PREVALENCE OF ABNORMAL CERVICAL SMEARS AND KNOWLEDGE OF CERVICAL CANCER SCREENING AMONG WOMEN ATTENDING GYNAECOLOGY CLINIC OF GENERAL HOSPITAL MINNA, NIGERIA

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ATTESTATION

I declare that the work in this thesis "PREVALENCE OF ABNORMAL CERVICAL SMEARS AND KNOWLEDGE OF CERVICAL CANCER SCREENING AMONG WOMEN ATTENDING GYNAECOLOGY CLINIC OF GENERAL HOSPITAL MINNA, NIGERIA**"** was performed by me in the Department of Community Medicine under the supervision of Dr. S A Ahmed and Dr. M. S Shehu the information derived from literature has being duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any university.

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CERTIFICATION

This thesis entitles "PREVALENCE OF ABNORMAL CERVICAL SMEARS AND KNOWLEDGE OF CERVICAL CANCER SCREENING AMONG WOMEN ATTENDING GYNECOLOGICAL CLINIC OF GENERAL HOSPITAL MINNA, NIGER STATE, NIGERIA" by Hauwa, I. Muhammad meets the regulations governing the award of the degree of Master in Public Health of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This work is dedicated to the Almighty ALLAH for making it possible for me to successfully complete this work.

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LIST OF ACRONYMS

AGC	Atypical glandular cells
ASCUS	Atypical squamous cells undetermined significance
ASR	Age standardized rate
CD4	Cluster of differentiation 4
CIN	Cervical intraepithelial neoplasia
GLOBOCAN	Global cancer
HPV	Human papillomavirus
HIV	Human immunodeficiency virus
HSIL	High grade squamous intraepithelial lesion
HR	High-risk
IARC	International agency for research on cancer
LSIL	Low-grade squamous intraepithelial lesion
LGA	Local government area
LR	Low risk
O & G	Obstetric and gynaecology
OND	Ordinary national diploma
PID .	Pelvic inflammatory disease
SEER	Surveillance, epidemiology, and end result
SIL	Squamous intraepithelial lesion
VIA	Visual inspection with acetic acid
WHO	World health organization

ABSTRACT

Cervical cancer is an important women's reproductive health problem. It is a preventable disease of significant public health concern especially in developing countries. It is the third most common cancer worldwide and the second most common cancer and leading cause of death from cancer among women in developing countries.

A cross-sectional, descriptive study was performed in the Gynaecology clinic, Minna General Hospital, from January to March 30, 2013. To determine the prevalence of premalignant lesions in cervical smears, to assess the knowledge, and risk factors of cervical cancer and to determine the uptake of screening among women of child bearing age group among women attending Gynaecology clinic in General Hospital Minna. Data were analyzed with Epi-info V 3.5.3 Analysis at 95% confidence interval, 5% significance level. Univariate analysis applied include frequencies, means. proportions, while bivariate analysis include the calculation of prevalence odds ratios, analysis for association between cervical abnormalities and selected exposure factors, Fisher's exact test for statistical significance.

A total of 108 pap smear samples were collected and questionnaires administered to each of the participants, Of the participant 14 (13.9%) 95% CI (0.8-21.9) had pap smear with abnormal findings. The abnormal cytological results were low grade squamous intraepithelial lesion (LSIL) seen in 12 (11.11%) with 2 (1.9%) human papilloma virus (HPV) effects. Out of which 17(16%) had inflammation, Majority 72 (66%) of respondents reported having heard about cervical cancer, out of which 77 (71%) of respondents had heard about cervical cancer screening, 74 (68%) knew Pap smear test as the only screening method while 67(62%) of women did not have knowledge on the risk factors for cervical cancer. Uptake was low only (5) 4.6% have had cervical cancer screening prior to the study.

This study showed prevalence of abnormal positivity of 14(13.9%) 95% CI (0.8-21.9) which is consistent with previous reports of the prevalence of abnormal cervical smear in women in Sub-Saharan Africa. The age pattern was notable, with the highest prevalence among women $\geq$ 49 years. Intense public health campaign be conducted on a recurring basis; providing cervical cancer education with emphasis on its aetiology, risk factors and methods of prevention.

Policies should be put in place that encourage or as appropriate mandate that all women coming for antenatal services are provided with the options of a Pap smear test.

CHAPTER ONE - INTRODUCTION

1.1 Background

Cervical cancer is an important reproductive health problem. It is a preventable disease of significant public health concern especially in developing countries. It is the third most common cancer worldwide and the second most common cancer and leading cause of death from cancer among women in developing countries.[1] In 2008, there were an estimated 529,000 new cases and 274,000 deaths due to cervical cancer. It is estimated that over one million women worldwide currently have cervical cancer, most of whom have not been diagnosed, neither do they have access to treatment that could cure them or prolong their life.[2] High-risk regions are Eastern and Western Africa: Age-standardized rate (ASR) greater than 30 per 100,000), Southern Africa (26.8 per 100,000), South-Central Asia (24.6 per 100,000), South America and Middle Africa (ASRs 23.9 and 23.0 per 100,000, respectively). Rates are lowest in Western, Northern America and Australia/New Zealand (ASRs less than 6 per 100,000).[4] More than 85 % of cervical cancer deaths occur in developing countries, where it accounts for 13% of all female cancers.

Cervical cancer used to be the leading cause of cancer death for women in the United States. However, in the past 40 years, the number of cases of cervical cancer and the number of deaths from cervical cancer have decreased significantly.[2] This decline is largely due to the result of regular screening using Pap tests, which can detect cervical precancer before it turns into carcinoma in situ.[3] In 2008, 11/100,000 women in the United States were diagnosed with cervical cancer while 3/100,000 women died from cervical cancer.[4] While the incidence of cervical cancer in less developed countries is

453/100,000 women and 242/100,000 women died from it. In sub-Saharan Africa, lack of effective screening and treatment policy, strategies and programs largely explains the high cervical cancer prevalence and mortality in most countries. With no access to quality prevention and detection services, most women seek consultation only when the disease is already at an advanced stage, with age-standardized rates of 35.7 per 100,000 women in Bamako, Mali, and 41.7 per 100,000 women in Kyadondo, Uganda.

Nigeria is the most populous country in Sub-Saharan Africa, with approximately 167 million inhabitants (2011 population estimate), a life expectancy at birth of 50.6 years in men and 52.6 years in women, child mortality of 159 and 152 per 1000 in males and females, respectively, and per capita total expenditure on health of US $8 per year, with women population of 36.59 million aged 15 years and older who are at risk of developing cervical cancer.

A current estimate indicates that every year, 9,922 women are diagnosed with cervical cancer and 8,030 died from the disease. In Nigeria cervical cancer is the second most common cancer among the female population and the second most frequent cancer among women between 15-44 years.[5,6] The annual age-standardized incidence of cervical cancer in Ibadan in 1998–1999 was 19.9 per 1000,000 women.[7]

In spite of a vaccine that holds some promise for cervical cancer prevention, screening is still essential. A vaccination programm will not eliminate the need for screening because the current vaccines only protect against HPV types that are responsible for about 70% of cervical cancer cases.[8] Hopefully, with a combination of a vaccine, good screening and education, young women will stand a better chance of avoiding cervical cancer.[8] Human

papillomavirus (HPV) is a primary cause of cervical cancer which is the second most common cancer in women worldwide. Human papillomaviruses are common throughout the world. As many as 50% of people with HPV genital infections are asymptomatic but persistent infection can cause cervical cancer in women and transmission of the virus to others.[9]

Internationally, the worldwide prevalence of HPV in cervical carcinoma is 95-99.7%.[10] virtually all cervical cancer cases (99%) are linked to genital infection with HPV which is the most common viral infection of the reproductive tract. HPV can also cause other types of cancer such as anogenital cancer, head and neck cancers, and genital warts in both men and women. HPV infections are transmitted through sexual contact.[11]

Cervical HPV infection is a common sexually transmitted infection affecting an estimated 50-80% of sexually active women at least once in their life time.[12] High risk HPV types 16 and 18 are together responsible for over 65% of cervical cancer cases.[13,10,12] Yet only recently has information on the prevalence of cervical infection become available. [7,14,15,16,17]

Other risk factors such as early age of sexual activity onset, multiply sexual partners, low socio-economic status, smoking, nutritional factors and long use of contraceptives have all been implicated as potential risk factors for cervical cancer,[7] cervical cancer is characterized by the abnormal growth of cells in the cervix, the region of the uterus that joins the vagina. It usually arises from a ring of mucosa called the cervical transformation zone which is a ring of active squamous metaphase where the stratified squamous epithelium of ectocervix progressively undermines and replaces the columnar epithelium

of endocervix.[18] Each year, there are about 400,000 new cases of cervical cancer, 80% of which occur in developing countries, Worldwide, every two minutes a woman dies of cervical cancer.[19,20,21]

There are major steps in cervical cancer development which are the infection of metaplastic epithelium at the cervical transformation zone, viral persistence, progression of persistently infected epithelium to cervical precancer and invasion through the basement membrane of the epithelium. Cervical cancer may not cause any symptoms at first, but later could be manifested by unusual vagina bleeding or discharged bowel and bladder problems, and pains.[22]

It usually takes several years for normal cells in the cervix to turn into cancer cells. Cervical cancers could be prevented by doing a Papanicoloau (Pap) test which is used in detecting abnormal cells-examining cells from the cervix under a microscope and by getting regular Pap tests done, changing cells could be found and treated before turning into cancer. Women who do not have regular cervical cancer screenings substantially increase their risk of developing cancer, because potentially precancerous lesions are not detected and they do not receive appropriate follow up.[23]

1.2 Statement of the Problem

Cervical cancer is the second most common cancer among women worldwide.[24] It is a major public health problem of low income countries including Nigeria, having only 5% of global resource for cancer control.[25,26,27] Annually 300,000 deaths occur from this cancer in low income Countries, where advanced disease is common and facilities for care are limited.[28] Most women in poorer countries do not have access to effective

screening programm. In Nigeria, it is the commonest genital tract cancer and is the commonest cancer of women.[24,29] In our own environment we noticed an increase in the incidence and prevalence of the disease and also that our patients present late with a variety of complications.[30] We have observed that there is paucity of reports on the enormity of this problem in Nigeria, especially in Northern Nigeria.[31,32,33] The differences in the prevalence of cancer in different regions of the world can be explained through heredity, medical practices, lifestyle changes and environmental exposures like different diets, tobacco and pesticides. Since there are cheap and effective methods of treatment for pre invasive cervical lesions, cervical cancer screening is known to reduce the incidence of, and mortality from, invasive cancer of the cervix to an extent directly related to the proportion of the the population screened. To ensure that most women benefit from cervical screening services, most developed countries have put in place effective screening programmes. This is not the case in most developing countries where opportunistic screening remains the practices. However, there appears to be lack of interest in opportunistic screening among Nigerians. In order to increase the number of women screened, a plea has been made for an increased opportunistic screening by Nigerian gynaecologists and a suggestion made that cervical cancer screening be included in pre employment examination. In pursuance of a better coverage in cervical cancer screening the Medical Women Association of Nigeria in Enugu , South Eastern Nigeria establishes a highly subsidised screening centre in the late 1980s This study is essentially a cross-sectional study that is time bound with only limited number of participants, with a papanicolaou smear taken only once at recruitment. Follow up with multiple papanicolaou smears over a period of time would have been ideal. Further

research will be needed and above issues be put into consideration. Result from this study will provide information on screening of women.

