnostic test, cost of diagnosis, medical insurance, personnel training, attitude of staff towards patients.

Data analysis included examination of measures of central tendency and other descriptives. The Chi square test of significance was used for associations between factors of study. Since many factors were interrelated, adjusted odds ratio was used to adjust for known confounding factors. Logistic regression analysis was used to examine predictors associated with stage of diagnosis. . The dependent variable was created by recoding the four-stage diagnosis into binary variable coded as '1' = 'early diagnosis' and '2' = 'late diagnosis.' The independent variables comprised of three socio-demographic and economic variables (marital status, employment status, and educational level). These were employed as control variables for the effects of the knowledge-related factors. The other five independent knowledge-related variables were previous knowledge of cancer, knowledge of signs, knowledge of PAP smear, knowledge on screen type, and appointment waiting period. A P-value of <0.05 was considered significant at 95% Confidence Interval.

3. RESULTS AND DISCUSSION

3.1 RESPONDENTS BY TYPE OF CANCER

There were 2 main types of cervical cancers: squamous cell carcinoma and adenocarcinoma. Squamous Cell Carcinoma (SCC) Not Otherwise Specified (NOS) was the most common histological diagnosis accounting for 89.2% of the respondents while adenocarcinoma NOS accounted for only 1.9%. The results showed very few (0.9%) patients with squamous cell carcinoma *in situ.* The rest were SCC Keratenizing (5.1%), SCC large cell keratenizing (2.5%) and carcinoma anaplastic (0.6%). This confirms evidence from other studies (Nairobi Cancer Registry Report, 2006) that about 80% - 90% of cervical cancers are squamous cell carcinomas. Table 2 shows the morphological types of cervical cancer represented in this study.

Table 2: Morphological types of cervical cancer

Morphology type	Number (%)
Squamous Cell Carcinoma In Situ	3 (0.9%)
Squamous Cell Carcinoma NOS	280 (89.2%)
Carcinoma Anaplastic	2 (0.6%)
Squamous Cell Carcinoma Keratinising NOS	16 (5.1%)
Squamous Cell Carcinoma Large Cell Keratinising	8 (2.5%)
Adenocarcinoma NOS	6 (1.9%)

Total	320 (100.0%)

Source: Authors

Squamous Cell Carcinoma NOS type of cervical cancers most often begin where the exocervix joins the endocervix. Most of the other cervical cancers are adenocarcinomas while Cervical adenocarcinoma develops from the mucus-producing gland cells of the endocervix. Less commonly, cervical cancers have features of both squamous cell carcinomas and adenocarcinomas and are known as adenosquamous *carcinomas* or mixed carcinomas. Analysis of locations and progression from the medical reports of respondents showed that Squamous Cell Carcinomas were found to cover the surface of the exocervix in 91% of women diagnosed with this kind of cervical cancer.

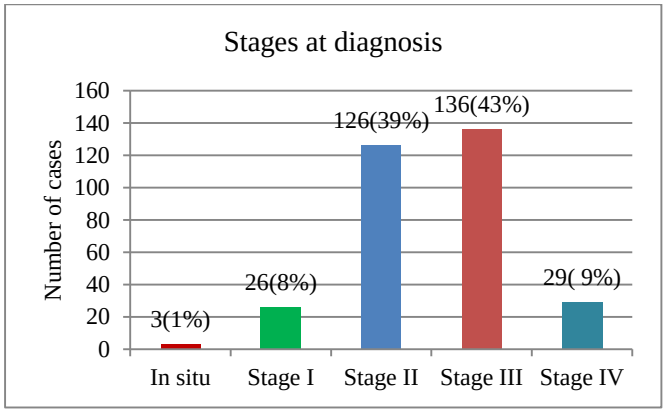
3.2 BASIS OF DIAGNOSIS

The change from cervical pre-cancer to cervical cancer usually takes several years, but it can happen in less than a year. For most women, pre-cancerous cells will go away without any treatment while in some others, pre-cancers turn into true (invasive) cancers. The study investigated the status of verification of invasion of cervical cancer among the studied women. About 98.4% cases were morphologically verified. Of these, 94% were confirmed through histology while 1.3% through cytology. There were 1.6% cases classified under clinical examination, indicated by the clinicians as "advanced disease" and so were grouped under stage IV. Interviews with hospital staff and medical officers established that the hospital referred all patients for laboratory investigations where necessary and hence the high number of histological confirmation. The fact that the study focused on cases with confirmed stage also explains the high number of confirmed diagnosis.

