PERCEPTION AND UTILIZATION OF CERVICAL CANCER SCREENING SERVICES AMONG FEMALE NURSES IN UNIVERSITY COLLEGE HOSPITAL, IBADAN, NIGERIA

BY

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(POPULATION AND REPRODUCTIVE HEALTH EDUCATION)

OF THE

UNIVERSITY OF IBADAN

DECEMBER, 2012

DEDICATION

This work is dedicated to: The GOD ALMIGHTY- my sustenance, preserver and all in all; My husband, Olusegun and my children, Toluwani, Temiloluwa and Motiloluwa for their love, understanding, encouragement and support; All women suffering from cervical cancer. May the Lord comfort you.
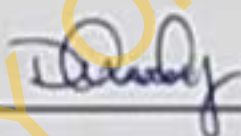
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CERTIFICATION

I certify that this work was carried out by MAXWELL, Opemipo Olubunmi in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan under my supervision

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Opemipo Olubunmi MAXWELL
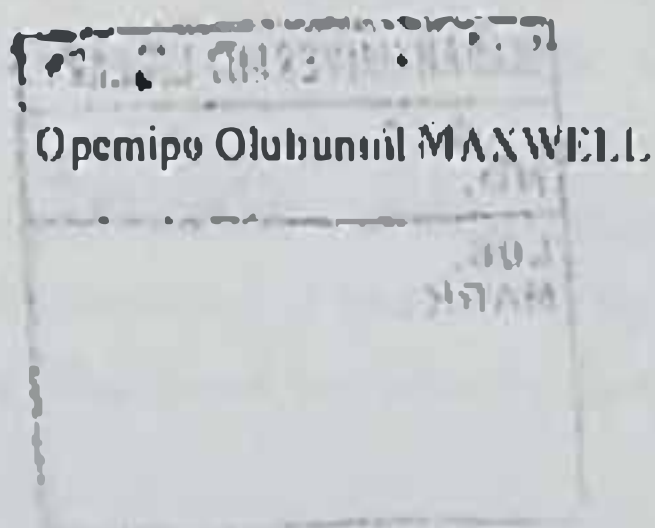
ABSTRACT

Cervical Cancer (CC) is the second most common cancer among women worldwide, and the best options for its management are early detection and prompt treatment. In Nigeria, female nurses in tertiary health care facilities have crucial roles to play as role models in promoting the adoption of Cervical Cancer Screening Services (CCSS), yet little information exists regarding their perception and utilization of these services. The CCSS related knowledge, perception and utilization among female nurses at the University College Hospital, (UCH) Ibadan were therefore determined.

A survey was conducted from April to July 2009 among 503 nurses selected using stratified random sampling technique out of 1006 nurses. The stratification was done by cadre. A self-administered questionnaire which included a 40-point knowledge scale and questions on nurses' perception of CCSS was used for data collection. Data were analyzed using descriptive statistics, Chi-square test, ANOVA and logistic regression.

Most (80.9%) respondents were married, 91.8% were Christians, 86.3% were Yoruba and the overall mean age was 38.0±8.6 years. The mean year of experience was 12.5 ± 8.9 years and 28.6% of them were staff nurses. Respondents' mean knowledge score was 22.8±4.1. The mean knowledge scores by cadre were Assistant Directors (26.7 ± 1.5), Chief Nursing Officers (23.4 ± 2.3) and Staff Nurses (21.7 ± 5.3) (p<0.05). Eighty-eight percent of respondents correctly perceived CC to be preventable while 51.7% believed that its early detection could be done through regular pap smear examination. Eighty-two percent believed that screening should be carried out as soon as sexual intercourse started irrespective of age. Of the 59.0% respondents who had practiced in the Obstetrics and Gynaecology Department, only 44.8% had ever been screened for CC. Although 83.5% nurses were aware of the screening centre in UCH, only 32.6% had ever used the facility, majority (29.0%) were Principal Nursing Officers. A few (34.6%) respondents would be willing to use CCSS in the future. Age and years of experience were significantly associated with the utilization of CCSS (p<0.05). Main reasons for not using CCSS included lack of time (50.8%), fear of result (13.9%) and not being sexually active (6.3%). Staff Nurses were twice less likely to

utilize cervical screening services than the Assistant Directors of Nursing (OR 0.23, CI 0.117-0442), (p<0.05).