1.3 Justification

Worldwide, cervical cancer comprises approximately 15% of all cancers in women.[34] Cervical cancer remains a major public health problem in developing countries, especially in Africa where an estimated 53,000 women die of the disease every year. In Nigeria each year approximately 10,000 women develop cervical cancer, and about 8,000 women die from it.[37] New estimates of worldwide and regional cancer incidence and mortality published by the World Health Organization in the GLOBOCAN 2008 report confirm the prediction that the numbers for cervical cancer would continue to climb, especially in developing countries. The estimated annual incidence in the less-developed countries of the world is now more than 450,000 and the mortality more than 240,000. Using GLOBOCAN 2002 figures, more than 80 percent of deaths from cervical cancer worldwide were estimated to be in developing countries. GLOBOCAN 2008, it was 88 percent; and by 2030, it is predicted to be at least 98 percent.[4]

Cervical cancer is far more common and associated with higher mortality in the developing world compared to the United States. One reason: women in the US receive routine screening that catches the disease in its earliest stages. Efficient, low-cost screening approaches for cervical cancer are available and suitable for low-resource areas; furthermore vaccines that are efficacious in preventing the infections and precancerous changes that can lead to cervical cancer are available. Cervical cancer is a disease that is 100% curable if detected early through Pap smear, screening for cervical cancer is cheaper and a better alternative to treatment of advanced disease.

In Niger state and particularly in the state capital, Minna which shares boundary with the nation's capital city Abuja, the general hospital remains the main health care facility where patients are referred to from rural and other secondary health facilities, information on the prevalence of abnormal cervical findings and cervical cancer are not available. Therefore, this study will serve as a base line for other studies, and provide data for action through free and accessible services to women thereby justifying this study.

Research Questions

What is the prevalence of abnormal cervical smears in Gynaecology Clinic of Minna General Hospital?

What are the knowledge and uptake of cervical screening among these women?

What are the risk factors for cervical cancer among these women?

1.4 Aim of the study

To determine the prevalence of abnormal cervical smears and knowledge of cervical cancer screening among women attending Gynaecology Clinic of General Hospital Minna, Nigeria

1.5 Specific Objectives

- To determine the prevalence of premalignant (abnormal smears) lesions of cervical cancer among women attending Gynaecology Clinic in General Hospital Minna.
- To assess the knowledge of cervical cancer screening among women attending Gynaecology Clinic in the General Hospital Minna.
- To determine the uptake of screening among women of child bearing age group attending gynecology clinic in the General Hospital Minna.
- To determine the prevalence of risk factors that are associated with cervical cancer among women attending Gynaecology Clinic in the General Hospital Minna.

CHAPTER TWO - LITERATURE REVIEW

2.1 Epidemiology

Literature review search strategy was done through Hinari access to research initiative, which is a programme, set up by world Health organization together with major publishers to enables developing countries to gain access to one of the world's largest collections of biomedical and health literature. Over 6200 journal titles are now available to health institutions in 108 countries, were Nigeria is inclusive areas and territories benefiting many thousands health workers and researchers and in turn, contributing to improved health. Cervical cancer still remains a significant public health issue. It is one of the most prevalent forms of carcinoma affecting women worldwide as it accounts for 15% of all cancers, and global data have revealed an estimated 466,000 new cases of the disease annually. [39,40,41] The age-standardized mortality rate of cervical cancer in developing countries is 9.6 per 100,000 women, which is twice the rate in developed countries.[42]

The disparity in prevalence between the developing and developed worlds can be attributed in part to lack of effective cytological screening. Cytological screening (the Papanicolaou smear or Pap smear) has been one of the most successful public health measures available for cancer prevention.[43] Cervical cancer screening is widely available in developed countries and in most cases lesions are detected at the pre-cancer or early cancerous stage.[44]

Benefits of cervical cancer screening programs in developed countries have been well documented. For instance, Denmark recorded a 25% decline in mortality following 40% coverage.[45] In Norway, 5% coverage achieved a 10% fall in mortality.[45]

The overall age-adjusted incidence rate of cervical cancer is 8.4 per 100,000 women per year. The incidence is highest among Hispanics (12.1 per 100,000 women) and blacks (10.7) and lowest among non Hispanic whites (7.5), American Indians and Alaska Natives (7.5), and Asian and Pacific Islanders (7.7).[48] Based on 2004 to 2008 (Surveillance Epidemiology and End Results) SEER data, the median age at diagnosis for cervical cancer in all women was 48 years.[48] Half of all incident cervical cancer cases between 2004 and 2008 occurred in women between the ages of 35 and 55 years. The age-adjusted death rate for cervical cancer was 2.5 per 100,000 women in 2007,[49] the median age for mortality was 57 years.[48]

The national target established in Healthy People 2010 was a mortality reduction to 2.0 deaths per 100,000 women. For 2010, SEER data estimate 12,200 new cases of cervical cancer and 4,210 deaths,[47] with incidence frequently equating with mortality in the absence of healthcare facilities to deal with the condition. Mortality rates vary seventeen fold between the different regions of the world. Cervical cancer contributes over 2.7 million years of life lost among women between the ages of 25 and 64 worldwide some 2.4 million of which occur in developing areas and only 0.3 million in developed countries. In Nigeria cancer of the cervix is the commonest malignancy of the genital tract. In an atmosphere of opportunistic screening due to lack of national screening programs, studies are needed to determine patients at risk of premalignant lesions of the cervix. There are few published studies on the prevalence of abnormal cervical smear among women attending gynecologic clinic of secondary health facilities.

2.2 Pathology

The cervix is the lower part of the uterus (womb). It is sometimes called the cervix uteri (figure 1).[50] The cervix connects the body of the uterus to the vagina (birth canal). The part of the cervix closest to the body of the uterus is called the endocervix.[50] The part next to the vagina is the exocervix (or ectocervix). The two main types of cells covering the cervix are squamous cells (on the exocervix) and glandular cells (on the endocervix). These two cell types meet at a place called the transformation zone. Most cervical cancers start in the transformation zone.

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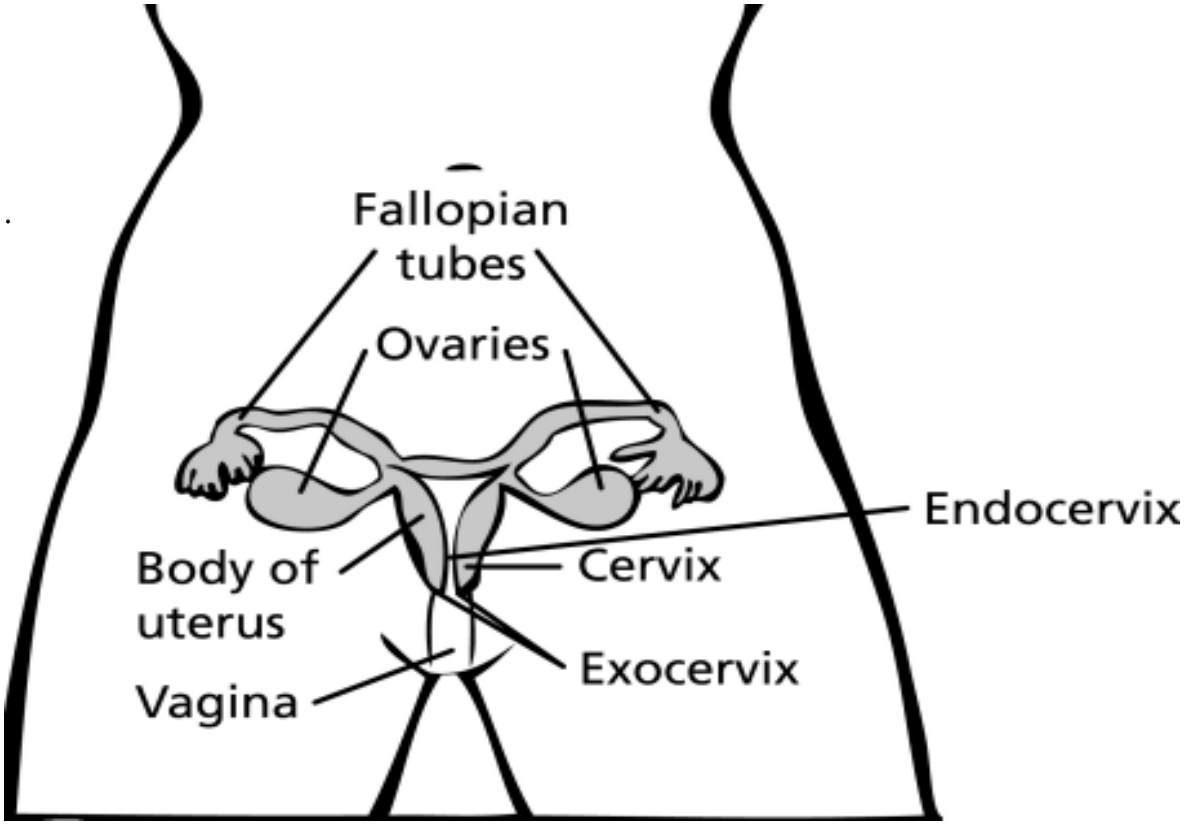


Figure 1: "Anatomy of Female Genital Tract showing Cervix Uteri".
(Source: American Cancer Society 2013)

Most cervical cancers begin in the cells lining the cervix. These cells do not suddenly change into cancer. Instead, the normal cells of the cervix first gradually develop pre-cancerous changes that turn into cancer.[50] Several terms are used to describe these pre-cancerous changes, including: LISL (low-grade squamous intraepithelial lesion), HSIL, (high grade squamous intraepithelial lesion), invasive cancer (carcinoma in situ). These changes can be detected by the Pap test and can be treated to prevent from developing to cervical pre-cancers and cervical cancers. Cell changes are classified morphologically by cytology. There are two main types of cervical cancers: squamous cell carcinoma and adenocarcinoma. About 80% to 90% of cervical cancers are squamous cell carcinomas.[50] Squamous cell carcinomas most often begin where the exocervix joins the endocervix.[50] Cervical adenocarcinomas seem to have become more common in the past 20 to 30 years. 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.[2] This form is called adenosquamous carcinoma or mixed carcinoma. Although cervical cancers start from cells with pre-cancerous changes (pre-cancers), only some of the women with pre-cancers of the cervix will develop cancer.[2] 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. Still, in some women pre-cancers turn into true (invasive) cancers. Treating all pre-cancers can prevent almost all true cancers. Other types of cancer also can develop in the cervix. These other types, such as melanoma, sarcoma, and lymphoma, occur more commonly in other parts of the body.[2]

