FACTORS INFLUENCING EARLY DIAGNOSIS OF CERVICAL CANCER

A CROS-SECTIONAL COMPARATIVE STUDY

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF A DEGREE IN MASTERS OF MEDICINE IN OBSTETRICS AND GYNAECOLOGY

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List of abbreviations

AIDS: Acquired immunodeficiency syndrome

CHS: College of health sciences

CIN: Carcinoma intraepithelial neoplasm

CIS: Carcinoma in situ

Dept: Department

E.T.C: Etcetera

EUA: Examination under anesthesia

FIGO: International Federation of Gynecologic organization

GOPC: Gynecologic outpatient clinic

Gynae: Gynecology

HPV: Human papilloma virus

HSV: Herpes simplex virus

HSIL: High grade squamous intraepithelial lesion

HIV: Human immunodeficiency virus

KNH: Kenyatta national hospital

LEEP: Loop excisional electrosurgical procedure

LLETZ: Large loop excision of transformation zone

LSIL: Low grade squamous intraepithelial lesion

M.MED: Masters in Medicine

OBS/GYN: Obstetrics and gynecology

QOL: Quality of life

SHO: Senior house officer

STI: Sexually transmitted infections

UON: University of Nairobi

VS. : Versus

WHO: World health organization

Acknowledgements

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Dedication

This book is dedicated to my family; my dad and mom, Mr. and Mrs. Muchena. My wife Leah and children Isaac and David. My sisters Eunice and Gladys and my late brother and Sister Wilfred and Christine for their inspiration throughout my medical career.

Declaration

This is to certify that the dissertation herein is my original work and no other similar study has been done in the same institution.

Signature:…….

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CERTIFICATE OF AUTHENTICITY

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FACTORS INFLUENCING EARLY DIAGNOSIS OF CERVICAL CANCER

ABSTRACT

Background: Cervical cancer is the second most commonly diagnosed cancer in the world after breast cancer. It is the most common genital cancer in Kenya and causes most deaths of gynecological cancers. Most of patients at KNH present with late stage clinical disease. HPV is a causative agent with many other risk factors. Early diagnosis is possible using various methods, because cervix is an easily accessible organ. In developed countries, population based screening has reduced morbidity and mortality due to cervical cancer and increased the rate of early diagnosis. Not so for third world countries. Despite late presentation, some women present early with pre-invasive lesions.

Objective: To determine the factors that influence early diagnosis of cervical cancer

Design: A cross-sectional, comparative study.

Setting: Kenyatta National Hospital, Colposcopy clinic for early diagnosis subjects and Radiotherapy clinic for subjects with advanced cervical cancer.

Method: Two groups of women were sampled. The first group was those women presenting with dysplastic lesions, while the second group was those with late advanced cervical cancer.

Data management: Raw data was entered in a computer. Univariate and multivariate Statistical analysis using appropriate tests and logistic regression analysis was done, to test the significance of dependent and independent characteristics.

Results: Early diagnosis was associated with higher social economic status than late diagnosis as in 61.9% and 26.3% respectively, were either in business or were professionals (p=0.02). Those with early diagnosis were more likely to have a higher education than those with late diagnosis (55.3% and 32.9% respectively, P‹0.001). Visiting a gynecologist in the previous 5 years was commonly associated with early diagnosis (39.5%) compared to 11.8% of those who had late diagnosis (p‹0.001). Those with early diagnosis were also more likely to have visited a gynecologist more frequently compared to the ones with late diagnosis (76.7% and 11.1% respectively, p=0.004). There was a higher level of awareness on cervical cancer among those with early diagnosis (36.8%) than the ones with late diagnosis (7.9%), p‹0.001. For many women, despite being aware of cervical cancer, fear of screening outcome was reported as a major reason for not screening for cervical cancer (42.9% and 39% with early and late diagnosis respectively, p=0.9). Women of higher social economic status were more likely to source their reproductive health services from private health facilities (38.6%) compared to 7.7% of those with late diagnosis (p‹0.001).There was high perception of lack of community social support by both groups of women with either early or late diagnosis(67.1% and 89.5% respectively, p=0.002.

Conclusion: It is concluded that higher education, exposure to knowledge, higher social economic status, previous visit to a gynecologist, and good community social support are associated with early diagnosis of cervical cancer.

Recommendations: It is recommended that economic empowerment to women, basic education on cervical cancer, as well as improvement of public health care systems will improve on early diagnosis of cervical cancer.

1.0. INTRODUCTION

Cancer of cervix has for long been recognized as a common disease. In 1842 Italian investigators found that cancer of cervix was commoner among many women but not amongst nuns.[1] It is the second most frequently diagnosed malignancy in women worldwide after cancer of breast.[2] In the year 2000, over 470 000 new cases and 233,000 deaths worldwide were estimated.[2] In Kenya as in other most developing countries, cervical cancer is the most common female cancer and is often diagnosed in late stages.[3] In 1978, 60% of patients at Kenyatta National Hospital (KNH) with cervical cancer were aged 40-49years, 8.5% <29 years, 31.5%>50 years.[3] However, the true population incidence or prevalence in Kenya of cervical neoplasm is not known.[3]

Most of the pre-invasive lesions are diagnosed in younger women. Ralph et al[4] in a population based observation cohort study, found annual incidence of 8.1/1000 for Cervical intraepithelial neoplasia (C.I.N) II and III amongst 25-29 years age group, which was the highest in a population of 150,052, with an CIN overall incidence of 2.7/1000.

Accessibility of the uterine cervix makes it possible for prevention of cervical cancer through Screening. Yet, this has had little impact in reducing the incidence of late stage cancer in the developing countries. On the other hand, well organized population based screening programmes, through government initiatives, have led to reduction of both incidence and mortality due to cancer of cervix in developed countries.[5] The screening programmes in the third world countries have largely not been successful in reducing the incidences and mortality partly because little resources are allocated in terms of personnel and finances, and there is generally a low political will.[6]

The World Health Organization (WHO) has recommended once in a life time screening of all women between 35 and 40 years of age in a low resource settings, which at long run is cost effective.[7] For patients presenting in an advanced cervical cancer state, an opportunity for early diagnosis has already been lost. The effects of this is increasing disease burden, high cancer related morbidity and mortality which is already being experienced with over 80% of world cases of late stage cervical cancer incidences occurring in developing countries.[6] In addition, the quality of life (QOL) of late stage cervical cancer survivors is poor compared with the general population, with the definitive treatment option reduced to radiotherapy alone.[8]

Previous studies conducted in the department of Obs/Gynae, University of Nairobi, and elsewhere in Africa, concerning early and late cervical cancer detection have however, not addressed on the gap analysis between patients admitted for conservative treatment during early diagnosis and those for palliative therapy.[9 - 12] It is this hiatus in knowledge that this study seeks to understand.