Knowledge and utilization of cervical cancer screening services among the female nurses were low. Nurses' level of knowledge about cervical cancer should therefore be upgraded through educational interventions and be motivated to adopt cervical screening services.

Key words: Female nurses, Cervical cancer, Cancer screening
Word count: 407

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LIST OF ABBREVIATIONS

ACCP	Alliance for Cervical Cancer Prevention
ACOG	American College of Obstetricians and Gynaecologists
CA	Cancer
CCSS	Cervical cancer screening service
CDC	Centers for Disease Control and Prevention
CIN	Intraepithelial neoplasia
DALY	Disability-adjusted life years
DES	Diethylstilbestrol
FIGO	International Federation of Gynecology and Obstetrics
GLOBOCAN	Global Cancer Statistics
HIV	Human Immune virus
HPV	Human Papilloma Virus
HSIL	High-grade squamous intraepithelial lesions
IARC	International Agency for Research on Cancer
NARHS	National HIV/AIDS and Reproductive Health Survey
NCI	National Cancer Institute
NHS	National Health Service
PATH	Program for Appropriate Technology in Health
RTCOG	Royal Thai College of Obstetricians and Gynaecologists
SIL	Squamous Intraepithelial Lesions
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION

1.0   Background to the Study

Cancer belongs to a class of diseases in which a group of cells display uncontrolled growth, invasion and sometimes metastasis (spread to other locations in the body via lymph or blood). These three malignant properties of cancers differentiate them from benign tumors, which are self-limited, and do not invade or metastasize (Bosch, Lorincz, Muñoz and Meijer, 2002). Cancers are caused by abnormalities in the genetic material of the transformed cells (WHO, 2006). These abnormalities may be due to the effects of carcinogens, such as tobacco smoke, radiation, chemicals, or infectious agents. Other cancer-promoting genetic abnormalities may randomly occur through errors in DNA replication, or are inherited, and thus present in all cells from birth (Cancer Research UK, 2007). Cancer affects people of all ages with the risk for most types increasing with age. The WHO projected that over 7.5 million would die of Cancer in 2005, and that over 70% of these deaths would be from low and middle-income countries (WHO, 2006)

Cervical cancer is the second most common cancer among women worldwide, with almost half a million new cases each year. Furthermore 80% of the women affected are in the developing countries (Parkin, 2000; WHO, 2002; Sankaranarayanan, 2002; Eifel, 2008). Parkin, Ferlay and Hamdi-Cherif (2003) reported that cervical cancer is the most common cancer among women in Sub-Saharan Africa, accounting for 22.2% of all cancers in women. According to Ferenczy and Franco (2002), epidemiological studies have identified a number of risk factors for cervical cancer such as infection with certain oncogenic types of human papillomaviruses (HPV), sexual intercourse at an early age, multiple sexual partners, multiparity, long-term oral contraceptive use, tobacco smoking, low socio-economic status, infection with Chlamydia trachamatis, micronutrient deficiency, and a diet deficient in vegetables and fruits, as factors that contribute to the development of cervical cancer.

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According to Cheryl, Michael, Reynolds, and Ruffin (2000) the strategies for prevention of cancer generally can be categorized into three specific areas namely primary, secondary and tertiary. The primary preventive strategies aims at reducing the incidence of the disease and generally targets the entire population without symptoms or disease. The focus of the secondary preventive strategies is on early detection or screening and it aims at reducing the prevalence of the disease by finding the disease in an asymptomatic phase and instituting early treatment. While the tertiary preventive strategies deals with patients with the disease and symptoms which focus on reducing reoccurrence or early detection of reoccurrence.