The stratified squamous epithelium covering the cervix provides protection from toxic substances and infection. Under normal circumstances, the top layers are continually dying and sloughing off and the integrity of the lining is maintained by the constant, orderly formation of new cells in the basal layer. However, in the presence of persistent HPV (human papillomavirus), infection and other cofactors, such as, early sexual activity, multiple pregnancies and, to a lesser extent, long-term use of oral contraceptives the metaplastic squamous cells of the transformation zone take on an abnormal appearance, cervical squamous precancer (dysplasia). These cells later multiply in a disorderly manner typical of cancerous change to produce squamous cell carcinoma. During puberty and pregnancy, and in women using oral contraceptives, the transformation zone on the ectocervix is enlarged.[2]

2.3 Screening for cervical cancer

The Pap smear test is currently the most widely used approach for screening cervical cancer, via a 1–3 yearly screening depending on the environment.[51,52] The benefits of Pap smear test in preventing cervical cancer has been demonstrated by countries like Finland and Sweden with National screening programs. As a result, these countries are reported to have the lowest incidence and prevalence of cervical cancer and related morbidity and mortality in the worlds.[53,54]

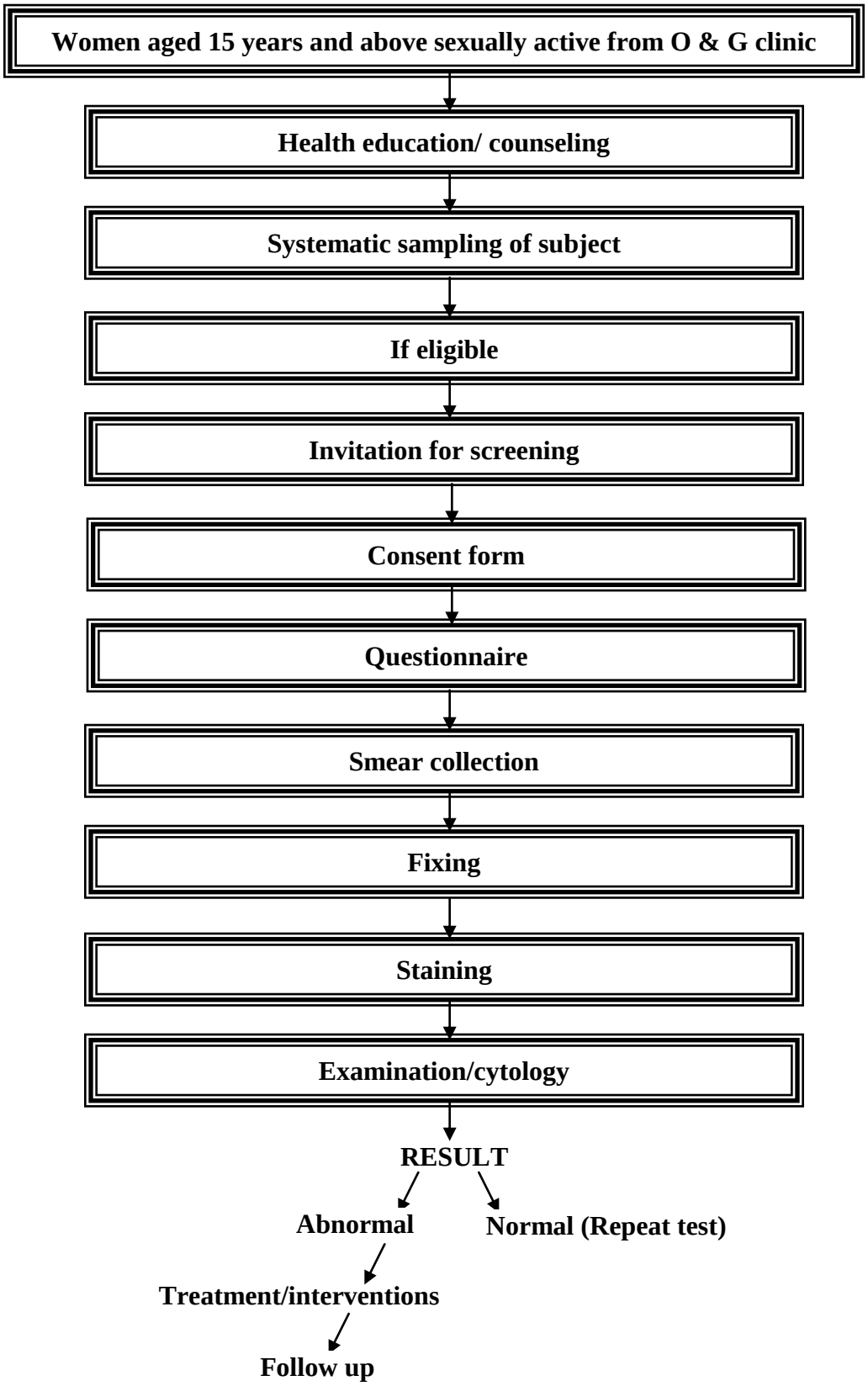
The high incidence and prevalence of cervical cancer in developing countries such as Nigeria is highly suggestive of health care access issues. For example, a pilot study in Jos, Nigeria, reported an estimated annual incidence rate of cervical cancer in 77/1,000 women[55] and mortality of 3000–8000.[56,57] These estimates are much higher than those of the United States[58] or Europe[59] where there is regular cervical cancer screening. Uptake

of Pap smear test in Nigeria is very low[60,61,62] even when compared with other developing countries[63,64] further contributing to the reportedlevels of cervical cancer and its attendant morbidity.[65] It has been reported that almost two thirds of cervical cancer cases in Nigeria present at stage III or later, and that a single one time screen could potentially save more than 6,000 women annually.[66]

Various reasons have been suggested for the low utilization of Pap smear test screening in Nigeria. The two main reasons are lack of awareness and poverty,[60,62,66,67,68] Adewole et al..[66] reported a strong relationship between poverty and incidence or prevalence of cervical cancer in low income countries in Africa. Such countries, including Nigeria with high incidence of cervical cancer, were reported to have lower rates of screening for the condition compared with other populations reporting higher levels of awareness. Some investigators concluded that increased awareness may not translate into increased utilization, because studies among healthcare workers, medical students and physicians, who have a high level of awareness demonstrated a lower level of utilization than non-healthcare workers or students.[61,69,70]

In another study conducted in Enugu by Leonard et al. they found that the utilization of the subsidized cervical cancer screening service is very poor. The high prevalence of positive smears and the increased rates with increasing age may be related to the absence of an effective screening program in Nigeria. Collective effort to increase the number of women screened is advocated, pending the establishment of a national cervical cancer-screening program. The introduction of screening programs based on cytological examination of cervical smears resulted in a significant decrease in both incidence and mortality rates.[71]

Method of Selection of the study participants for screening by Pap smear technique



2.4 Prevalence of abnormal smear

Cervical cytology by Papanicolaou (Pap) smears is an effective means of screening for cervical premalignant and malignant conditions. Cervical intra-epithelial neoplasia (CIN) and cervical cancer remain important health problems for women worldwide.[72] Al-Jaroudi et al.[73] in their study of prevalence of abnormal cervical cytology among subfertile Saudi women found cytology abnormalities in 71 (29.5%) which included epithelial cell abnormality in 7 (2.9%) women, inflammation in 55 (22.8%) women,and infection in 9 (3.7%) patients. Epithelial cell abnormalities included three atypical squamous cells of undetermined significance (ASC-US), one high-grade squamous intraepithelial lesion (ASC-H), two low-grade squamous intraepithelial lesions (LSIL), and one glandular cell abnormality (AGS).[73]

Manjit Singh Bal et al.[72] in India in their study of the detection of abnormal cervical cytology in Papanicolaou smears detected fifteen positive malignancies and 223 (74.3%) were inflammatory. Out of 223 inflammatory smears, 214 (71.3%) showed non-specific inflammation, 8 (2.7%) had features of Gardnerella infection, and 1 (0.3%) had evidence of Trichomonas infection. Diagnosis of (ASCUS) was made in one (0.3%) case. Squamous intraepithelial lesion was seen in 10 (3%) patients, out of which, 8 (2.7%) had low grade squamous intraepithelial lesion (LSIL) exhibiting koilocytic atypia in majority of the smears**.** In two cases (0.3%) of high grade squamous intraepithelial lesion (HSIL), the smears showed severely dyskaryotic cells with irregular hyperchromatic nuclei with coarsely clumped chromatin. Invasive cancer was detected in four (1.3%) cases. Three (1%) smears showed squamous cell carcinoma and one (0.3%) smear showed adenocarcinoma.[72] In Nigeria, there are very few studiesn on abnormal cytology, among

them are studies by Audu et al.[74] at the Federal Medical Centre Gombe who found inflammation to be the commonest abnormality in 52.5% (76/145) with human papilloma virus infection accounting for 22.1% of cases,[74] while in Enugu Leonard et al. found the prevalence of abnormal smears to be 12.2%, the proportion rising with increasing age and doubling after the age of 54 years. All the women with positive smears were or had been coitally active; 97% were parous and 81% grand multiparous.[74] Thomas et al.[75] in Ibadan found atypical squamous cells of undetermined significance and atypical glandular cells 22 (1.99%); low-grade 43 (3.89%) and high-grade squamous intraepithelial lesions (HSIL) 17 (1.54%); invasive cancer 2 (0.18%) and normal 593 (53.8%) and reactive changes 427 (38.7%). The prevalence of epithelial abnormalities is 7.6%[75] Another study in Zaria by Abdul et al.[20] in the Obstetrics and Gynaecology clinic of Ahmadu Bello University Teaching Hospital Zaria, Nigeria, on cervical smear pattern in patients with chronic pelvic inflammatory disease found dysplastic smears, with a prevalence rate 14% for CIN.

They also found higher cases of dysplasia in the chronic PID group than in the control and these differences was statistically significant.[20] Schnatz et al.[76] found that of the 199 Pap smears performed, 21.6% had high-risk (HR) HPV, low-risk (LR) HPV, or both. HR HPV was present in 16.6% of the women. There were 13 (6.5%) abnormal Pap smears, of which 9 (4.5%) had atypical squamous cells of undetermined significance (ASCUS), 1 (0.5%) had atypical glandular cells (AGC), 2 (1%) had low-grade squamous intraepithelial lesions (LSIL), and 1 (0.5%) had a high-grade SIL (HSIL). Other findings were *Trichomonas vaginalis* in 18 patients (9%) and Candida in 27 patients (13.5%).[76] Anorlu et al.[77] in their study of cervical cytology in an urban population in Lagos, found

inflammatory smears of 52.7%, mild dyskaryosis 2.4%, moderate dyskaryosis 1.5%, severe dyskaryosis 0.3% and probable malignancy (malignant cells) 0.8%. Abnormal smears were higher in symptomatic cases compared with asymptomatic cases; 6.1% and 2.1% of symptomatic cases had dyskaryosis and carcinoma, respectively, compared with 3.4% and 0.1% for asymptomatic cases. In postcoital bleeding, 9.3% and 1.9% had dyskaryosis and carcinoma, respectively. Fifty-six of 62 cases of cervical erosion had abnormal smears.