2.0. LITERATURE REVIEW

The uterine cervix is readily accessible, thus makes it easier to perform screening procedures like Pap smear. Yet, only a few women present for screening globally.[13]

A number of important epidemiological risk factors have been identified as contributing to the development of carcinoma intraepithelial neoplasia (CIN) and invasive cervical cancer. Many studies have indicated a causal relation between genital human papilloma virus (HPV) infections and cervical cancer in almost 100% of all cervical cancers. The progression of HPV infection to invasive cervical cancer takes long time (> 25 years).Technically; this slow pace of progression provides a window of opportunity for early diagnosis. [14, 15, 16]

In a population based case control study, Slattery, et al, found that personal cigarette smoking increase the risk of cervical cancer.[17] The mechanism is not clear but chemical substances like tar may either enhance HPV infectivity or are direct causes.[1] Advising women to cease smoking may reduce this risk and be one modality of cervical cancer prevention. In addition, offering early screening to smokers may detect early lesions.

In HIV infected individuals, HPV infection is more common and the progress from CIN to advanced cervical cancer is faster. They therefore need more frequent screening than the general population.[18, 19] Early sexual debut, multiple sexual partners, and sexually transmitted infections like HPV type 2 have also been associated with cervical cancer. As a result of this, STI'S control can be offered as a modality of cervical cancer prevention.[1,20, 21]

Early lesions are detected when actively sought for. Bethesda system (2001) classifies cytologic abnormalities of premalignant lesions into various successive classes, which take long durations to progress. In fact, most of them regress. These lesions can be easily prevented or their progression halted via simple techniques like repeated pap smears, LEEP, or ablation techniques like Cryotherapy when indicated.[16, 22]

Cytological screening often in form of Pap smear is the gold standard for cervical cancer screening with colposcopy done if indicated.[16] Though procedures like LEEP are expensive, other less expensive procedures like cone biopsies can be offered in resource poor settings. The overall cost and morbidity lowers compared to treatment of advanced cervical cancer.[16]

Visual inspection with acetic acid (VIAA) and Visual inspection with lugols iodine (VILI) are other screening modalities. They are cheap and good for screening especially in resource poor settings.[16, 23] HPV testing is an alternative but more expensive hence less frequently used in developing countries.[24]

On the other hand, advanced cervical cancer present with late symptoms and definitive diagnosis is made after EUA and biopsy, after which the management is mainly reduced to radiotherapy with poor prognosis and QOL.[25,26]

Previous studies both in developed and developing countries have described various factors that determine whether screening for cervical cancer is done or not. For instance, low formal education, poor exposure to knowledge on cervical cancer and lack of

information on cervical cancer screening have been associated with low screening uptake.[27,28,29,30]

Women of low social economic status tend to present late with advanced cervical cancer compared to those of high social economic status. This may explain the disparity in cervical cancer screening between developed and developing world.[28,31]

Regular cervical cancer screening and visits to a gynecologist have also been associated with early diagnosis of cervical cancer.[30] However, lack of political good will in developing countries have led to poor public health financing hence poor access to reproductive health services and low cervical cancer screening levels, compared to developed countries.[6,27]

Cultural barriers- myths and beliefs have led to fear of screening not only in the developing but also in developed countries.[30,31,32] This has resulted to poor community social support hence late cervical cancer diagnosis.[31]

This, therefore, necessitates the need to determine the factors that influence some women to seek for early diagnosis of cervical cancer, while others present late in a resource poor set up like KNH.

3.0. RATIONALE

Advanced cervical Cancer is a great burden at KNH. Since a great majority of these patients are referrals from all over Kenya, this is therefore, a direct reflection of the magnitude of the disease burden in the country. The advent of HIV and AIDS has led to an increase of disease burden as more and more of infected women are diagnosed with the clinical disease at earlier ages than before, due to faster progression in the infected women. In addition to high morbidity and poor quality of life for the survivors, it is the leading cause of cancer related deaths in Kenya.

The accessibility of the uterine cervix makes it easier to control cervical cancer by use of screening methods that enable early preclinical diagnosis. This opportunity has not been adequately exploited in the third world countries, yet, it has proved effective in the developed world, leading to a reduction of morbidity and mortality due to cervical cancer.

This raises the question as to why, despite availability of screening centers, women fail to seek for cervical cancer screening services. There is a need, therefore, to determine the factors that could influence some women to seek for early diagnosis while others await clinical disease- which is often too late. Consequently, this would enable recommendations of measures that would enhance early diagnosis of cervical cancer, and early treatment. This would in turn reduce cervical cancer related morbidity and mortality, and the associated titanic costs of palliative treatment, through averting development of invasive cervical cancer.

4.0. Research Question

What factors influence some women to seek for early diagnosis of cervical Cancer, while others do not?

4.1. Hypothesis

4.1.1. Null hypothesis

There is no difference in characteristics of women who seek for early diagnosis of preclinical cervical cancer when compared to women who present with advanced cervical cancer.

4.1.2. Alternative hypothesis

There is a difference in characteristics of women who seek for early diagnosis of preclinical cervical cancer when compared to women who present with advanced cervical cancer.