3.3 STAGE-AT-DIAGNOSIS OF CERVICAL CANCER FOR PATIENTS AT THE STUDY HOSPITAL

Cervical cancer is staged by clinicians mainly through the results of a patient's physical examination, which includes a complete pelvic (internal) examination of the cervix, uterus, and ovaries. Other procedures and tests are also performed to assess how far the cancer may have spread. The Pap's smear test was both diagnostic and a screening test at the study hospital and gave a confirmatory result of presence of malignancy and the morphological type. The clinicians after examining the patient, staged the cancer and classified it from the earliest stage (stage 0) (*carcinomain-situ*) to the advanced stage IV. (Figure 1).

Figure 1: Stages at diagnosis of cervical cancer among studied patients



Source: Authors

There were only 1% women diagnosed when the tumour was still localized at stage 0 (*carcinoma in-situ*) while 8.1% and 39.4% were diagnosed at stage I and II respectively. The three stages (0, I and II) have been grouped as early stage cancer. A significant number of women (43%) were diagnosed at stage III, while 9% were diagnosed at stage IV or clinically indicated as advanced disease. The two stages III and IV have been grouped as late stage disease. In this study, early stage cancers (48%) were slightly lower than those at the late stage cancers, (52.8%) The difference between early stage cancers (48%) and late stage cancers (52%) were not significant (P>0.05). Similar findings in categorizing early and late stage disease have been documented in another study on down-staging of cervical and breast cancer (Devi, Tang & Corbex, (2007). Early stages of the disease are associated with a favorable prognosis: five-year survival rates for stage I disease are higher than 90%. Women diagnosed with more advanced disease, however, experience a considerably worse prognosis and less than 10% survive stage IV disease (Parkin et al., 2010).

3.4 SYMPTOMS EXPERIENCE BY PARTICIPANTS

Though regular and systematic screening has been found to be the best method of detecting cervical cancer in early stages before they become malignant, it is hardly done in Kenya (Gatune and Nyamongo, 2005). At the time of this study, it was established that screening services were available in major hospitals at a fee higher than most women could afford. Only 0.6% of respondents were discovered with cervical cancer during routine screening while the rest were prompted by symptoms to seek treatment. These included; pain and bleeding in absence of sex (39.7%), pain and bleeding during sex (35.9%), regular fatigue and pain (12.2%) andaccidental diagnosis while being treated for other ailments (11.3%). These findings indicate that over 99% of cervical cancer diagnosis is symptom driven.

3.5 DURATION OF SYMPTOMS

Generally, cervical cancer has been described as a disease that brings forth some form of embarrassment to the patient (Gatune. and Nyamongo , 2005). Given its mode of presentation, women rarely disclose the symptoms

to their spouses and may take time to visit the health facility with the complaint (Gakidou, Nordhagen, Obermeyer , 2008). In this study, respondents were asked to indicate the duration they had endured the symptoms before visiting the hospital. Close to half (44.1%) of the respondents reported enduring symptoms for 12 to 24 months before seeking healthcare, 28.1% endured the symptoms for >24 months while 24.4% sought formal health care within 5 to 12 months. Only 3.4% went to hospital within the first 5 months of symptom presentation yet is paramount that cervical cancer be identified early for effective treatment. These findings point to varying determinants of screening patterns for cervical cancer indicating various barriers such as demographic, socio-economic and socio-cultural structures and experiences patients with this kind of cancer experience.

Studies have shown that by the time symptoms of cervical cancer are manifested, the cancer is likely to have advanced from localized stage to invade adjacent areas like the birth canal. Notably, some of the symptoms suggestive of cervical cancer are also common in other sexually transmitted diseases like *Chlamydia trachomatis* infection, which could be an avenue for delay in screening since health personnel are likely to prescribe medication and send patient home instead of referring for further investigations. According to Sankaranarayanan et.al (2008), women presenting with an inflamed cervix which may bleed on contact should be tested and for *Chlamydia trachomatis.*

3.6 HEALTH CARE ORGANIZATION FACTORS ASSOCIATED WITH LATE DIAGNOSIS

Health care organization factors that determine early or late cervical cancer diagnosis were also established. The following section draws mainly from key informant interviews with health care providers and from opinions expressed by patients on the structure of health facilities to diagnose and treat cervical cancer.