In postmenopausal bleeding, 13.0% and 4.3% had dyskaryosis and carcinoma, respectively. Prevalence of abnormal cervical smears is high in women who have genital tract disease. In places with no national screening programmes every effort should be made to screen such women.[77] Sagay et al. in their study of the genital tract abnormalities among female sex workers who douche with lemon/lime juice in Nigeria**,** among patient examine for Pap smear 87 (24.6%) had SILs [use of lemon juice 26 (33.3%); non-use of lemon juice 61 (22.1%)). Lemon/lime use was associated with cervical dysplasia after controlling for HIV status our data suggests an association between the practice of douching with citrus juice and cervical dysplasia.[78]

The infertility group had more abnormal cervical squamous epithelial abnormalities (48 positive cases, 9.8%) than the controls positive cases, 3%. Women with secondary infertility had more epithelial abnormalities and more high-grade lesions than women with primary infertility. Women with infertility had statistically significant higher frequency of squamous intraepithelial lesions than women without infertility problems of similar age and demographic background. The data suggest that women with infertility might benefit from more frequent cervical cytology screening.[79]

2.5 Knowledge of cervical cancer and cervical cancer screening

In a study among market women in Zaria Ahmed et al. [80] found that only 66.9% of respondents ever heard of cervical cancer screening. About 90% of the nurses who had heard of HPV infection knew that it could be transmitted through sexual intercourse, while only eleven (7.3%) knew it could be transmitted by skin-to-skin contact. Less than half of the respondents who had heard of genital HPV infection knew that it could be prevented by vaccination (31.8%) and condom use (33.1%). Most (74.7%) of the respondents had never heard of the HPV vaccines. Among the 45 nurses who had heard of the vaccines, only twelve (26.7%) knew they were for the prevention of cervical cancer, while 30 (66.7%) respondents thought they were for the prevention of HPV infection.[80]

Makwe et al.[81] in their study of knowledge and attitude assessment among female nurses in tertiary hospital Lagos found that almost all (99.4%) of the respondents had heard of cervical cancer, while about 85% of them had heard of HPV infection. Only a quarter (25.3%) of respondents had heard of the HPV vaccines, and of those only 26.7% knew the vaccines were for the prevention of cervical cancer. Most (70.2%) of the nurses expressed a desire to be vaccinated and 120 (67.4%) supported the vaccination of preadolescent girls. Those who expressed a willingness to be vaccinated were more likely to recommend HPV vaccination for preadolescent girls. About 90% of the nurses who had heard of HPV infection knew that it could be transmitted through sexual intercourse, while only eleven (7.3%) knew it could be transmitted by skin-to-skin contact. Less than half of the respondents who had heard of genital HPV infection knew that it could be prevented by vaccination (31.8%) and condom use (33.1%).Most (74.7%) of the

respondents had never heard of the HPV vaccines. Among the 45 nurses who had heard of the vaccines, only twelve (26.7%) knew they were for the prevention of cervical cancer, while 30 (66.7%) respondents thought they were for the prevention of HPV infection.[81]

Aswathy et al.[82] in their study of knowledge in India found that almost three quarter of the study population (584, 72.1%) were aware of cervical cancer as a type of cancer affecting women. Three quarter of the population (600, 74.2%) knew that it could be detected early by a screening test, but only 47 (5.8%) could name the Pap test as the screening method of cervical cancer. Though 56 (6.9%) had ever done Pap test, only 5.8 per cent could recall the name of the screening test. Only about half (395, 48.8%) of the women were aware of symptoms of cervical cancer. The cardinal symptoms of cervical cancer mentioned included bleeding (289, 35.7%) and pain (70, 8.6%).

Other incorrect responses included lump, stomachache, and pain in legs (9.1%). On being asked about timing of Pap test, majority of women (726, 89.7%) did not know when it should be done, 23 (2.8%) said it should be done only when there is any problem and 60 (7.4%) said it should be done after age of 30 yr. On periodicity, 12 (1.5%) said it should be done monthly, 20 (2.5%) said 1-2 yearly and 23 (28%) every 2 to 3 years. Scoring of knowledge levels showed that 92.8 per cent had poor knowledge on the various aspects like symptoms, risk factors, screening test.[82] The knowledge factors included no symptoms (91, 37.1%), not being aware of the Pap test (28, 11.4%), not necessary (4, 3.1%). Resource factors included lack of time (18, 7.3%), financial reasons (14, 5.7%) and lack of facility in the area (3, 1.2%). Two women said they ‘did not get a chance to do it′. Different psychosocial factors included lack of interest (3, 1.2%) fear of procedure

(3, 1.2%), and embarrassment (1, 0.4%). However, 18 (7.3%) did not specify any definite reason.[82]

Lyimo et al.[83] in their study in Tanzania found a low level of knowledge of cervical cancer and its prevention, among the study participants and less than a quarter (*n* = 75, 21.2%) of the participants had a medium level, and less than a quarter (*n* = 68, 19.2%) had a high level of knowledge. Of the 80 women who reported having been screened, those with the highest level of knowledge about cervical cancer and its prevention were more likely than those with low and medium levels of knowledge to have been screened.[83]

Urasa et al.[84] in their study of knowledge of cervical cancer and screening found that the participating nurses know correctly causes and transmission in 46%, symptoms in 32.1% and adequate risks in only 7.3 %. More than 80% of nurses aged less than 30 years had adequate knowledge of causes of cervical cancer and transmission of HPV compared to only 36.4% and 47.1% for the 30 – 40 and above 40 age groups respectively. However, the association with cadre, department and work experience was not significant. There was a significant association between the nurses' cadre and knowledge level of symptoms of cervical cancer; 43.3% of the registered nurses had adequate knowledge of symptoms of cervical cancer compared to only 21.4% of enrolled nurses.[84]

Kahesa et al.[85] in their study of knowledge found out that More than half (53%) of the women had never heard of cervical cancer. When questioned about perceived barriers for attending health check-ups, 57% stated that difficult access to health service would be a hindering factor. In addition, 31% of the women stated they were reluctant to go for any

test in absence of disease. Lack of medical advice and fear of being diagnosed as having cancer were additionally mentioned as a barrier by 12% and 13% of the women.[85]

Oyedunni et al.[86] in their study of knowledge found that 51.7% of participant opined that regular pap smear can be used to prevent cervical cancer, 30.8% reported early diagnosis, 13.9% mentioned avoidance of multiple sexual partners and 11.9% early treatment. Other ways of prevention mentioned included avoidance of sexual intercourse (8.0%), health education (6.6%), and reduction in exposure to radiation (3.4%).[86] The overall analysis of knowledge of respondents showed that 84.9% had average knowledge score, 14.3% had poor knowledge and 0.8% had very good knowledge score. Respondents' overall mean knowledge score was 22.8±4.1. These levels of knowledge were found not to influence the utilization of cervical screening services.[86]

When the participants were asked about cervical screening techniques, 399 (79.3%) would like to know about screening procedures, 387 (76.9%) about its efficacy in the detection of cervical cancer, 336 (66.8%) wanted to know the age limit for cervical cancer screening, 367 (73.0%) about the side effects of the screening technique while 377(75.0%) would want to know what is next line of action after the screening.[86] Four hundred and twenty-eight (85.1%) of the respondents were aware of at least one screening centre in the city of Ibadan. Majority, 465 (92.4%) of the respondents were aware of the test called pap smear and 360 (77.4%) of these correctly stated what the test was used for the detection of cancer of the cervix and 455 (90.5%) confirmed pap smear to be a diagnostic test. When asked at what age a woman should commence screening for cervical cancer, 81.7% mentioned that when a woman starts having sex and 62 (12.3%)

gave an age range of 15-39 years. When asked how often the screening should be done, 30.2% said twice a year and 38.0% of the respondents said once a year.[86]

Abotchie, et al.[87] in their study found that in general respondents seemed to understand that cervical cancer screening had benefits. Over 64 percent believed that the test could find cervical changes before they became cancerous while 78.5% thought those changes could be easily cured. Among the perceived barriers to screening, the most prevalent perceived barrier was that only half of respondents believed that the purpose of cervical cancer was to diagnose cancer, the second commonest reported barrier (40.6%) was the belief that their partner would not allow them to obtain cervical cancer screening, the following barriers were also important; cost (23.2%), not knowing where to go (24.3%), and belief that everyone would think they were sexually active (24.6%). Encouragingly, few believed that a pap test would be painful (9.4%). While more than 68% perceived that young women were susceptible to cervical cancer, a lower percentage (52.5%) believed that they themselves were at risk for cervical cancer.

About three quarters of respondents (73%) believed that cervical cancer was a serious disease that would make a woman's life difficult and about 62% of students also believed that there were effective cures for cervical cancer. In general, a low percentage received screening cues from their social environment by way of knowing peers who had screened or from a healthcare worker recommendation. Six of the fifteen who had received at least one recommendation from a healthcare worker to get cervical screening scheduled and obtained one. The subset reporting having received a health care worker recommendation, but reported not having the test indicated the following reasons; they could not afford it, they did not know where to get screening, they had no time to

schedule and obtain screening and they felt it was embarrassing to expose themselves for screening. About a third reported ever having heard a mass media discussion on cervical cancer while a fifth have at least once listened to a discussion on cervical cancer at a church or other social gathering. About half also stated that they would be willing to obtain the cheaper alternative cervical cancer screening using visual inspection and mild acetic acid, if a doctor recommended it.[87]

Awodele et al.[88] in their study in Lagos among nurse found that 99% of the respondents were aware of cervical cancer and that 92% of the respondents were also aware of the causative organism of cervical cancer (human papillomavirus). Their major sources of information were through electronic media (43.9%) and health professionals (37.4%). Furthermore, the respondents were quiet aware of Pap smear (91%) as one of the screening techniques of cervical cancer and had good attitudes (89%) towards Pap smear, but most of them had never done it before.[88]

2.6 Risk factors for abnormal cervical cancer

A risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury. Some risk factors for cervical cancer are. Tobacco use, sanitation and hygiene, unhealthy diet with low fruit and vegetable intake, lack of physical activity, alcohol use, sexually transmitted HPV-infection, urban air pollution, indoor smoke from household use of solid fuels.