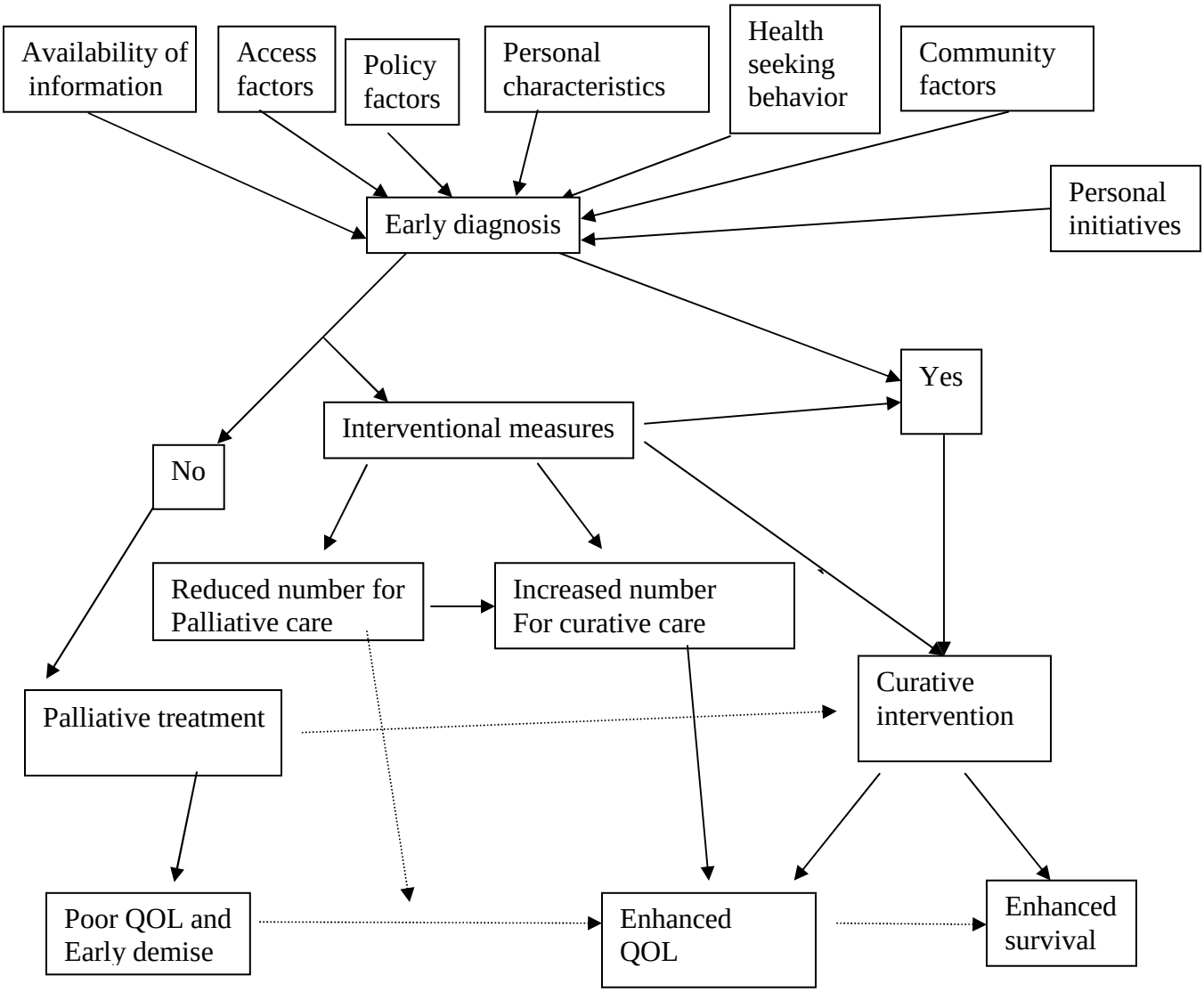
4.2.0. Conceptual frame work

4.2.1. Narrative

Health seeking behavior is the main issue in prevention of advanced invasive cancer. Access to services is enhanced through utilization of other health contact opportunities- what would be otherwise missed opportunities. Knowledge, personal characteristics, policies in relation to health, community factors, personal initiative and access to services may be some of these reasons that influence whether or not screening for cervical cancer is done.

The outcome of early diagnosis is early intervention with enhanced survival and better QOL. The outcome of failure to seek early diagnosis of cervical cancer is palliative treatment with resultant poor QOL and early demise. Identification of these factors is expected to pave ways of reducing the burden of palliative care on one hand while increasing early diagnosis, longevity of life and good QOL on the other.

4.2.2. Diagrammati



5.0. OBJECTIVES

5.1. Main Objective

To determine the factors that influence early diagnosis of cervical cancer.

5.2. Specific Objectives

(1) To determine the influence of social demographic characteristics on cervical cancer screening.

(2) To determine the influence of exposure to knowledge and the health seeking behavior on cervical cancer screening.

(3) To determine the influence of health service delivery systems and personal initiatives on cervical cancer screening.

(4) To determine the influence of community social support on early cervical cancer diagnosis.

6.0. METHODOLOGY

6.1. Study Design

This was a cross-sectional, comparative study. It sought to compare women who have abnormal pap smears with those coming for radiotherapy with advanced cervical cancer. It was designed to elucidate factors that influence their health seeking behavior. In identifying the factors that influence the former to take measures that enable early diagnosis, the study design provided possibilities of coming up with recommendations on objective interventional measures in the immediate period and long term.

6.2. Study Site

The study was conducted at Kenyatta National Hospital. This is a National referral Hospital, located in Nairobi city. It offers both preventative and curative services for a variety of illnesses, to patients from all over Kenya. It has a bed capacity of 2000.The Colposcopy clinic caters for patients with cervical dysplasia. It is conducted every Thursday and Friday. An average of 15 to 30 patients is attended to every week, of which 4 to 6 undergo colposcopy or LEEP/LETZ. This is done for those with CIN II, III/CIS and HIV positives with low grade lesions (LSIL/CIN I). Those with lesions not amenable to LEEP are sent for surgical management which ranges from extended hysterectomy for CIN III/CIS and stage 1A, to Warthem's hysterectomy for stage 1B to 2A.This is done after admission to elective gynecology ward. If the cytology is normal, they are advised to repeat pap smears after an appropriate duration, usually 1 year which may be shorter for HIV positive individuals. The catchments area is KNH and referrals from all over Kenya.

Pap smears are also done at the casualty and GOPC. Thus, it (colposcopy clinic) offers a suitable site with a representative population for recruiting a study sample.

By virtue of its status, the Radiotherapy clinic caters for referrals all over Kenya of those with cancer, including advanced cervical cancer for palliative radiotherapy. New cancer patients are attended to every Monday and Tuesdays, while follow up is on Wednesdays and Thursdays. Between 10 and 15 new cervical cancer patients are attended to every Monday and Tuesday, with Radio-marking and assimilation done any day as necessary. A huge number of patients are attended to every day of the week. After radiotherapy, they are then referred to the hospice for palliative care. Thus, radiotherapy clinic by virtue of receiving patients from all over the country offers suitable site to recruit a representative comparative sample.

6.3 Study population

The study population consisted of women with abnormal pap smears who had been recommended for colposcopy, or had undergone colposcopy irrespective of the outcome of colposcopy results. The other group was women with advanced cervical cancer who had been recommended for radiotherapy or already undergoing radiotherapy. The choice of these two categories of women as the study population was that the intention had been defined- which was the intervention that influenced the outcome of the two categories of these patients. The gap analysis on factors that influence this difference between these two groups in both extreme ends will aid in coming up with important measures that can be used in intervention strategies.

6.4. Study sample size

The Fisher's formula below was used to calculate the desired sample size;

$$n = \frac{z^2_{1-\alpha/2} P(1-P)}{D^2}$$

Where; ***n*** = required sample size, ***P*** = prevalence of cervical cancer. In this study, we used estimate of 50%. ***D*** = Degree of precision or a tolerance error margin or width of the confidence interval (a measure of precision of the estimate which ranges from 1% - 20%). ***Z*** = Standard normal deviation at 95% C.I. For a 95%CI, ***Z*** = 1.96.Using this information in the sample size formulae above, we estimated that, the following sample size was necessary to achieve the required sufficient precision for the assessment of factors influencing early diagnosis of cervical cancer.

Using **D** =0.08% $N = \frac{(1.96)^2 (0.05) (0.05)}{(0.08)^2} = 150$

We used a sample of 152 to cater for any non-responses and to increase power. However, there were no non-responders. Therefore, 76 women were from colposcopy clinic and the next 76 from radiotherapy Clinic, in a ratio of 1:1.

6.5. Study instruments

The study instrument was a structured questionnaire which focused on the following areas:

6.5.1 Social demographic characteristics

This included the age, marital status, parity, Residence, occupation, education level, and religion.

6.5.2 Level of knowledge exposure and health seeking behavior

This focused on the number of visits to a gynecologist in the previous 5 years, if at all.

Awareness on cervical cancer causes, how it can be prevented, and where such information was sourced from. If ever had a pap smear and if so how many times, starting from what age. How long ago was the last pap smear done, Any knowledge on availability of cervical cancer vaccine and if knowledgeable, where the information was gotten from.