Specifically for cervical cancer, the primary preventive strategies include dietary changes or supplements, preventive vaccination and risk reduction among the general population. The secondary preventive strategies include the Papanicolau smear (Pap Smear), HPV detection, and any of the new technologies to improve the performance of either of these techniques. Furthermore, the tertiary preventive strategies include medical, radiologic or surgical treatment aimed at reducing reoccurrence or early detection of reoccurrence of cervical cancer (Denny, Kuhn, Pollack and Wright, 2002).

Bleggi, Werner, Totsugui, Collaco, Araujo, et al (2003) stated that cervicovaginal cytology (Pap smear) is the most effective screening test in medical oncology. According to Torres et al Papanicolaou (Pap) smear was introduced by George Papanicolaou in 1940 and it is still recognized as a major contributor to the remarkable decrease in cervical cancer morbidity and mortality among women throughout the world. The positive effect of screening programs using the Pap smear is possible because of the long development time of the disease and the ability of the test to detect precancerous lesions in order for treatment to commence before it progress to invasive cancer.

In most developed countries such as Britain and United States cervical cancer screening has become a regular routine which has led to extensive reductions in cervical cancer mortality (Onah, Ezugwu and Eze, 2001). Conversely, opportunistic screening or no screening at all for cervical cancer is the norm in developing countries including Nigeria which has resulted in high mortality because most women with cervical cancer present late to the hospitals

(Onah, et al, 2001). Major factors responsible for high cervical cancer mortality include; low literacy level, poverty, ignorance, lack of equipment and dearth of trained medical personnel (Adesina, Babarinsa, Fawole, Oladokun, Adeniji and Adewole, 2003).

However cervical cancer is both preventable and curable, especially if detected early. Widespread comprehensive cervical cancer control programs have had a profound impact in developed countries where they have successfully reduced incidence and mortality rates by more than half (Adewole, Benedet, Graio, Follen, 2005).

Statement of problem

Cervical cancer constitues a major public health threat to women in many low and medium resourced countries in South and Central America, sub-Saharan Africa, and South and Southeast Asia where it is still the leading type of cancer among women (IARC 2006, Sankaranarayanan, Budukh, and Rajkumar, 2011; Felay, Bray, Pisani and Parkin (2002), GLOBOCAN, 2002). The high burden of cervical cancer in these countries is due both to a high prevalence of Human Papillomavirus (HPV) infection (>10% in women aged 30 years or older) and the lack of effective cervical cancer screening programs. In cases where effective screening programs are available, poor knowledge and negative health seeking behaviour of the populace have led to poor utilization of such services (Sankaranarayanan et al, 2001).

Cervical cancer accounted for an estimated 493,000 incident cases, 1.4 million prevalent cases and 273,000 deaths in the world around the year 2002, constituting approximately 8% of the global burden of cancer among women and more than 80% occurred in the low- and medium resourced countries of South Asia, East Asia, sub Saharan Africa and Latin America (Ferlay et al, 2002).

According to the World Health Organization, it is estimated that over one million women worldwide currently have cervical cancer, most of whom have not been diagnosed, or have no access to treatment that could cure them or prolong their life (WHO, 2006). In the developing countries of the world, a large proportion of cervical cancers are diagnosed in advanced stages, with poor rates of survival (Sankaranarayanan, Black and Parkin, 1998). In

addition, the incidence of cervical cancer begins to rise at age 20-29 years, reaches a peak around 55-64 years, and declines somewhat after 65 years. The age-standardized incidence rates during 1993-97 varied from 20-55 per 100,000 women in most of the regions in developing countries where incidence data were available (Parkin, Whelan, Ferlay, Thomas, and Teppo, 2002).