Patel et al.[89] found that sexually transmitted infections increased substantially in the NE and Wales, numbers of episodes of chlamydia and herpes nearly doubled in both the 20–24 and the 25–34 years age groups in the NE between 2000 and 2009, with a significant

rise in Wales as well. The number of new episodes of genital warts in the NE also increased by almost 25% in the 25–34 years age group during the last 10 years. There were no major changes observed in the other population risk factors during the study period.[89] Were et al.[90] in their study noted that large proportion (over 54%) of study participants who on self report, had multiple sex partners. Tobacco use was uncommon, reported by less than 4%. Sexual debut earlier than 20 years was rampantly mentioned by nearly 62% of participants. The high rate of contraceptive use was not surprising since this was a selected population derived from the MCH-FP clinic they also report that about 35% of participants felt that they were at no risk of developing cervical cancer and felt no need for screening for the condition. Even though only approximately 23% of all respondents felt that they were at risk of the condition, about 65% of all participants, none the less, felt they needed to be screened for the disease. A substantial 42% of the participants had no opinion on their own risk, and this was further reflected in the 54% of all participants who did not have any opinion on who is at risk of cervical cancer.[90]

Kivistik et al.[91] in Estonia found, that cervical cancer risk factors were given without stating this and women were asked whether they think that these are risk factors or not. Women did not have a good overview of the impact of smoking as a cause of cervical cancer - only 49.2% of the women marked this as a risk factor. HPV was better known as a risk factor, 76.6% of the women marked it. Awareness of the risk factors for cervical cancer did not depend on socio-demographic factors.[91] .

Binswanger et al. found an overall, high prevalence of risk factors for abnormal Pap smear among women in the sample. For instance, 64% of the women were current smokers, and 63% reported more than one sexual partner over the past 3 months.

Inconsistent use of a barrier during sexual intercourse ($p<0.05$) and a lower frequency of barrier use when having sexual intercourse ($p<0.05$) were associated with increased reports of abnormal Pap smear. A history of any STI including chlamydia and genital warts was significantly associated with a history of an abnormal Pap smear. Additionally, a history of any gynaecologic infection including candidiasis and bacterial vaginosis was significantly associated with a reported history of an abnormal Pap smear. Having a healthcare provider was not significantly associated with ever having an abnormal Pap smear. Eighty percent (n=306) of women reported a history of pregnancy, and 73.9% (n=291) reported a history of giving birth. Number of live births was not associated with reporting an abnormal Pap test.[92] Ali et al.[93] reported more than 35 risk factors namely.

Sexual practice, which included unprotected sex, multiple partners and other promiscuous behavior was the most common risk factor observed (45%). Sixteen percent of the sample was of the opinion that poor hygiene can be a risk factor for cervical cancer. Other stated risk factors were, infection, nulliparity, multiparity, early stage at first coitus, family history, smoking, age, contraception, etc. Most common presenting complain reported was lower abdominal pain (42%) and per vaginal bleeding (40%). While few thought discharge (20%), fever (15%) and menstrual irregularity could also be the initial symptoms patients with cervical cancer can present with.[93] The work of Muñoz et al.[94] has shown that tobacco smoking, high parity, long-term hormonal contraceptive use, co-infection with Chlamydia trachomatis, herpes simplex virus type 2, HIV, immunosuppression, certain dietary deficiencies, and genetic and immunological host factors are contributing factors to cervical cancers.

2.7 Uptake of cervical cancer screening

Cervical cancer screening is acknowledged as currently the most effective approach for cervical cancer control, and it is associated with reduced incidence and mortality from the disease.[83] In developed countries, cervical cancer prevention programmes have been shown to be effective in reducing the incidence of and mortality from cervical cancer, while in developing countries, where these programmes exist, they have failed to meet their objectives due to logistical, financial and social problems.[95]

The uptake of cervical cancer screening in many developing countries such as Tanzania is still poor due to various factors. Demographic characteristics include education, age, and marital status. In regards to education level, several studies have found that women with high screening rates have a high level of education.[96,97] However, women with high education may not necessarily seek screening,[98] thus, additional factors must be considered. Rates of screening are substantially lower in younger women aged 20-29 years and elderly women aged 60 years and above.[96,99]

Also, unmarried and widowed women are less likely than married women or women living with a partner to obtain screening.[96] However, some studies have found that single women are more likely than married women to have pap screening.[99, 100]

Screening is a universally accepted early detection strategy; yet, the utilization of screening in many developing countries is still poor.[101] Although some reasons for poor uptake have been studied, the most significant ones that can directly inform public policy are not yet known.[83] Women who were less educated were less likely to participate in screening, a finding that is consistent with previous reports.[102,103] Previous research on

the relationship between socioeconomic factors and the use of health services has shown that education influences screening behaviour through its effects on income and through its association with individual knowledge about cancer screening.[104] One key issue is to determine how to obtain high levels of attendance, which is essential to achieving adequate coverage. Barriers to screening uptake include a lack of knowledge about the disease, a lack of familiarity with the concept of prevention, the geographical and economic inaccessibility of care, the poor quality of services and a lack of support from husbands and families.[105,106] Evidence indicates that to minimize these barriers, strategies in low-resource settings should be socially and culturally appropriate.[105,107] The type of screening test did not appear to be a significant predictor of compliance. Cervical cancer screening in a large population-based programme carried out in a developing country; information on these variations is essential to help identify underserved women. Our service delivery strategy was designed to reduce the main barriers to screening, including the poor quality of health resources, economic and social inaccessibility, lack of knowledge about preventing cervical cancer, difficulties in paying for services and the social stigma associated with reproductive health problems.[107, 108,109]

Bhagwan Nene et al in their study found satisfactory general level of participation (79%), women with a specific socio-demographic profile were still less likely to participate in the programme. The lowest rate of participation was found among nulliparous women. In addition, women who used contraception were more likely to participate. Having had a higher number of pregnancies, using family planning, having contact with the health-care system have been found to be associated with an increased use of screening services,[110,111,112] indicating that previous contacts with reproductive health services may

increase awareness, making women more responsive to cervical cancer Increasing age has been found to be associated with a decreased use of screening services in several studies carried out in different settings.[95,113] This has been confirmed in rural India in a study that screened with visual inspection with acetic acid.[7]

It has been suggested that older women may be less responsive to awareness activities because they believe that detection and treatment make no difference them. Therefore, strategies to promote cervical cancer screening should pay particular attention to incorporating messages specifically targeted at older women. Our finding that married women are more likely to be screened is consistent with previous studies in India and other low-resource settings.[110,113]

Two proposed reasons are: first, married women may receive more frequent obstetric or gynaecological care, making them more responsive to reproductive health care,[114] and second, a key factor in a woman's decision to participate in cervical cancer prevention services is her husband's positive emotional support.[107]

In Nigeria sporadic screening is being carried out using opportunist method for those who visit certain clinics. Also, there is no standard policy or protocol for cervical cancer screening in Niger which is very similar to that of Nigeria which is sporadic or opportunistic. It is more worrisome as all sexually active women are at risk for the development of cervical cancer. Where the services are available, many women seem not to be aware of the services. Services are mainly available in some secondary and tertiary health facilities at a cost that make it not accessible and affordable to many women. Over the years awareness and uptake of services has remained poor despite all the studies on

cervical cancer screening. Various studies indicate that cervical cancer screening services is poorly utilized and the awareness of the need for it is very low but can be treated if detected early.[115, 116]

The barriers identified by Mutyaba[117] were "ignorance about cervical cancer, cultural constraint/beliefs about illness, economic factors, domestic gender power relations, alternative authoritative sources of reproductive health knowledge and unfriendly health care services" Women in developing countries like Nigeria seem to utilize reproductive health services more during pregnancy. They also use reproductive health services for post natal check up and family planning or when faced with various gynaecological problems. It is important to ensure that these women are screened in order to reduce incidence of cervical cancer. Their visit to the clinics provides opportunity to give them information on the importance of the screening and where to get the services. The researchers observed that many women attending various health facilities have not been screened. Thus the need to explore the factors influencing utilization of cervical screening services among women in selected Health facilities in Nigeria.

CHAPTER THREE - METHODOLOGY

3.1 Study Area

Niger State is the largest state in the country in term of (land mass) located in North geopolitical zone of Nigeria.[38] The state capital is Minna, other major towns are Bida, Kontagora, and Suleja. It was created in 1976 when the then North-western state was bifurcated into Niger State and Sokoto state. The state is named after the River Niger. Minna which is also the headquarters of Chanchaga Local Government area has estimated population 235,581 in 2012 [38] and with female population of 112,934 in 2012[38] with overall population of 4,814,215. The state General Hospital Minna is situated in Chanchaga LGA of the State. It has a total of 625 beds spread over a number of clinical departments, a total number of about 10,000 patients are usually seen annually out of these about 200 gynaecology cases are seen per month. This hospital is the main public health facility in the state, this research will therefore be carried out in this facility.

3.2 Study Design

This is a cross-sectional, descriptive study carried out in the Gynaecology clinic of Minna General Hospital, from January - March 30, 2013. There were 280 females attending the clinic during the time of the study. Therefore for each week there will be 70 new gynecologic cases.

3.3 Sample size calculation and sampling method

$$N = \frac{Z^2 \times P \times Q}{d^2}$$

Where

N = Minimum sample size

Z = The standard normal deviate (1.96 for 95% confidence level)

P = The proportion of the population having the characteristic being measure, local prevalence = 7.6%[75]

q = The proportion of the population that does not have the characteristic (i.e. 1-p)

d = The level of accuracy desire, or sampling error (tolerance error 5%)

Using the formula above the minimum sample size shall be 108 at (5%) level of probability;

Let

P = 7.6% = 0.076

q = 92.4% = 0.924

$$n = \frac{(1.96)^2 \times 0.076 \times 0.924}{(0.05)^2}$$

n = 108 Sample size for the study was calculated as shown

Sampling Method

Systematic Sampling: Based on the above, samples were selected using the number of the clinic attendees as the sample frame, an interval was than generated which was used for the selection.

The formula N/n = k,

Where

n = the sample size,

N = the sample frame

k = sampling interval will be used.

N is the sample frame (since there are 70 new cases per week in the clinic, in four weeks the sample frame will be 70 x 4 = 280).

n is the sample size, which is 108.

The Sampling interval, k = 280/108 = 2.5

For each clinic day, the first participant was selected using simple random sampling, (based on the interval which is 3, three ballot paper were marked 1-3 and a bottle spin to obtained the starting point, 3 of the patient were ask to pick this paper and the one that happened to picked one was our starting point) and subsequently other participant was picking using the sampling interval which is 3. Where a patient declines (that is not interested) the next participant was picked. This process was repeated until the complete sample size of 108 was generated.

3.4 Study population

Sexually active women age from 15 years and above who are attending gynaecologic and obstetrics clinic in this hospital.

Eligibility

Inclusion criteria

Women 15 years and above whom consented to participate in the study and attending this clinic during the study period.

Exclusion criteria

Pregnant women were excluded from this study.

3.5 Ethical clearance

Ethical approval was sought from the ethical and scientific committee of Ahmadu Bello University Teaching Hospital Shika-Zaria, while permission to carry out this study was obtained from General Hospital Minna and informed consent was obtained from participants.