6.5.3 Health service delivery systems and personal initiative

This focused on problems faced when sourcing for screening or treatment services, source of advice for screening/treatment services, where reproductive health services are sourced from, and reasons why women don't seek for screening services.

6.5.4. Community social support

This enquired on who supplies finances for screening/ treatment services, whether one felt adequately socially supported by the community and the overall feeling on what to be done to improve screening services provision.

The same questionnaire was used for both populations.

6.6.0. Data collection

Recruitment was done by the Principal investigator and an assistant, a clinical officer trained on patient recruitment, and administration of the questionnaire. All questions in the questionnaire were jointly studied by the interviewers and roles play done, thus coming up with a uniform way of framing questions and extracting information from respondents for standardization purposes.

For both study and comparative groups, double entry was prevented by directly questioning the patient, serializing the data entry forms, using numbers 001C, 002C, 003C…..etc for early diagnosis sample. 001R, 002R, 003R……..etc for late diagnosis sample. After data collection, files and other supporting documents were labeled at the far upper right hand corner with C for early diagnosis sample and R for late diagnosis sample using a pen. To ensure further quality control, questionnaires were filled immediately by the same interviewer, giving the respondent adequate time to understand questions and offer clarifications where necessary. Later, the principal investigator perused the questionnaires to ensure maximum accuracy. Pre-testing was done using 10 respondents from each clinic, and corrections and minor changes made appropriately before undertaking the main study.

6.6.1 Subjects for early diagnosis

All women in colposcopy clinic, who met the inclusion criteria, were included in the study. The diagnosis was obtained from the respondent's files or any accompanying document. After a respondent had been identified, she was ushered into a private room before or after receiving the services she had come seeking depending on which was more convenient. This was after obtaining an informed verbal and written consent. Each question was read to the subject and appropriate answer sought. The questionnaires were then perused to seek for any entry errors, and appropriately marked to avoid double entry. Once the interview was over, the respondent was thanked and allowed to leave. The next available subject was then recruited if she met the inclusion criteria.

6.6.2 Subjects for late diagnosis

The sample included those women with advanced lesions undergoing radiotherapy, in the radiotherapy clinic, who met inclusion criteria. The suitability of the participant to be included in the study was assessed after perusing the files to ascertain the diagnosis and the cancer stage after which, the patient was ushered into private room and informed consent obtained. Interviews were done sequentially, with the next available patient considered for an interview, after an informed consent. The same questionnaire administered to study subjects was used. Each question was read to the respondent and if any difficult encountered clarification was sought from accompanying relative. This was after obtaining more informed consent. The file was then appropriately marked to avoid double entry.

6.7. Inclusion criteria

In both populations, informed consent was obtained before inclusion to the study. These subjects for early diagnosis included those women with cervical dysplastic lesions. They included Mild, moderate and severe dysplasia, LSIL, HSIL, CIN I, II and III/CIS. Those with stage 1A cancer and with no symptoms suggesting advanced disease were included.

The subjects for late diagnosis were those undergoing radiotherapy for late stages (stages 2b and above) cervical cancer. The stage of the tumour was checked from the files and other patient's documents and if not documented, the investigator used his discretion to include the patient if as per the symptoms, it pointed to a clinically advanced disease. The patients in stage 1B to 2A were included in this group only if they had symptoms suggestive of advanced disease. Those for emergency radiotherapy were included if it

was suggestive or confirmed cervical cancer. Those with recurrent disease were included irrespective of the stage at previous diagnosis.

6.8. Exclusion criteria

For both early and late stage presenting patients, those who declined to give consent after getting information about the study were to be excluded, though none declined. For those presenting for early diagnosis, all women without cervical dysplasia were excluded, as were the women with cancer other than that of cervix in the late stage presenting population. Post operative patient coming for vaginal vault pap smear or colposcopy were excluded, since the previous presentation was presumed to be late. In the advanced cancer category, if she had ill-defined diagnosis (vague symptoms, no histology confirmation and not staged), she was excluded unless she had signs suggestive of cervical cancer on examination or from investigations like CT scan. No woman was too sick to be interviewed since most of very sick women had a relative accompanying them.

6.9. Study limitations

- Technical issues like missing information from the files and other documents.
- Limitation of memory (recall of exposure).
- Very sick patients were difficult to interview.

6.9.1. Mechanisms to minimize the limitations

- Information was primarily collected verbally. Attempts were made to obtain as much information as possible from the informant and other relatives where necessary, but with consent.
- All efforts were made to assist the respondent recall any necessary information.

- Efforts were made to include very sick patients by involving any present relative after the patient's consent.

7.0 Data management

The collected data was entered into MS Access data base and cleaned for errors and inconsistent answers. All the data analyses was done using STATA v.10 (**Stata** Corp; College Station, TX). Socio-demographic characteristics of the study participants were summarized and presented in tables. Depending on the type of a variable, appropriate descriptive statistics; means and SD of normally distributed continuous factors, frequency counts and relative frequencies of categorical factors were calculated for women presenting with early diagnosis and those presenting with delayed diagnosis and compared with the t-test or (Wilcoxon rank sum test where necessary) for continuous factors and chi-square testing for categorical factors. Analyses of the association of delayed diagnosis and other covariates of interest such as demographics were assessed using logistic model for the odds of delayed (or early diagnosis) of cervical cancer. Given the observation nature of the study, a multiple logistic regression was fitted to control for any potential confounding effects by any lurking variables (variables that influence the relationship between diagnosis and other variables). As a measure of relative risk for delayed (early) diagnosis, odds ratios (ORs) and their 95% confidence intervals (CIs) computed from a logistic regression model were presented in table XX. For all the analyses, two-sided tests were used together with the 5% level of significance, with p-values of <0.05 being considered to be significant.

7.1. Ethical consideration

Informed consent was sought from all participants, with careful explanation on benefits of the study. No penalties for declining or financial incentives were offered for cooperating. Confidentiality was maintained, and no individual name was appearing on the questionnaire. Interviews were conducted in a closed private room or an area with maximum privacy. Permission was sought from the Research and Ethical committee of the hospital to conduct this study. There were no important ethical issues encountered during this study.

7.2. Organogram

	Month									
Activity	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**
Submit the proposal	⟺									
Presentation of the proposal to the dept.		⟺								
Approval by the dept.			⟺							
Approval by ethics committee				⟺						
Training of data collector and pretesting						⟺				
Data collection							⟺			
Data analysis								⟺		
Presentation of results to the dept.									⟺	
Submitting of final thesis document										⟺

8.0 RESULTS

The study population consisted of 76 subjects from colposcopy clinic and an equal number from Radiotherapy clinic. This formed the basis of which this study was conducted, results arrived at, and analysis done.

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8.1. Social demographic characteristics of the study populations

Table 1 shows that 26.3% of subjects with early diagnosis were 25-34 years old compared to only 7.9% with late diagnosis. The modal age group was 35-44 (47.4%) with early diagnosis compared to >45 years (55.2%) with late diagnosis. 73.7% with early diagnosis were aged 25-44 years while 92% with late diagnosis were 35 and above years. These differences were statistically significant ($p < 0.02$).