Early detection and prompt treatment of cancer and pre-cancerous conditions provide the best possible protection against cancer. Well organised screening has been shown to be effective in the reduction of both mortality and morbidity from cancer of the cervix (National Health Service (NHS), 2004). The NHS further reported that cases and deaths due to cervical cancer have declined markedly in the last 40 years in most industrialized countries, mainly as a result of effective screening programmes.

Nigeria is a developing country with a population of 36.6 million women aged 15 years and above who are at risk of developing cervical cancer (Akinremi, 2004). Current estimates indicate that every year 9,922 women are diagnosed with cervical cancer and 8,030 (80.9%) die from the disease. Cervical cancer ranks the second most frequent cancer among women in Nigeria after breast cancer and about 24.8% of women in the general population are estimated to harbour cervical HPV infection at a given time (Castellsagué, de Sanjose, Aguado, Louie, Bruni, Muñoz, et al 2007). A summary of activities at the colposcopy unit of Antenatal clinic of the University College Hospital showed that only 3,038 women were screened between 2005 and 2007 out of the large population that visited the Antenatal clinic and the hospital as a whole.

Nurses play a major role in enlightening the public on the availability and need for cervical cancer screening services. They are informed individuals who are expected to have more information and knowledge about several health related issues. However, studies have shown that this is not the case. In a study conducted among nurses in Nnamdi Azikwe University Teaching Hospital, Nnewi, on awareness of cervical cancer screening among female nurses. The result showed that 87% of the 144 participants were aware of the existence of cervical cancer screening services but only 5.7% of the female nurses had ever been screened for

cervical cancer (Udigwe, 2006). A finding that is at variance with the assumption that nurses are expected to have adequate knowledge about cervical cancer and make use of the available cervical screening services in the tertiary health care setting where they have physical, social and economic access to the service. This study therefore set out to assess the perception and utilization of cervical cancer screening services among female nurses in University College Hospital, Ibadan, Nigeria.

Justification for the study

Cancer is a deadly, yet preventable disease condition among women. Well-organized cervical screening has been shown to be effective in the reduction of both its morbidity and mortality (Parkin, 2000, Sankaranarayanan, 2002, Ferlay et al, 2003). The public health importance of controlling cervical cancer is now being increasingly appreciated as a means to improve the general health of adult women in many high-risk developing countries. A significant reduction in deaths from cervical cancer may be achieved through improving the stage at presentation, by awareness programmes and accessibility to diagnostic and treatment services. (Sankaranarayanan, 2002).

Most women who die from cervical cancer, particularly in developing countries, are in the prime of their lifes. They may be raising children, caring for their families, and contributing to the social and economic life of their town or village. Their death is both a personal tragedy, and a sad and unnecessary loss to their family and community at large. Unnnessary, because there are a number of compelling evidences that cervical cancer is one of the most preventable and treatable form of cancer, as long as it is detected early and managed effectively (WHO, 2006, Denny, 2005).

Health workers especially nurses are often times looked upon as "role models" in health related issues. Their attitude and practice to such issues might positively or negatively influence the decision made by the community members. It is therefore pertinent to appraise their perception and utilization of cervical cancer screening services. This study will provide a baseline for intervention that is needed among this group of people. It is also hoped that

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findings from this study will suggest directions on how best to increase awareness and improve utilization of cytological screening among female nurses and the general populace.

Research questions

This study answered the the following research questions:

1. What is the level of knowledge the female nurses in UCH about cervical cancer?
2. What are female nurses' knowledge about cervical cancer screening services in UCH?
3. What is the perception of female nurses in UCH towads cervical screening as a measure of preventing cervical cancer?
4. What are the variations in the level of utilization of cervical cancer screening among cadres of female nurses in UCH.
5. What are the factors that influence the utilization and non-utilization of cervical screening among them.

Broad objective

The broad objective of the study was to determine the knowledge, perception and utilization of cervical cancer screening services among female nurses in University College Hospital. Ibadan.