3.6.1 FACILITIES WHERE PATIENT FIRST SOUGHT HEALTH CARE SERVICES

The delay to diagnose cancer early leads to the disease progressing to late stage. This delay can occur when health facilities are unable to diagnose cancer on the first visit or refer the patient to a more equipped hospital. This study investigated the ability of health facility where patients first sought treatment when they experienced symptoms of cervical cancer. This was to understand the availability of services offered to cancer patients and their implications on early or late diagnosis. Most of the facilities where patients first sought medical attention may not have been sufficiently equipped to test or diagnose cervical cancer. Though KNH remains the only national hospital with the combination of equipment to make a clear diagnosis for this type of cancer, tests such as Pap smear are performed in most hospitals irrespective of their level. Patients are then referred to KNH after a confirmed diagnosis.

About 71%, 20%, 5% and 3% of the respondents sought help from the local district/provincial hospital, private clinic, near home, local dispendary and from herbalist respectively. Usually, before cases were referred to KNH, it is probable that a patient had visited the local dispensary, private and district hospital severally leading to

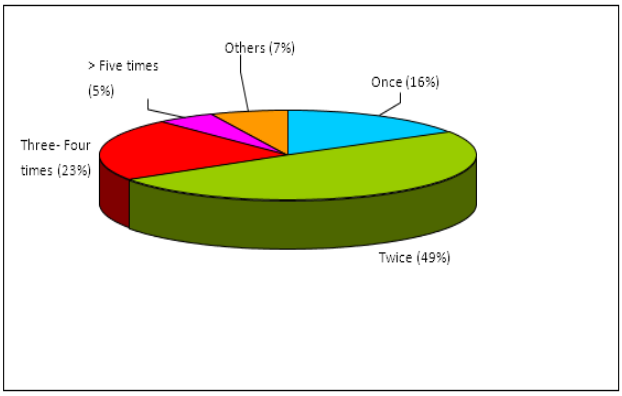
delayed detection of an illness at the referral hospital.. Most of such facilities lack the equipment or qualified personnel to detect cervical cancer yet they may not immediately refer patients to KNH further delaying the timely diagnosis of the disease. Thus, majority of the cervical cancer patients that visited KNH were referrals, explaining the possible reasons for the advancement of disease.

Herbalists and practitioners of alternative complementary medicine are also known to discourage utilization of mainstream health care further delaying the correct diagnosis of a patient. A study by Davis et.al (2006) on use of alternative complementary medicine in the Unites States showed that there was significant delay in cancer treatment associated with use of complementary medicine.

3.6.2 NUMBER OF VISITS MADE TO THE HEALTH FACILITIES BEFORE REFERRAL

To establish actual patterns of seeking help from a health facility before final diagnosis of cervical cancer, patients were asked to state the number of times they visited a medical centre before referral to KNH (Figure 2).

Figure 2: Number of times patient visited health facility before referral



Source: Authors

Results shows that more than three quarters of the patients still spend time visiting a facility that lacked the equipment or the personnel to detect a cervical cancer causing a delay in correct diagnosis. A study in Lagos showed that, delay by primary health care providers in referring cases of cervical cancer was found to be an important cause of late-stage disease presentation (Anorlu, Orakwue Oyeneyin, 2004). Anorlu et.al., (2004) reported a mean of 9.35±12.9 months for primary health care providers to diagnose and refer women with cervical cancer to a tertiary hospital for management . A review by Mitchell et al. (2008). showed that healthcare provider-delay related to initial misdiagnosis and insufficient examination by the practitioner, was the most common factor associated with delay in referral.

The challenges expressed by the patients in regard to health system caused delays in the diagnosis of cervical cancer were corroborated by the key informants drawn confirming that majority of the patients referred to KNH

presented when the disease was at advanced stages and when not much success could be achieved from treatment. Health care personnel within the cancer units and wards revealed that patients reported late for diagnosis due to lack of diagnostic facilities in the district hospitals (73.7%), lack of screening programs (52.6%) and poor referral systems in the district hospitals (36.8%).