On marital status, majorities in both groups were married (67.1% in early diagnosis and 69.7% in late diagnosis respectively). These differences were not statistically significant ($p = 0.14$).

On parity, 88.2% with early diagnosis had parity of 0 to 4 compared with 51.3% with late diagnosis. Only 11.8% with early diagnosis had a parity of 4 and above compared to 48.7% of those with late diagnosis. These findings were statistically significant ($p < 0.001$). 23.7% with early diagnosis were either unemployed or domestic servants compared to 42.6% with late diagnosis. Most with early diagnosis (61.9%) were either business ladies or professionals compared to 26.3% with late diagnosis. This was statistically significant ($p < 0.002$).

Concerning education, 2.6% with early diagnosis and 23.7% with late diagnosis had no education. An almost equal number from both groups had primary school education (42.1% from early and 42.4% from late diagnosis groups respectively). 55.3% with early diagnosis and 32.9% with late diagnosis had education above secondary school. These differences were statistically significant ($p<0.001$).

For the religion, there were 32.9% Catholics from early diagnosis and (36.8%) from late diagnosis groups. Protestants were 59.2% and 63.2% from early and late diagnosis respectively. Religion differences did not have any statistically significant influence ($P= 0.888$).

Table 1: Social demographic characteristics of study population by time of diagnosis

Characteristic	Early diagnosis (N=76)		Late diagnosis (N=76)		OR (95% CI)	p=value
	No.	%	No.	%		
Age (in Years)						
< 25	6	7.9	-		-	-
25 - 34	20	26.3	6	7.9	ref.	-
35 - 44	36	47.4	28	36.8	2.6 (0.8 - 8.4)	0.068
45+	14	18.4	42	55.2	4.2 (1.1 - 17.2)	**0.017**
Marital Status						
Married	51	67.1	53	69.7	ref.	-
Single	15	19.7	3	3.9	0.2 (0.0 - 0.8)	0.014
Divorced	4	5.3	5	6.6	1.2 (0.3 - 5.7)	1
Widowed	6	7.9	15	19.7	2.4 (0.8 - 7.6)	0.139
Parity						
Zero	5	6.6	-		-	-
1	7	9.2	1	1.3	0.2 (0.1 - 1.8)	0.147
4-Feb	55	72.4	38	50.0	ref.	-
4+	9	11.8	37	48.7	6.0 (2.4 - 15.1)	**<0.001**
Occupation						
Unemployed	10	13.2	20	26.3	ref.	-
Domestic	8	10.5	20	26.3	1.3 (0.4 - 4.4)	0.914
Business	36	47.4	16	21.1	0.2 (0.1 - 0.6)	**0.002**
Professional	11	14.5	6	7.9	0.3 (0.1 - 1.1)	**0.039**
Other	11	14.5	14	18.4	0.6 (0.2 -2 .2)	0.422
Education						
None	2	2.6	18	23.7	ref.	
Primary	32	42.1	33	42.4	0.1 (0.0 - 0.6)	***0.001***
Secondary	32	42.1	21	27.6	0.1 (0.0 - 0.4)	***<0.001***
Post Secondary	10	13.2	4	5.3	0.04 (0.0 - 0.4)	***<0.001***
Religion						
Catholic	25	32.9	28	36.8	ref.	-
Protestants	45	59.2	48	63.2	0.95 (0.5 - 2.0)	0.888

Table 2. Multiple Logistic Regression analysis of social demographic characteristics of the study population

Characteristic	Regression Parameter	Standard Error of mean	P-Value	ODDs
Intercept	20.8	1.7	0.000	
Age in years	0.0	0.0	0.105	2.6
Parity	-0.3	0.1	***0.020***	2.1
Marital Status				1.0
Married	0.1	0.7	0.870	3.1
Single	0.6	1.0	0.505	6.8
Divorced/Separated	-0.1	1.0	0.904	2.4
Widowed	ref	. .		
Occupation				1.0
Unemployed	-0.4	0.7	0.540	1.9
Domestic Servant	-1.4	0.7	0.054	1.3
Business person	0.3	0.6	0.678	3.6
Professional	-0.2	0.8	0.846	2.3
Other	ref	. .		
Education				1.0
None	-0.2	1.4	0.858	2.2
Primary	-0.4	0.9	0.696	2.0
Secondary	-0.4	0.9	0.667	2.0
Post Secondary	ref	. .		
Religion				1.0
Catholic	-17.3	0.4	***0.000***	1.0
Protestants	-17.3	0.0 .		1.0
Muslim	0.7	4277.1	1.000	7.8
None	ref	. .		

Table 2 shows that when the social demographic characteristics were subjected to multiple regression analysis, only parity and Catholic religion were significant to explain the differences. Most of other factors were dependent on each other.

8.2. Exposure to knowledge and health seeking behavior

Table 3. Exposure to knowledge for the study populations by time of diagnosis

	Early diagnosis N=76		Late diagnosis N=76		OR (95% CI)	p=value
Knowledge exposed to	**No.**	**%**	**No.**	**%**		
Causes of Cervical Cancer	**N=76**		**N=76**			
Yes	28	36.8	6	7.9	6.8 (2.6 – 17.7)	**<0.001**
No	48	63.2	70	92.1	-	-
Specific causes	**N=28**		**N=6**			
HPV	6	21.4	1	16.7	Ref.	-
Immunosuppression	4	14.3	2	33.3	3.0 (0.1 – 123.9)	0.559
Smoking	-		-		-	-
Oral Contraceptives	1	3.6	1	16.7	6. 0 (-)	0.417
Early Sex Debut	-		-		-	-
Multiple Partners	16	57.1	2	33.3	0.8 (0.0 – 25.4)	1
STDs	1	3.6	-		-	-
Prevention modalities	**N=28**		**N=6**			
Vaccination	2	7.1	-		-	-
Screening	10	37.0	3	50	Ref	-
Use of Condoms	5	18.5	-		-	-
Avoid promiscuity	9	33.3	2	33.3	2.0 (0.1- 40.1)	0.09
Others	2	7.1	1	16.7	0.6 (0.3- 21.5)	1

Table 3 shows that 36.8% with early diagnosis compared to only 7.9% with late diagnosis knew what causes cervical cancer. These findings were statistically significant

(p<0.001).Of those who reported knowing the causes of cervical cancer, 57.1% with early diagnosis and 33.3% with late diagnosis reported multiple sexual partners as the cause. Other responses were; HPV (21.4% and 16.7% with early and late diagnosis respectively), Immunosuppression (14.3% with early and 33.3% with late diagnosis), and oral contraceptives (3.6% vs.16.7% for early and late diagnosis respectively).These differences were not statistically significant (p=1).

All the subjects who knew the causes of cervical cancer gave the correct prevention modalities. The differences were not statistically significant (p=0.09).