Specific objectives

The specific objectives were

1. To determine the knowledge of cervical cancer among female nurses in UCH.
2. To determine the knowledge of cevical cancer screening services among female nurses in UCH.
3. To identify the perception of female nurses in UCH towards the utilization of cervical screening services
4. To determine the variations in the level of utilization of cervical cancer screening among cadres of female nurses in UCH.
5. To identify the factors that influence the utilization and non-utilization of cervical screening services among female nurses in UCH.

Hypotheses tested

The following hypotheses were tested:

1. There is no association between knowledge of cervical cancer and the utilization of screening services.
2. There is no association between cadres of nurses and utilization of screening services.
3. There is no association between knowledge of cervical cancer and years of experience.
4. There is no association between knowledge of cervical cancer and cadre of nurses.

CHAPTER TWO

LITERATURE REVIEW

2.1 Cancer

Cancer (malignant neoplasm) is a class of diseases in which a group of cells display uncontrolled growth (division beyond the normal limits), invasion (intrusion on and destruction of adjacent tissues), and sometimes metastasis (spread to other locations in the body via lymph or blood). These three malignant properties of cancer differentiate them from benign tumors, which are self-limited, do not invade or metastasize. Most cancers form a tumor but some, like leukemia, do not. (American Cancer Society, 2007) Nearly all cancers are caused by abnormalities in the genetic material of the transformed cells. These abnormalities may be due to the effects of carcinogens, such as tobacco smoke, radiation, chemicals, or infectious agents. Other cancer-promoting genetic abnormalities may be randomly acquired through errors in DNA replication, or are inherited, and thus present in all cells from birth. The heritability of cancers is usually affected by complex interactions between carcinogens and the host's genome. New aspects of the genetics of cancer pathogenesis, such as Deoxy Ribonucleic Acid (DNA), methylation, and micro Ribonucleic Acid (RNAs) are increasingly recognized as important. (Kleinman and Liau, 2001).

2.1.1 Cancer Epidemiology

Worldwide there were around 11 million new cases of cancer in 2002 and a quarter of these were in Europe. Cancer is the number one fear for the British public, topping the list over Alzheimer's, heart attack and terrorism. (Cancer Research UK, 2008) According to the American Cancer Society, 7.6 million people died from cancer in the world during 2007. (American Cancer Society, 2007).In the U.S. and other developed countries, cancer is presently responsible for about 25% of all deaths. On a yearly basis, 0.5% of the population is diagnosed with cancer. Cancer is on the high in the health agenda of nations throughout the world, in developing countries as well as in developed countries (Jemal, Murra, Ward ,

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Samuels, Tiwari, Ghafoor, Feuer and Thun, 2005). Cancer can develop at any age but is most common in older people. Around one per cent of cancers occur in children, teenagers and young adults, the risk of disease for most varieties increases with age (Cancer Research UK, 2007). Statistics from the SEER program of the US NCI demonstrate that childhood cancers increased 19% between 1975 and 1990, mainly due to an increased incidence in acute leukemia. Since 1990, incidence rates have decreased. (American Cancer Society, 2007) In some Western countries, such as the United State of America (USA) and the United Kingdom (UK) cancer is reported to have overtaken cardiovascular disease as the leading cause of death. There are around 285,000 new cases of cancer diagnosed each year in the UK. More than 1 in 3 people will develop some form of cancer during their lifetime. With tobacco smoking becoming more common in various Third World countries, lung cancer incidence has increased in a parallel fashion. (Jemal et al, 2005).