3.6.3 WAITING PERIOD AT KNH BEFORE COMMENCEMENT OF TREATMENT

The study also sought if there were any further delay on diagnosis once patients were received and attended to at KNH. Given that this was the only national government hospital with radiotherapy equipment, it received many referrals from all over the country. The medical staff indicated that when patients visited the hospital whether or not by referral, they were first seen by the clinicians who then referred them to the laboratory for several tests.. If cancer was suspected, a specimen was taken for either cytology or histology and imaging (x-ray) tests depending on clinical assessment. Not all the patients however took up these tests on the first visit as some went back home to look for finances. The laboratory results took a period of 2-3 weeks and could be repeated up to three times depending on their clarity and consistence with reported symptoms, prolonging this period to more than a month. With the results out, cancer patients were referred to the radiotherapy unit to begin treatment and some sent to the wards and admitted for chemotherapy treatment.

Owing to the large number of patients and the limitation of the facility, scheduling of appointments was done for commencement of treatment according to stage of the cancer, severity of symptoms and on first come first treated basis with only 2% of respondents reporting to have been scheduled to begin treatment within two weeks after diagnosis while 23% were scheduled for treatment within one month while 40% and 35% of respondents waited up to two months and four months respectively to begin treatment with a statistically significant relationship ($P < 0.05$) between the appointment period and stage at cancer diagnosis (Table 3).

Table 3: Appointment period and stage at diagnosis of cancer

Appointment period	Early	Late	Total
	n (%)	n (%)	N (%)
One to Two weeks	3 (0.9)	5 (1.6)	8 (2.5)
Three weeks to One month	37 (11.6)	38 (11.9)	75 (23.4)
One month to Two months	74 (23.1)	53 (16.6)	127 (39.7)
Three months to Four months	41 (12.8)	69 (21.6)	110 (34.4)
Total	155 (48.4)	165 (51.6)	320 (100.0)
Fisher's Exact Test: Table Probability (P) 1.400E-05 (P=0.0115)			

Source: Authors

These findings imply that delay in diagnosis can also occur at KNH due to long appointment periods. The resources available for instance equipment, personnel are inadequate to cater promptly for all those seeking diagnostics and treatment services at the referral hospital.

Other factors that complicate diagnosis and treatment of cervical cancer are logistic arrangements that patients make. After reporting on the appointment date the patient was expected to pay for treatment (radiation therapy) and to find accommodation given that this is often an out-patient service. About 46% of respondents receiving treatment at KNH did not have family members or friends to accommodate them in the city.About 14% of study women reported to spend the nights on the hospital corridors for lack of funds for accommodation as the hospital did not consider their condition critical for inpatient admission. If chemotherapy treatment was recommended, the patient was admitted as this service was only to in-patients. , Before admission, the patient was required to purchase a combination of different prescribed drugs for several doses. These drugs were reportedly expensive with costs for one dose ranging from 100-150 and hence 23% of patients did not go back for this treatment. Hospital staff interviewed attested that cancer treatment was expensive and though highly subsided at the hospital, it was impractical for the hospital to meet every cost for all referred patients due to high demand and inadequate government funding.

3.7 ASSOCIATIONS BETWEEN PATIENTS' SOCIO-DEMOGRAPHIC FACTORS AND LATE DIAGNOSIS OF CERVICAL CANCER AT KNH

Respondent's age at diagnosis was not a significant determinant to early or late stage diagnosis (χ^2=0.285). The relationship residence (rural/ urban), marital status and religion and stage at diagnosis was not significant *(P*=.0.920).. This is similar to findings in the colorectal study which found little evidence that demographic or socio-economic status had an effect on patient delay (Mitchell et al 2008). Education level was significantly associated with stage at diagnosis (P<0.05) with directional measures (Gamma test) indicating more patients in late stage with lower education levels than those with higher level. There was no signifincat relationship between employment status and stage at diagnosis (P>0.05). Frequency of hospital visist was associated with stage at diagnosis (χ^2 = 0.027). Having insurance cover had an association with stage of disease (χ^2 = 0.014). Stigma and discrimination from family was significantly associated with stage at diagnosis (χ^2 = 0.0002).