Data collected was kept confidentially on a pass word protected computer. Names were made optional to the participant, while the participant were made to make their mobile number available for contact tracing for any abnormal result. The data collected was not linked to any person. Participants were given health education on the implication of risk behaviors associated with cervical cancer and measures to reduce the risks.

3.6 Data Collection, Processing and Analysis

Data were collected using pre-tested semi-structured questionnaire, similar to the other cervical cancer studies coordinated by Ahmadu Bello University Teaching Hospital Shika Zaria 2010 included information on socio demographic characteristics, smoking, reproductive, sexual habits of the woman and her husband, and lifetime use of contraceptive methods. which has four sections: (A) Socio demographics of respondents,

(B) Gynecological history, (C) Knowledge about the risk factors & screening methods, (D) Pap smear finding.

All data were entered and the analysis was performed using the Epi-info version 3.5.3 (CDC Atlanta, GA) computer software program, analysis at 95% confidence interval, 5% significance level. The following statistics were used: Univariate analysis: frequencies, means, proportions; bivariate analysis: odds ratios analysis for association between cervical abnormalities, for selected exposure factors Fisher's exact test and/ or Chi² (χ^2) test.

Scoring of knowledge

There were eleven questions asked about cervical cancer, and each question was score one mark. If any question was answer correctly we give one mark per question and any wrong answer attracts zero mark. Commutatively the scores are categorized;

1-3 = poor knowledge,

4-6 = fair knowledge,

7 - 11 = good knowledge.

The mean knowledge score for all the question was calculated, and this is the bases for scoring. Those that score below mean score were graded as low knowledge and those that score above were score as high knowledge.

3.7 Pap smear collection

All pelvic examinations were performed by a gynaecologist or a trained gynaecology nurses. The participant was placed in the lithotomy position and a Cusco's speculum applied. Following visual inspection with a good light source, the cervix was assessed for gross lesions and abnormal discharge. Cervical smears were obtained using the Ayre's spatula from both the ectocervix and endocervix. Smears were made at two points on pre labelled glass slides and then fixed immediately in 95% (v/v) alcohol in coupling jars. These were delivered to the cytopathology laboratory of Ahmadu Bello University Teaching Hospital Shika-Zaria for staining and microscopic examination. All the slides were stained using Papanicolaou staining technique (Appendix V). Cytology was reported using the Bethesda system of classification by an experienced cytopathologist. With the exception of patients with a normal report, all others were referred to the gynaecology clinic for further evaluation.

CHAPTER FOUR - RESULTS

A total of 108 participants were included in the study. The response rate was 100%. The mean age was 36.7±10.4 years (range: 20–78 years), with 56.4% in the 20-39 year old range, 72.2% were Muslims and 93.5% are married. Majority (44.4%) of respondents had some form of tertiary education with the mean number of children reported as 4.7±2.6 and ranging from 1–12. More than two-thirds of respondents had 4–6 children, while only 73.6% of reported having one sexual partner in the last one year.

4.1 Socio-demographic characteristics of respondents

Table 1: Socio-demographic characteristics of respondents screened by Pap test for abnormal cervical smear in General Hospital Minna (n=108)

Variable	Frequency	Percent (%)
Age group		
<20	4	4.0
20-29	21	19.0
30-39	40	37.0
40-49	29	27.0
50-59	12	11.0
60-69	1	1.0
70 +Years	1	1.0
Marital status		
Single	4	3.7
Married	101	93.5
Separated	1	0.9
Widowed	2	1.9
Ethnic group		
Gwari	30	28.0
Nupe	24	22.0
Hausa	22	20.0
Igbo	5	5.0
Others	27	25.0
Religion		
Christianity	30	27.8
Islam	78	72.2
Educational status		
Primary	20	19.0
Secondary	17	16.0
Tertiary	48	44.0
None	23	21.0
Occupation		
Civil Servant	22	20.4
Medical Practitioner	13	12.0
Merchant	20	18.5
Student	5	4.6
House wife	42	38.9
None	6	5.6

4.2 Knowledge and awareness of cervical cancer among the respondents

Table 2: Knowledge and **awareness of cervical cancer among women screened by PAP test for abnormal cervical smear in General Hospital Minna (n=108)**

Variables	Frequency	Percentage
Study participant aware about PAP test		
Yes	72	66.7
No	36	33.3
Awareness source		
Health care personnel	23	21.3
Media	22	20.4
Family	9	8.3
Friend	9	8.3
Place of work	7	6.5
Others	38	35.2
Symptoms of cervical cancer		
Bloody vaginal discharge	7	6.4
Smelly vaginal discharge	6	5.6
Don't know	95	88.0
Person-to-person-transmission possible		
Yes	36	33.6
No	71	66.4
Cervical cancer preventable		
Yes	88	81.5
No	4	3.7
Don't know	16	14.8
Means of prevention of cervical cancer		
Antibiotic	17	15.7
Cervical screening	61	56.5
Others	6	5.6
Don't know	24	22.2
Possibility of cure		
Yes	86	79.6
No	6	5.6
Don't know	16	14.8
Cure by traditional healer possible		
Yes	4	3.7
No	104	96.3
Risk factors for cervical cancer		
MSP	16	14.8
Dietary	4	3.7
Others	21	19.5
Don't know	67	62.0

Comment: Approximately two third (66.7%) of respondents reported having heard about cervical cancer, 21% heard about it through health care provider. Eighty five percent believed the disease to be preventable, of which 20% said through the use of antibiotics, while 80% felt it could be curable, of which only 3.7% said through traditional healer.

4.3 Knowledge of cervical cancer screening

Table 3: Knowledge of cervical cancer screening among women screened by PAP test for abnormal cervical smear in General Hospital Minna (n=108)

Variable	Frequency	Percent (%)
Knowledge on cervical screening		
Yes	77	71.3
No	31	28.7
Source of knowledge		
Health care personnel	37	34.3
Media	17	15.7
Friend	12	11.1
Lecturer	10	9.3
Don't know	32	29.6
Knowledge on types of screening		
Pap smear	74	68.5
Computer	2	1.9
VIA	5	4.6
Colposcopy	0	0.0
Don't know	27	25.0
Age of cervical screening		
<15	12	11.1
15-30	8	7.4
21-30	3	2.8
>30	4	3.7
Don't Know	81	75

Comment: Of the 108 respondents, 77% of respondents had heard about cervical cancer screening, 68% knew Pap smear test as the only screening method, one quarter of respondents have never heard about cervical cancer screening. Only 15.7% heard their information from the media. Eighty one (75%) respondents did not know the age at which to go for cervical screening.

4.4 Level of knowledge on cervical cancer

Table 4: Level of knowledge on cervical cancer among women screened by Pap test for cervical abnormalities in Minna General Hospital (n=108)

Knowledge scoring*	Level of knowledge	Frequency	Percent (%)
1-3	Low	19	17.6
4-6	Medium	35	32.4
7+	High	54	50.0

* Mean Score = 6.2 ± 2.8

Comment: Using the sum of the knowledge items, the mean knowledge score 6.2 ± 2.8 was determined. Half (n = 108, 50.0%) of the participants had a high level of knowledge of cervical cancer and its prevention, greater than a quarter (32.4%) had a medium level, and less than a quarter (17.6%) had a low level of knowledge. Women with the highest level of knowledge about cervical cancer were more likely to be screened before the study compared to those with medium or low knowledge (OR=0.01; 95% CI: 0.005-.0.2). However, women with higher education were more likely to have higher knowledge (OR=2.6; 95% CI: 1.0 -.7.7).

4.5 Cytological results of PAP smears

Of the 108, 93 (86.1%) of the study participants had a Pap smear without abnormal findings according to the Bethesda system. However, 17% showed signs of inflammation. There were 13.9 % abnormal results consisting of low grade squaomous intraepithelial lesion (LSIL) seen in 12 specimens (11.11%) with 2 (1.9%) Human PapillomaVirus effects. During the study period no any high grade squaomous intraepithelial lesion or invasive cancer was detected.

4.6 Risk Factors for abnormal cervical cancer

Table 5a: Results of the frequency distribution in relation to the risk factors among women screened by PAP test for abnormal cervical cancer in Minna General Hospital (n=108)

Variable	Frequency	Percent (%)
Age group		
<20	4	3.7
20-29	21	19.4
30-39	40	37.1
40-49	29	26.9
50-59	12	11.1
60-69	1	0.9
70+	1	0.9
Marital status		
Married	101	93.5
Unmarried	7	6.5
Type of marriage		
Monogamous	61	56.4
Polygamous	43	39.8
Family history of cancer		
No	67	62.0
Yes	40	37.0
Age at first sex		
Less than 20 years	70	64.8
Above 20 years	35	32.4
STI		
No	48	44.4
Yes	57	52.7
Smoking		
No	92	85.1
Yes	8	7.4
Sex uncircumcised partner	105	97.2
No	1	0.9
Yes		
Diet on fat		
No	24	22.2
Yes	84	77.8

Table 5b: Results of the frequency distribution in relation to the risk factors among women screened by PAP test for abnormal cervical cancer in Minna General Hospital (n=108)

Variable	Frequency	Percent (%)
Diet on fruit		
No	6	5.5
Yes	100	92.5
Education status		
High	65	60.2
Low	43	39.8
Family planning		
No	73	67.5
Yes	26	24.1
Parity		
High	51	47.2
Low	47	43.5
Income status		
High	29	26.8
Low	70	64.8

Comment: The majority of the women are married, with about sixty of them with some form of educations with only less than thirty using some form of family planning.

Table 6: Factors associated with abnormal pap smear among women screened by PAP test for abnormal cervical smear in General Hospital Minna (n=108)

Variable	Pap Smear Result		Odds ratio (95% CI)	P- Value
	Abnormal n (%)	Normal n (%)		
Age 18 – 49 years ≥ 50 years	 10 5	 94 10	 4.78 (1.13-19.38)	 0.023
Sexual relationship with uncircumcised partner Yes No	 0.0 15(96.7)	 1(1.1) 90(98.9)	. 0.3 (0.09 - 93.4)	 0.2
Family planning used Yes No	 4(15.4) 10(13.7)	 22(84.6) 63(86.3)	 1.2 (0.3 - 4.0)	 0.4
Family history of cervical cancer Yes No	 0(0.0) 15(16.0)	 13(100) 79(84.0)	 0.20 (0.01 - 3.60)	 0.38
Food rich in vegetable Yes No	 11(11.2) 4(50.0)	 87(88.8) 4(50.0)	 0.12 (0.03 - 0.58)	 0.01
Food rich in fruit Yes No	 13(13.0 2(33.3)	 87(87.0) 4(66.7)	 0.29 (0.04 - 1.70)	 0.20
Food rich in fat Yes No	 10(11.9) 5(20.8)	 74(88.1) 19(79.2)	 0.5 (0.15-1.68)	 0.21
Age at first sex <20 Yes <20 No	 9(12.9) 6(17.1)	 61(87.1) 29(82.9)	 0.7 (0.23-2.19)	 0.28
Marital status Unmarried Married	 0(0.0) 15(14.9)	 7(7.5) 86(85.1)	 0.40 (0.02-7.6)	 0.60

Comment: In bivariate analysis, only three factors were found to be significantly associated with abnormal Pap smear results: Age ≥ 50 years (OR=4.78, 95% CI: 1.13 – 19.38), food rich in vegetables (OR=0.12; 95%CI: 0.03-0.58) and screened once before study (OR= 93; 95% CI: 4.72-1829).