Table 4: Health seeking Behavior of study populations by early and late diagnosis

Health service	Early diagnosis N=76		Late diagnosis N=76		OR (95% CI)	p=value
	No.	%	No.	%		
Visited a gynecologist in the past 5 years						
Yes	30	39.5	9	11.8	4.9 (2.1 – 11.2)	**<0.001**
No	46	60.5	67	88.2		
No. of visits in the previous 5 years	**N=30**		**N=9**			
Once	7	23.3	8	88.9	Ref	-
2-5 times	17	56.7	1	11.1	0.1 (0.0 – 0.6)	**0.004**
>5 times	6	20	0	0	-	
Ever had a pap smear?	**N=76**		**N=76**			
Yes	76	100	5	6.6	-	-
No	0	0	71	93.4		-
Frequency of screening in lifetime	**N=76**		**N=5**			
Once	18	23.7	1	20	Ref.	-
2-5 times	53	69.7	3	60	1.0 (0.1 – 27.1)	1.000
>5 times	5	6.7	1	20	3.6 (0.0 – 168.2)	0.430
Age at first pap smear (Years)	**N=76**		**N=5**			
Less than 25	10	13.7	1	20	Ref.	-
25-29	15	19.7	0	0	-	-
30-34	19	25	0	0	-	-
35-39	15	19.7	3	60	2.0 (0.1 – 5.9)	1.000
40 plus	17	22.4	1	20	0.6 (0.0 – 24.7)	1.000
No. of years since last pap smear	**N=76**		**N=5**			
less than 1	76	100	4	80	-	-
>1-3	0	0	1	20	-	-
Reasons for Not screening						
Not aware	37	40.2	25	32.5	Ref.	
Fear	39	42.4	30	39	1.1 (0.5 – 2.4)	0.851
Not willing	6	6.5	3	3.9	0.7 (0.1 – 3.8)	1.000
Don't know	7	7.6	17	22.1	3.6 (1.2 – 11.3)	**0.022**
Others	3	3.3	2	2.6	1.0 (0.1 – 8.1)	1.000

Table 4 shows the health seeking behavior of the study populations. 39.5% with early diagnosis compared to 11.8% with late diagnosis had visited a gynecologist in the previous 5 years. This difference was statistically significant ($p<0.001$). For those who

had visited a gynecologist, 23.3% with early diagnosis and 88.9% with late diagnosis had done so once, while 56.7% with early diagnosis and only 11.1% with late diagnosis had visited 2-5 times. None with late diagnosis had more than 5 visits compared with 20% with early diagnosis. This difference was statistically significant ($p<0.004$).

Only 6.6% with late diagnosis ever had a pap smear compared to 100% with early diagnosis. For those with history of Pap smear screening, 23.7% with early diagnosis and 20% with late diagnosis had screened once, while 69.7% with early diagnosis and 60% with late diagnosis had been screened 2-5 times. 6.7% and 20% with early and late diagnosis respectively had been screened more than 5 times in their lifetime. These differences were not statistically significant ($p=0.43$).

For those with history of screening, 58.4% from early diagnosis group screened at less than 35 years of age compared to 20% with late diagnosis. None with late diagnosis had been screened between ages 25-34years compared to 44.7% with early diagnosis. 22.4% with early diagnosis screened at age 40 and above years compared to 20% with late diagnosis. These findings were not statistically significant ($p=1$).

For those who had been screened, most of them (100% with early diagnosis and 80% with late diagnosis) had been screened in less than a year. The reasons given for women not screening for cervical cancer were mainly lack of awareness and fear (82.6% with early diagnosis and 71.5% with late diagnosis respectively). 7.6% with early diagnosis and 22.1% with late diagnosis did not know the reasons. However, these findings were not statistically significant ($p=1$).

8.3. Health services delivery systems

Table 5. Health facility commonly used and source of health information by early and late diagnosis

Health facility/Health Information source	Early diagnosis N=88 No.	%	Late diagnosis N=78 No.	%	OR (95% CI)	p=value
Health facility						
Private hospitals	34	38.6	6	7.7	Ref	-
Health centers	22	25	29	37.2	7.5 (2.4 – 24.1)	**<0.001**
Sub districts & District hospitals	13	14.7	23	29.5	10.0 (2.9 – 35.6)	**<0.001**
Provincial hospitals	5	5.7	10	12.8	11.3 (2.4 – 58.9)	**<0.001**
Dispensaries	2	2.3	6	7.7	17.0 (2.2 – 164.8)	**0.002**
National hospitals	9	10.2	2	2.6	1.3 (0.2 – 9.1)	1
Don't get services	3	3.4	2	2.6	4.0 (0.4 – 41.5)	0.195
Health Information source	**N=76**		**N=76**			
Medical personnel	52	68.4	69	90.8	Ref.	-
News media	8	10.5	0	0	-	-
Self decision	11	14.5	5	6.6	0.3 (0.1 – 1.2)	0.093
Others	5	6.6	2	2.6	0.3 (0.0 – 1.9)	0.241

Table 5 shows that majority of respondents with early diagnosis get their reproductive health services from private hospitals (38.6% compared with 7.7% with late diagnosis). Health centres catered for 25% with early diagnosis and 37.2% with late diagnosis. Other levels of hospitals like sub district, district and provincial hospitals had 20.4% and 42.3% with early and late diagnosis respectively. Dispensaries and National hospitals catered for

12.5%with early and 10.3% with late diagnosis respectively. These differences were statistically significant (p<0.001).

Most respondents from both groups got advice to seek for screening or treatment from medical personnel (68.4% and 90.8% with early and late diagnosis respectively). Only 14.5% with early and 6.6% with late diagnosis made self decision. 10.5% and none with early and late diagnosis respectively were inspired by news media. The differences are not statistically significant (p=0.2).

8.4. Community social support

Table 6. Perception on, and support from community for medical services by early and late diagnosis

Perception/Support	Early diagnosis N=76		Late diagnosis N=76		OR (95% CI)	p=value
	No.	%	No.	%		
Services supported by	**N=76**		**N=76**			
Husband and family	31	40.8	56	73.7	Ref.	-
Self	36	47.4	16	21.1	0.3 (0.1 – 0.5)	**<0.001**
Friends and well wishers	7	9.2	3	3.9	0.2 (0.0 – 1.1)	**0.045**
Others	2	2.3	2	2.6	0.6 (0.1 – 5.9)	0.619
Perception of adequate Support	**N=76**		**N=76**			
Yes	25	32.9	8	10.8	Ref.	-
No	51	67.1	68	89.5	4.2 (1.6 – 11)	**0.002**

Table 6 shows that 40.8% with early diagnosis and 73.7% with late diagnosis received financial support for their medical services from their husbands and other family members. 47.4% and 21.1% from early and late diagnosis respectively funded these services themselves. Friends and other sources accounted for 11.5% for the early and 6.5% for late diagnosis groups respectively. These differences were statistically significant ($p<0.001$).

67.1% and 89.5% with early and late diagnosis respectively did not feel adequately socially supported by the community. The differences were statistically significant ($p=0.002$).