3.8 MULTIVARIATE ANALYSES OF PREDICTORS OF LATE DIAGNOSES OF CERVICAL CANCER

Logistic regression analyses were used to examine associations between demographic and socio-economic factors and late diagnosis (Table 4).

Table 4: Logit Model for predictors of late diagnosis of cervical cancer

Variable	Parameter Estimates	Std. Error	Wald χ_2	DF	*p*-value	Odds Ratio	95 % CI	
Intercept	-2.222	1.363	2.655	1	0.103	-	-	-
Marital status	0.014	0.177	0.006	1	0.935	1.014	0.717	1.435
Employment status	-0.074	0.333	0.049	1	0.823	0.928	0.483	1.784
Education level	-0.540	0.198	7.454	1	0.006**	0.583	0.396	0.859
Previous Knowledge of Cancer	0.680	0.298	5.222	1	0.0223*	1.974	1.102	3.538
Knowledge of signs	0.081	0.112	0.527	1	0.4677	1.085	0.871	1.352
Heard about PAP Smear	1.074	0.385	7.772	1	0.0053**	2.926	1.376	6.226

Knowledge on screening	0.351	0.273	1.652	1	0.198	1.421	0.832	2.429
AppointmentPeriod	-0.073	0.179	0.168	1	0.682	0.929	0.654	1.320
			Chi-sq.	DF	*p*-value			
	Likelihood Ratio		30.1713	8	0.0002***			
	Wald		25.9449	8	0.0011**			
*p<.05, **p<.01, ***p<.001								

Source: Authors

Logistic regression model showed some significant predictors that explain reasons for late diagnosis of cervical cancer. Among the explanatory variables were three socio-economic and demographic variables which were employed as control variables and five knowledge aspects. Educational level, previous knowledge of cancer and previous knowledge on Pap smear test were statistically signifinant (P<0.05). A higher education attainment was associated with 0.58 lower odds of late diagnosis of cervical cancer. Having no previous knowledge of cancer was associated with 1.97 higher odds of late diagnosis while those respondents who had not heard about PAP smear had 2.93 lower odds of late diagnosis of cervical cancer. These results corroborate with findings from other studies that showed that high level of illiteracy among women is responsible for late diagnosis of cervical cancer (Ngoma et al, 2010; Gyenwali et.al 2013). As established from this and other previous studies, having no knowledge on cervical cancer screening indicate that one has lower chances of utilizing screening tests even when available, contributing to late diagnosis of cervical cancer.

4. CONCLUSIONS

The stage at diagnosis for a majority of the respondents was stage II and III and was mainly symptomatically driven with most patients having had the symptoms for between 12-24 months. The study notes that dynamics of testing, diagnosis and referral system were inefficient and contributed to the delay of in screening. Socio-demographic factors that related to late diagnosis of cervical cancer included level of education, cancer knowledge, number of hospital visits, stigma and discrimination.

The study recommends a need for a coordinated mechanism for delivering free cervical cancer information infused into reproductive and family health programmes and screening programmes be routinely mounted in all Level 4 and reproductive health facilities. The study recommends strengthening of health care and referral systems while addressing the challenges of accessibility and affordability of cervical cancer treatment for the country. Continuing health education for healthcare providers is also recommended.

Conflict of Interest

The authors declare no conflict of interest

Abbreviations

AIDS - Acquired Immune Deficiency Syndrome
CI - Confidence Interval

DNA	-	Deoxyribonucleic acid
FIGO	-	International Federation of Gynecology and Obstetrics
GPs	-	General Practitioners
HBV	-	Epstein Barr Virus
HIV	-	Human Immunodeficiency Virus
HPV	-	Human Papilloma Virus
IARC	-	International Agency for Research on Cancer
KNBS	-	Kenya National Bureau of Statistics
KNDHS	-	Kenya National Demographic Health Survey
KNH	-	Kenyatta National Hospital
LEEP	-	Loop Electrosurgical Excision Procedure
NCR	-	Nairobi Cancer Registry
PAP smear	-	Papanicolaou smear
TB	-	Tuberculosis
VIA	-	Visual Inspection with Acetic Acid
VILI	-	Visual Inspection with Lugol's Iodine
WHO	-	World Health Organization

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