Multivariate analysis of risk factors for abnormal cervical smear

Table 7: Multivariate analysis of risk factors for abnormal cervical smear among women screened by Pap test for cervical abnormalities in Minna General Hospital (n=108)

Term	Odds Ratio	95% C.I.		P-Value
Age (>=50/<=49)	4.5184	1.10627	21.2083	0.0559
Education (low/high)	0.4289	0.1074	1.7128	0.2308
Food rich in fat (yes/no)	0.6744	0.1450	3.1372	0.6155
Fruits (yes/no)	1.2526	0.0569	27.5746	0.8864
Age at first sex years (<20+/<20 years)	1.3422	0.3566	5.0519	0.6635
Knowledge (low/high)	1.7807	0.3668	8.6449	0.4741
Uncircumcised partner (yes/no)	1.7403	0.1088	27.8462	0.6953
Vegetable (yes/no)	0.2182	0.0163	2.9197	0.2500
Screened once before study (yes/no)	0.0000	0.0000	>1.0E12	0.9665

Comment: The following variables were included in the multivariable analysis: dietary intake with food such as fat, fruits, educational status, level of knowledge, sex with an uncircumcised male partner to control for confounding. Logistic regression analysis revealed that only age was independently associated and significant with the risk of abnormal pap smear (OR adjusted= 4.5**,** 95% CI: 1.0-21.2 P=0.0559).

Table 8: Odds ratios (ORs)[a] and corresponding 95% confidence intervals (CIs) for major risk factors for abnormal positivity among women screened by pap test for cervical abnormalities in Minna General Hospital (n=108)

Term	Crude OR (95%CL)	Adjusted OR (95%CL)	P-Value
Age (>=50/<=49)	4.78 (1.13-19.38)	4.5184(1.10-21.20)	0.0559
Education (low/high)	1.9(0.58-6.70)	0.4289(0.10-1.71)	0.2308
Food rich in fat (yes/no)	0.5(0.15-1.68)	0.6744(0.14-3.13)	0.6155
Fruits (yes/no)	0.29(0.04-1.70)	1.2526(0.05-27.57)	0.8864
Age at first sex years (<20+/<20 years)	0.7(0.23-2.19)	1.3422(0.35-5.05)	0.6635
Knowledge (low/high)	1.5(0.64-3-46)	1.7807(0.36-8.64)	0.4741
Uncircumcised partner (yes/no)	0.3(0.09-93.4)	1.7403(0.10-27.84)	0.6953
Vegetable (yes/no)	0.12(0.03-0.58)	0.2182(0.016-2.91)	0.2500
Screened once before study (yes/no)	93(4.72-1829)	0.0000(0.00->1.0E)	0.9665

CHAPTER FIVE – DISCUSSION

The prevalence of abnormal cervical findings according to the Bethesda system of classification was 13.8% in women screened at the General Hospital Minna. The age pattern was notable, the highest prevalence seen among women 49 years and above. There was higher level of knowledge among women with higher education. However, the prevalence noted in this study is similar to studies of the same environment and other developing countries.

Cervical smear test are routinely used for the purpose of screening for cervical cancer since clinical disease may be preventable by the detection and appropriate management of its precursor. There is evidence that regular screening of sexually active women confers an overall public health benefit in reducing morbidity and mortality from the disease. The prevalence noted in the published studies in an environment comparable to Nigeria ranged from 4.8% to 14%[118] among normal women without any symptoms.[118]

However, in Gombe Federal Medical Centre higher prevalence was reported (22.7%) compared to the results obtained from this study. Possible reasons may be the technique used, and the centre was newly established and being newly established patient may be referred to from other part of North East zone.[74]

Leonard I. et al.[71] in Enugu who found the prevalence of abnormal PAP smears in 12.2% of the screened women, abnormal smear results were seen in 14 (1.7%) of women with younger age (39 years <30).

The higher prevalence seen in the older age group is congruent with the findings of Leonard et al.[71] showing an increasing proportion of abnormal cervical findings with increasing age and doubling after the age of 54 years. All the women with abnormal cervical findings were or had been sexually active, which is also similar to the findings in this study. In Ibadan Thomas et al. assessed an overall prevalence of cervical abnormalities of 7.6%.[71]

In Zaria in-patients with chronic pelvic inflammatory disease (PID) a prevalence rate 14% for Cervical Intraepithelial Neoplasia (CIN) was detected. Furthermore, more cases of dysplasia were found the chronic PID group compared to the controls, as earlier stated abnormal cervical cytology was more prevalent in women with abnormal finding than in healthy one.

A study conducted by Schnatz et al.[76] in Okene, Nigeria, found 13 (6.5%) abnormal Pap smears.[76] Anorlu et al.[77] in their study of cervical cytology in an urban population in Lagos found a higher number of abnormal smears in symptomatic cases (6.1%) compared with asymptomatic cases (3.4%),[77] Sagay et al..[78] in their study of genital tract abnormalities among female sex workers who douche with lemon/lime juice in Nigeria found a prevalence of 33.3% among women using lemon/lime juice for douchng and 22.1% among women not using lemon[78]

The different results of the presented studies might also be due to the different techniques (PAP smear, VIA) and classifications used (CIN or ASCUS, LSIL, HSIL). The high prevalence of cervical abnormalities in middle and young women in Minna may have different explanations. A high proportion of women in Minna get married at early age, furthermore, women of this area may also be at risk to cervical abnormalities, possibly due to nutritional deficiencies.[1]

Pap smear test may also be used to detect inflammatory changes occurring within the cervical epithelium and occurred in 14.8% of cases in this study. These may be characterized by definitive infections of human papilloma virus infection. The prevalence of cytological evidence of HPV infection of the cervix of 1.8% in this study is less than 22% reported in Gombe by Audu et al.[74] perhaps due to difference in sexual behaviours between these populations. Teenage pregnancy, age at first sex, parity income, number of STI were not significantly associated with abnormal pap smear results.

This study showed that cervical cancer awareness was 66.7%, a value that is similar to study conducted among market women in Zaria with 66.9% level of awareness, but less than what was reported among nurses in South Eastern Nigeria by Arulogun and Makwe et al. (80.9% and 99.4%).[81]

The varying level of awareness in these studies may be due to the fact, that a different client group was used, ranging from nurses who are supposed to be advocator for cervical cancer, to federal civil servant who are employee in a government department. Anecdotal evidence suggests that federal civil servants in Nigeria are likely to be more and well educated and possess higher levels of socioeconomic status compared with the general Nigerian population.

Thus we hypothesized that the level of awareness of the Pap smear test and cervical cancer is directly related to the level of utilization. Furthermore, that both awareness and utilization would be higher among civil servants than reported for the general population, and market women who are target group by community health outreach programs.

Aswathy et al. in their study of knowledge in India found that almost three fourths of the study population was aware of cervical cancer as a type of cancer affecting women.[82]

The significant difference with the study among this group of women might be because this study involved a large portion of the "public" as opposed to Makwe et al.[81] where the study participants were health care providers.[81]

Lyimo et al.[83] noted a lower level of awareness in Tanzania than had been reported in this study. Possible reasons given for the low knowledge level obtained in Tanzania are the lack of proper communication between media, health care provider and study participants.[83] This also contrasts some reports from Nigerian communities who found that majority of the respondents never heard of cervical cancer or cervical cancer screening. Ogunbode et al.[119] reported less than 20% of the respondent to be aware of cervical screening in Ibadan[119] and in Feyi-Waboso et al.[120] found only 16% of the respondents in south-eastern Nigerian heard knowledge of screening services. [120] Kahesa et a.[85] in Dar es Salaam, Tanzania, in a community-based study on knowledge found that more than half of the women had never heard of cervical cancer.[85]

The majority of the participants in the study of Abotchie et al.[87] understood that cervical cancer screening had benefits.[87] Less than fifty percent of the participant cited the health care providers followed by media as their source of information about cervical cancer or Pap smear test. Thus the health care providers play an important role in disseminating health education information with the next most common source being the media thus the proportion is still low.

Other authors have shown that the role of the media in disseminating health maintenance information cannot and should not be discounted when health education is being carried out.[121,122,123] A health education program about cervical cancer that incorporates the media could be very impactful in our environment. The National Health Service (NHS) stated that the involvement of prominent public figures like movie stars or music artists can go a long way in increasing awareness about cervical cancer screening.[124]

Concerning the knowledge of the risk factors of cervical cancer the knowledge is poor. The majority of the study participants had no knowledge on the risk factors for cervical cancer.

This contrast reports by others authors like Hyacinth et al. and Oyedunni et al. in the southern 87.7% Nigeria possible reason could be that no proper communication channel for cervical cancer activities in these parts of the north country.[87, 121]

Screening has been shown to be accompanied by a reduction in the incidence of invasive cervical cancer.[124] Only few of our patients have been screened prior to this study. This might reflect lack of public awareness on cervical cancer screening and the related morbidity and mortality.

CHAPTER SIX – CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The presented study provides prevalence data on cervical abnormalities and knowledge about cervical cancer screening uptake and risk factors for cervical abnormalities in Niger state, which will be useful for planning future cervical cancer control programs. One of the key implications of this study is the need for cervical cancer screening education programs to be carried out among this group of women at all levels of health care services especially among these women attending gynecologic clinic.

Despite the high level of awareness among the respondents, utilization remains low. Reproductive health education is highly needed to play an important role in reversing this trend. Clinics constitute one of most effective and reliable area where authoritative sources of information about health matters for the general populace especially women can be passed. These public health clinic-based education programs can provide women useful information that they can benefit and passed to others.

This study is not without important limitations. First, it was essentially a cross-sectional study, that is time bound with a Papanicolaou smear taken only once at recruitment. Follow-up with multiple Papanicolaou smears over a period of time would have been ideal, with more number of samples to increase the power of the test.

6.2.1 RECOMMENDATIONS

1. Niger state Government should organized Public health education on cervical cancer, and screening activities be carried out among young women with intense public health campaign, be conducted on a recurring basis; providing cervical cancer education with emphasis on its aetiology, risk factors and methods of prevention.
2. Policies should be put in place by the federal government that encourage or as appropriate mandate that all women coming for antenatal services are provided with the options of a Pap smear test, through sensitization, sharing of information materials such as posters and handbills reflecting how cervical cancer can be prevented and how to identify symptoms related to the diseases.
3. The local authorities should introduce measures on public enlighten in local dilate on Improvement and behavioral modification that may reduce the risk of HPV infection among the women. This can be achieved by avoiding multiple sex partners (MSP) or safe practices.
4. There is need to facilitate communication and inter-disciplinary collaboration in sharing of information between health care provider, public health epidemiologists and policy makers.