9.0. DISCUSSION

This was a cross-sectional, comparative study comparing the various factors that influence whether patients present with early or advanced cervical lesions. The study has unearthed key issues associated with early diagnosis or late diagnosis. On social demographic characteristics, a majority of those with early diagnosis were more likely to be younger than those with advanced cervical cancer. 18.4% of those with early diagnosis and 55.2% of those with late diagnosis were 45 and above years, ($p<0.02$). This is expected, given that cervical cancer is a continum representing progressive stages over many years rather than a separate entity.[16] Most women studied were already married (67.1% with early diagnosis and 69.7 with late diagnosis, $p=0.14$). It can therefore be assumed that they were in sexual relationships- a risk factor for HPV infection. This is not strange, given that by these ages most women are married. Other studies have confirmed the same.[8,10,11] More so, high parity has been known to be a risk factor for cervical cancer.[33,34] Therefore as expected, a significant number with advanced cervical cancer had a parity of above 4 (11.8% with early diagnosis, and 48.7% with late diagnosis, $P< 0.001$).

Education was a key factor, given that 55.1% of those with early diagnosis and only 32.9% with late diagnosis had education beyond secondary school level, ($p<0.001$). Similarly, 61.9% of those with early diagnosis and only 26.3% with late diagnosis were involved in income generating activities ($p=0.002$). Overall it reflects on the economic status disparity between these two populations. This is in keeping with other previous studies.[9, 33,35] Cheserem, found that 64% of patients with advanced cervical cancer had no income or were earning less than 1000 Kenya shillings per month and that 60.4% had no

education.[12] However, economic status is a long term achievement, but when well informed, even those with low social economic status will go for screening as found in this study and other similar studies.[10] This therefore calls for a need to have more outlets for medical information dissemination given that 68.4% of those with early diagnosis and 90.8% with late diagnosis received health information from medical personnel only, (p=0.2). Elsewhere in the west, population based cervical cancer prevention programmes have led to a great extent an increase in knowledge and uptake of early diagnosis services.[5, 36] In contrast, cervical cancer screening in Kenya has not been prioritized as found in Kenya service provision assessment survey (KSPAS), 2010.[37] Hence, many avenues of information dissemination like opinion leaders, peer groups, church leaders, people with exposure and others have not been exploited.

Visiting a health specialist is important for early diagnosis (39.5% vs.11.8% with early and late diagnosis respectively, p‹0.001). However consistent visits are necessary as was found that 76.7% of those with early diagnosis and only 11.1% with late diagnosis in this study had visited more than 2 times in 5 years (p=0.04). This was consistent with other study findings.[4,30] there are no enough health specialist for everyone. Therefore, the role has to be cascaded so that the goals can be achieved through task sharing. It also points to a need for government and policy makers to take into consideration the importance of cervical cancer screening which is less expensive than treatment of advanced cancer. This may call for involvement of other third party stake holders like companies and non governmental organizations for financing, to ensure that financing is universal.

As evidenced by this study finding, 47.4% of those with early diagnosis are able to finance their health care services compared to only 21.1% with late diagnosis ($p<0.001$), majority of who rely on other family members (73.7% vs. 40.8% of those with early diagnosis, $p<0.001$). Those with early diagnosis were also able to access medical services from private hospitals (38.6%) compared to 7.7% with late diagnosis ($p<0.001$). This whole picture points towards additional need to empower women economically, apart from instituting public health care financing systems to improve not only on screening, but also treatment of cervical cancer. In deed, millennium development goals number 1 and 3 advocates for elimination of extreme poverty and promotion of gender equality and women empowerment.[38] In addition, public hospitals needs to be improved to cater for women of low social economic status, given that 89.7% with early diagnosis and 58% with late diagnosis in this study visited these facilities the most ($p<0.001$).

Fear factor need to be addressed in cervical cancer screening programmes. As evidenced in this study and other similar studies, [31, 32] 42.4% with early diagnosis and 39% with late diagnosis felt that many women do not screen for cervical cancer owing to fear of pelvic examination and results, among others ($p=0.9$). This is despite of being aware of cervical cancer. This can be partially overcome by involving the whole community, to demystify cervical cancer and improve on social support which 67.1% and 89.55% of those with early and late diagnosis respectively in this study as well as others, [8] perceived to be lacking ($p=0.002$). Other cultural barriers hindering cervical cancer screening need to be broken as well.

The gap between these two extremes of populations is therefore wide in terms of factors that influence whether one seeks for early or late diagnosis of cervical cancer, indicating a deficit or inability of measures put in place to bridge this gap.

Conclusions

From the results of this study, the following conclusions can be drawn:

1. Higher education and exposure to knowledge on cervical cancer are both more commonly associated with early diagnosis of cervical cancer.

2. Social economic status and the type of health facility attended to influence cervical cancer screening in that private care and higher social economic status are associated with early diagnosis of cervical cancer.

3. Health seeking behavior influences cervical cancer screening in that previous and consistent specialized health care seeking visits are associated with early diagnosis of cervical cancer.

4. There is fear of adverse outcome of cervical cancer screening, which is a determining factor on whether one seeks for early diagnosis of cervical cancer or not.

5. Those with better social support within the community are more likely to seek for early diagnosis of cervical cancer than those without.

Recommendations

1. Basic education as well as information on cervical cancer screening needs to be provided to women and young girls in schools and community in general.

2. Overall economic empowerment of women would improve on health seeking behavior and cervical cancer screening.

3. There is need for factual information on cervical cancer, specifically on early education to eliminate fear of cervical cancer screening.

4. There is need to improve public hospitals in order to improve on public health in terms of materials and communication so as to enhance cervical cancer screening among those who seek those services.

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Appendix I: QUESTIONAIRE

Serial NO: _____

Ip/op NO: _____

Clinic: 1.Colposcopy ☐ 2. Radiotherapy ☐

FACTORS INFLUENCING EARLY DIAGNOSIS OF CERVICAL CANCER

(Tick correct answer where applicable)