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APPENDICES

Appendix I – Data collection tools

QUESTIONNAIRE

All information given in the questionnaire shall be treated with strict confidentiality

Tick the boxes provided as appropriate

A Personal data

1 Age.....

2 Ethnic group

Nupe ( ) Gwari ( ) Hausa ( ) Igbo ( ) Others.....

3 Marital status:

Married ( ) Divorced ( ) Single ( ) Widowed ( ) order of marriage

1st ( ) 2nd ( ) 3rd ( ) >3( )

4 Religion

Islam ( ) Christianity ( ) Others:.....

5 Educational status

No formal education ( ) Primary ( ) Secondary ( ) Tertiary ( )

B Obstetric History

1 Have you been pregnant before? Yes ( ) no ( )

2 If yes ( ), how many times.....

C Knowledge of cervical cancer

1 Have you heard of cancer of the neck of the womb? Yes ( ) No ( )

2 If yes, how did you get to know about it?

Friends ( ) Family ( ) Media ( ) place of work ( ) Health care personnel ( ) others specify.....

3 What do you think are the risk factors of developing cervical cancer?

4 Age of onset of sexual intercourse: Yes ( ) No ( ), don't know ( )

5 Advance age yes ( ) No ( ), don't know ( )

6 Family yes ( ) No ( ), don't know ( )

7 Women's number of sexual partners yes ( ) No ( ), don't know ( )

8 Type of diet yes ( ) No ( ) don't know ( )

9 High socio-economic status yes ( ) No ( ), don't know ( )

10 Low socio-economic status yes ( ) No ( ), don't know ( )

11 Number of children yes ( ) No ( ), don't know ( )

12 Not having children yes ( ) No ( ), don't know ( )

13 Cigarette smoking yes ( ) No ( ), don't know ( )

14 Sexually transmitted infections/disease, yes ( ) No ( ), don't know ( )

15 Uncircumcised male partner yes ( ) No ( ), don't know ( )

16 Others specify: .....

D How do patient present with cancer of the cervix?

1 Bloody vaginal discharge yes ( ) No ( ), don't know ( )

2 Bleeding after intercourse yes ( ) No ( ), don't know ( )

3 Weight loss: yes ( ) No ( ), don't know ( )

4 Weight gain: yes ( ) No ( ) don't know ( )

5 Smelly vaginal discharge: yes ( ) No ( ), don't know ( )

6 Pain while urinating yes ( ) No ( ), don't know ( )

7 Abdominal pain: yes ( ) No ( ), don't know

8 Others.....

E Knowledge of cervical cancer screening

1 Do you think cervical cancer can be contacted from person to another?

Yes ( ) No ( )

2 Is cervical cancer preventable? Yes ( ) No ( ), don't know ( )

If yes, how

I. cervical screening ( )

II. Antibiotic ( )

III. Others specify ( )

3 Is cervical cancer curable? Yes ( ) No ( ), don't know ( )

If yes, how:

I. In the hospital

II. Traditional healer

4 Have you heard of cervical cancer screening? Yes ( ) No ( )

5 Source of information

I Lecturer yes ( ) No ( )

II Media yes ( ) No ( )

III Friends yes ( ) No ( )

IV Health centre/doctor yes ( ) No ( )

VI Can't remember yes ( ) No ( )

6 What types of screening do you know?

Pap smear ( ), Colposcopy ( ), Liquid-based cytology ( ), Computerized screening ( ), HPV Testing ( ), VIA Testing.

If yes to Pap smear, when should a woman do her first pap smear?

Soon after her 1st sexual exposure: yes ( ) No ( ), don't know

<15years ( ) 15-20years ( ) 21-30years ( ) >31 years ( ) don't know ( )

How often should it be carried out?

Once a year ( ), every three years ( ), every five years ( ).

Don't know ( ) others specify: .....

APPENDIX II

INFORM CONSENT FORM

I Hauwa Inna Muhammad, undertaking a research on prevalence ofabnormal cervical smear in the gynaecologic clinic of General Hospital Minna,Niger state, here by seek your consent on the collection of cervical sample from you. This research will help to know the prevalence of cervical cancer among women of child bearing age attending O and G clinic in the state and measures will be taken to reduce transmission of this viral infection.

All pelvic examinations will be performed by a trained gynecology nurses. The clients will be placed in the lithotomy position and a Cusco's speculum applied. Following visual inspection with a good light source, the cervix will be assessed for gross lesions and abnormal discharge. Cervical smears will also be obtained using the Ayre's spatula from both the ectocervix and endocervix. Smears will be made at two points on prelabelled glass slides that correspond to the questionnaire number and then fixed immediately in 95% (v/v) alcohol in coupling jars. These will be delivered to the cytopathology laboratory in Ahmadu Bello University Shikka for staining and microscopic examination. All the slides will be stained using the Papanicolaou staining technique. The fixed slides will also be stained in Harris hematoxylin. The smear will then be decolorized with acid alcohol and rinsed in Scott's tap water. They will then be stained in orange G stock solution and finally stained with Eosin Azure 50. The slides will further be rinsed in two changes of 95% alcohol, cleared in xylene, and mounted in a neutral synthetic resin medium. To ensure unbiased reporting, the cytopathologist will used blinded to the clinical profile of the samples. Cytology will be reported using the Bethesda system of classification by an experienced cytologist/pathologist. The smears

will be reported as normal, inflammatory, atypical squamous cells of undetermined significance, low-grade SIL, or high-grade SIL. Women with initial "inflammatory" Papanicolaou smear results will be given appropriate advise to seek immediate medical attention. With the exception of patients with a normal report, all others will be referred to the gynecology clinic of ABUTH for further evaluation.

I will also like to inform you that your name will not be disclosed to any one and no financial involvement during the course.

I will be grateful if my request is granted.

....

Signature Date

APPENDX III-ETHICAL CLEARANCE

Ahmadu Bello University Teaching Hospital

P.M.B. 06, Shika - Zaria, Kaduna State, Nigeria. 069-876305

website: www.abuth.org abuthshika@yahoo.com Abuthshika@gmail.com

Chairman of Board:

Chief Medical Director: DR. LAWAL KHALID, *MBBS, FMCS, FWACS, FRCS(ED) mni*

Chairman, Medical Advisory Committee: DR. ABDULLAHI MOHAMMED, *MBBS, FWACP FICS*

Director of Administration: BARR. ISHAK BELLO, *LL.B, BL, LL.M, PGDM, AHAN, FCAI*

Our Ref: ABUTH/HREC/TRG/36

7th March, 2013

Hauwa Mohammed
Dept of Community Medicine
ABU Zaria.

ETHICAL CLEARANCE.

Your application for ethical clearance on the research proposal titled: - 'Prevalence of abnormal cervical Smear among women attending the Obstetrics and Gynaecology clinic in General Hospital in Minna, Niger'' refers.

This is to convey ethical approval for you to commence the study. The ABUTH Scientific and Health Research Committee require an annual update from the Principal Investigator.

Thank you.

PROF. J.U OKPAPI
CHAIRMAN, ABUTH HREC

APPENDIX IV

NIGER STATE HOSPITALS MANAGEMENT BOARD
GENERAL HOSPITAL, MINNA

ADDRESS:
No. 1 Hospital Road,
P.M.B. 2 Minna
Niger State, Nigeria.
Tel: 08169999223
E-Mail: genhosp.minna@yahoo.com
Website:www.generalhospitalminna.com

3rd November, 2012.

The Head of Department,

Community Medicine,

Ahmadu Bello University

Zaria.

Through: Hauwa I. Muhammad

Sir,

RE: Hauwa I. Muhammad (MPH/N-FELTP/00026/2010/2011)

RESEARCH, ETHICS AND PUBLICATION COMMITTEE'S APPROVAL TO CONDUCT RESEARCH.

The bearer, a student of your department sought for permission to conduct research on **the prevalence of cervical abnormalities and determination of knowledge and risk factors for cervical cancer among women attending Gyneacology Clinic of General Hospital Minna, Nigeria 2013.**

The committee after going through her proposal has given her the approval to conduct Research.

A Copy of her final finding must be submitted to the committee as a requisite to this approval.

Thank you for your cooperation.

Dr. Ndagi Umar

(B. Pharm. M. Pharm. Pharm. D)

Secretary REPC.

For: Chairman REPC

For: Medical Director

APPENDIX V

ANNEX 2: THE 2001 BETHESDA SYSTEM [26]

SPECIMEN ADEQUACY

- Satisfactory for evaluation (note presence or absence of endocervical transformation zone component).
- Unsatisfactory for evaluation (specify reason).
- Specimen rejected/not processed (specify reason).
- Specimen processed and examined, but unsatisfactory for evaluation of epithelial abnormality because of....(specify reason).

GENERAL CATEGORIZATION (OPTIONAL)

- Negative for intraepithelial lesion or malignancy.
- Epithelial cell abnormality.
- Other.

INTERPRETATION AND RESULT

Negative for intraepithelial lesion or malignancy

Organisms:

- Trichomonas vaginalis;
- fungal organisms morphologically consistent with Candida species;
- shift in flora suggestive of bacterial vaginosis;
- bacteria morphologically consistent with Actinomyces species;
- cellular changes consistent with herpes simplex virus.

Other non-neoplastic findings (optional to report, list not comprehensive):

- reactive cellular changes associated with inflammation (includes typical repair);
- radiation;
- intrauterine contraceptive device;
- glandular cells status post-hysterectomy;
- atrophy.

[26] This categorization can be used for reporting results of Pap smears.

Epithelial cell abnormalities

Squamous cells

- Atypical squamous cell (ASC):
  - of undetermined significance (ASC-US);
  - cannot exclude high-grade lesion (ASC-H).
- Low-grade squamous intraepithelial lesion (LSIL).
- High-grade squamous intraepithelial lesion (HSIL).
- Squamous cell carcinoma.

Glandular cells

- Atypical glandular cells (AGC) (specify endocervical, endometrial, or not specified).
- Atypical glandular cells, favour neoplastic (specify endocervical or not specified).
- Endocervical adenocarcinoma in situ (AIS).
- Adenocarcinoma.

Other (list not comprehensive)

- Endometrial cells in women 40 years of age or over.

APPENDIX VI-PAPANICOLAOU STAINING TECHNIQUE

- Papanicolaou staining technique.
- Fixing was done with 95% alcohol
- Fixed slides were stained in Harris hematoxylin.
- The smear was decolorized with acid alcohol and rinsed in Scott's tap water.
- They were then stained in orange G stock solution and
- Finally stained with Eosin Azure 50.
- The slides were further rinsed in two changes of 95% alcohol,
- Cleared in xylene, and mounted in a neutral synthetic resin medium.