(A) Social and Demographic Characteristics

1. Age ☐☐ (in completed years)

2. Marital status:

1. Married ☐ 2. Single ☐ 3.Divorced/Separated ☐ 4.Widowed ☐

3. Parity:

_____ (pregnancies beyond 7 months) **+** _____ (abortions below 7 months)

4. Usual Residence (province):

1. Eastern ☐ 2.Central ☐ 3. Rift valley ☐ 4. Western ☐

5. Nyanza ☐ 6.North eastern ☐ 7.Nairobi ☐ 8. Coast ☐

5. Current residence:

1. Nairobi: (specify) _____ 2. Others (specify) _____

6. Occupation:

1. Unemployed ☐ 2.Domestic servant ☐ 3.Business person ☐

4. Professional ☐ 5.Others (specify) _____

7. Education level:

1. None ☐ **2**. Primary school ☐ **3**.Secondary school ☐

4. Post-secondary ☐

8. Religion:

1. Catholic ☐ **2.** Protestant ☐

3. Muslim ☐ **4**. Hindu ☐

5. Others (specify) _____

(B) Exposure to knowledge and health seeking Behavior

9. Have you visited a gynecologist for any other gynecologic illness in the past five years? (Not pregnancy related)

1. Yes ☐ **2**. No ☐

10. If YES in (9) above how many times?

1.1 ☐ **2**. 2-5 ☐ **3**.Above 5 ☐

11. Do you know what causes cancer of cervix?

1. Yes ☐ **2**. No ☐

12. If yes in (11) above what are the causes/ risk factors?

1. Human Papilloma Virus ☐ 2. .Immunosuppression ☐

3. Smoking ☐ 4. Oral Contraception ☐

5. Early Sexual Debut ☐ 6.Multiple sexual partners ☐

7. STD's ☐ 8. Others specify _____

13. If yes in (11) above how do you think cervical cancer can be prevented?

1. Vaccination ☐ 2.Screening (Pap smear, HPV serology, etc) ☐

3. Use of condoms ☐ 4.Abstinence ☐ 5.Avoid promiscuity ☐

6. Don't know ☐ 7.Others (specify) _____

14. If yes in (11) above where did you get the information from?

1. Medical personnel ☐ 2.School ☐ 3. Media ☐

4. Women groups ☐ 5. Church leaders ☐ 6.Friends ☐

7. Others (Specify) _____

15. Have you ever had cervical cancer screening (e.g. Pap smear)?

1. Yes ☐ **2**. No ☐

16. If YES to (15) above how many times in your life time?

1. Once ☐ **2**. 2-5 times ☐ **3**.Above 5 times ☐

17. If yes to (15) above at what age did you do the first pap smear?

☐☐ years

18. If yes to (15) above how long ago did you do your last pap smear?

1. <1year ☐ **2.** >1-3yrs ☐ **3**. >3-5years ☐ **4**. Above 5 years ☐

19. Are you aware of availability of any vaccine to prevent cancer of cervix?

1. Yes ☐ **2**. No ☐

20. If (YES) in (19) above where did you get information from?

1. Medical personnel ☐ 2. School ☐ 3.News Media ☐

4. Women groups ☐ 5. Church leaders ☐ 6. Friends ☐

7. Others (Specify) _____

(C) Health services delivery systems and personal initiatives

21. What problems have you faced in your attempt to get cervical cancer screening/treatment services?

1. Lack of finances ☐
2. Services not available nearby ☐
3. Services taking too long to be offered ☐
4. Lack of Information on services offered ☐
5. Service providers not supportive ☐
6. None ☐ 7. Others (specify) _____

22. Who advised you to come here for cervical cancer screening/treatment?

1. Medical personnel ☐ 2. News Media (TVs Newspapers, etc) ☐
3. Women groups ☐ 4. Church leader(s) ☐
5. Friend(s) ☐ 6. Self decision ☐
7. Relative(s) ☐ 8. Others (Specify) _____

23. Where do you get reproductive health services from?

1. Dispensary ☐ 2.Health centre ☐

3. Private hospital/ clinics ☐ 4.Sub-District/ District hospital ☐

5. Provincial hospital ☐ 6. National hospital (K.N.H, MTRH) ☐

7. Don't get any services ☐ 8. Others (specify) _____

24. Would you recommend someone for cervical cancer screening?

1. Yes ☐ **2**. No ☐

25. If NO in (24) above, why? Give reason(s)

_____

26. What do you think is/are the reason(s) why women do not go for a cervical cancer screening (e.g. Pap smear)?

1. They're not aware ☐ 2.Not willing ☐

3. Lack of finances ☐ 4.Services not available nearby ☐

5. Fear of physical exam and/ or results ☐ 6.I don't know ☐

7. Others (specify) _____

(D) Community social Support

27. Who supplies/has supplied you with finances to come for cervical cancer screening/treatment services?

1. Myself ☐ 2. Husband and other family members ☐

3. Friend(s) and well wishers ☐ 4. Church ☐

5. Other Non-governmental organizations ☐

6. Government institution(s) ☐ 7. Others (specify) _____

28. **Do you feel women are getting adequate social support for screening/treatment of cervical cancer from your community members?**

1. Yes ☐ **2**. No ☐

29. What do you think should be done to improve provision of cervical cancer screening services?

1. Increase public education (awareness). ☐ 2. Reduce the waiting time ☐

3. Introduce lessons at school level. ☐ 4. Increase funding. ☐

5. Bring services closer to the people. ☐ 6. Others (specify) _____

Appendix II: CONSENT EXPLANATION FORM

TITLE: FACTORS INFLUENCING EARLY DIAGNOSIS OF CERVICAL CANCER

Serial No: _____ IP/OP No: _____

Hi, my name is _____. We are conducting a study to document the reasons as to why women seek diagnosis of cervical cancer early while others present with late disease for treatment. No such information exists in our country. Your participation in this study will help us generate data to design better intervention modalities to reduce the incidence of cervical cancer. There are no risks involved when participating in this study.

Your participation in this study will be on voluntary basis only. You can terminate your participation in the study with no consequences, and the services offered to you will not be varied or terminated depending on your response. Also, your participation in the study entails no financial benefits.

The information given to researchers will be kept in strict confidence. It will be part of clinical records and no information on which your identity can be revealed will be released or published.

If you have any queries, my contacts are: Dr Muchena R.M
Tel. 0722600073

In case you need to contact Research and Ethics committee, the contacts are:

Tel. 726300-9 (020).

Now, I will request you to sign below if you have agreed to take part in this study.

Thank you.

CONSENT FORM

I , the undersigned _____ Hospital NO; _____,

has been informed about the study/ has read all the above, and understand all what it entails, do willingly consent to participate in this study.

_____ _____

(patient's sign or right hand thumb print) Date

_____ _____

(Witness) Date

KENYATTA NATIONAL HOSPITAL
Hospital Rd. along, Ngong Rd.
P.O. Box 20723, Nairobi.
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP", Nairobi.
Email: KNHplan@Ken.Healthnet.org

Ref: KNH-ERC/ A/132

16th June 2011

Dr. Muchena Robert Mionki
Dept. of Obstetrics & Gynaecology
School of Medicine
University of Nairobi

Dear Dr. Muchena

RESEARCH PROPOSAL: "FACTORS INFLUENCIN
(P66/02/2011)

This is to inform you that the KNH/UON-Ethics & Res
and **approved** your above cited research proposal .
16th June 2012.

You will be required to request for a renewal of the ap
the deadline given. Clearance for export of biological
KNH/UON-Ethics & Research Committee for each bat

On behalf of the Committee, I wish you a fruitful resea
the research findings upon completion of the study.

This information will form part of the data base that wi
related research study so as to minimize chances of s

Yours sincerely

PROF A N GUANTAI
SECRETARY, KNH/UON-ERC

c.c. The Deputy Director CS, KNH
The Dean, School of Medicine, UON
The Chairman, Dept.of Obs/Gynae,UON
The HOD, Records, KNH
Supervisors: Prof. Koigi Kamau, Dept.of Ob
Dr. Kihara Ann, Dept.of Obs/

G EARLY DIAGNOSIS OF CERVICAL CANCER"

arch Committee has reviewed
The approval periods are 16th June 2011

proval if you intend to continue with the study beyond
specimens must also be obtained from
ch.

rch and look forward to receiving a summary of

be consulted in future when processing
udy duplication.

s/Gynae, UON
ynae, UON