The WHO Technical Report No. 804 of 1990 reported that over 50% of cancer victims live in the poorer nations, which have less than 10% of the resources for cancer care and control. With a population of nearly 140 million people, the West African nation of Nigeria accounts for approximately 20% of the entire African population. (Adebamowo, 2007) Cancer is a major health problem in Nigeria, as it is in other parts of African. Unfortunately, the importance of cancer as a health problem has been underplayed or totally neglected by all agencies that have been advising on and/or financing health projects in Africa over the years. (Adebamowo, 2007) The burden of cancer in Nigeria is appreciable. According to the World Health Organization, there are an estimated 100,000 new cancer cases in the country each year although observers believe the figure could be as high as 500,000 new cases annually by the year 2010.It is feared that by the year 2020, cancer incidence for Nigerian males and females may have risen to 90.7/100,000 and 100.9/100,000 respectively. It is also anticipated that by 2020, death rates from cancer in Nigerian males and females would have reached 72.7/100,000 and 76/100,000 respectively. (Adebamowo, 2007, International Association of Cancer Registries, IACR, 2008).

The World Health Organization predicted that global cancer rates could further increase by 50 per cent to 15 million new cases in the year 2020. This is the gloomy prediction by the 2008 World Cancer Report - a 351-page, comprehensive global examination of the disease to date issued by the IARC - part of the World Health Organization (WHO). There is no doubt that cancer is a serious public health problem in Nigeria (Durosinmi, 2008) Cancer is a diverse class of diseases which differ widely in their causes and biology. The common trend in all known cancers is the acquisition of abnormalities in the genetic material of the cancer cell and its progeny, Research into the pathogenesis of cancer can be divided into three broad areas of focus. The first area of research focuses on the agents and events which cause or facilitate genetic changes in cells destined to become cancer. Second, it is important to uncover the precise nature of the genetic damage, and the genes which are affected by it. The third focus is on the consequences of those genetic changes on the biology of the cell, both in generating the defining properties of a cancer cell, and in facilitating additional genetic events, leading to further progression of the cancer. (American Cancer Society, 2007).

2.1.2 Types of Cancer

The most common cancers in Nigeria are carcinoma of the uterine cervix and breast found in women and liver and prostate cancers in men. Cancer registration started in 1960 and a National Headquarters of Cancer Registries in Nigeria was established in 1990; however, this institution is currently dormant. (Adebamowo, 2007) Cancer is a diverse kind of diseases. There are more than 100 different types of cancer. Not all tumors are cancerous; tumors can be benign or malignant.

- Benign tumors are not cancerous. They can often be removed, and, in most cases, they do not reoccur. Cells in benign tumors do not spread to other parts of the body.
- Malignant tumors are cancerous. Cells in these tumors can invade nearby tissues and spread to other parts of the body. (National Cancer Institute, 2008).

Cancer types can be grouped into broader categories. The main category of cancer includes:

- Carcinoma - cancer that begins in the skin or in tissues that line or cover internal organs.

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Cancer types can be grouped into broader categories. The main category of cancer includes:

- Carcinoma - cancer that begins in the skin or in tissues that line or cover internal organs.

- Sarcoma - cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue.
- Leukemia - cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and enter the blood.
- Lymphoma and myeloma - cancers that begin in the cells of the immune system.
- Central nervous system cancers - cancers that begin in the tissues of the brain and spinal cord. (National Cancer Institute,2008)

2.1.3 Pathophysiology of cancer

Cancer is fundamentally a disease of regulation of tissue growth. In order for a normal cell to transform into a cancer cell, genes which regulate cell growth and differentiation must be altered. Genetic changes can occur at many levels, from gain or loss of entire chromosomes to a mutation affecting a single DNA nucleotide. There are two broad categories of genes which are affected by these changes. Oncogenes may be normal genes which are expressed at inappropriately high levels, or altered genes which have novel properties. In either case, expression of these genes promotes the malignant phenotype of cancer cells. Tumor suppressor genes are genes which inhibit cell division, survival, or other properties of cancer cells. Tumor suppressor genes are often disabled by cancer-promoting genetic changes. Typically, changes in many genes are required to transform a normal cell into a cancer cell. (Maloba, Kang , Patmo , Wragg , Boehm, Gavrilova , Hurley , Bunz , Hwnng, 2006).

2.1.4 Pathogenesis of cancer

i. Chemical carcinogens

Cancer pathogenesis is traceable back to DNA mutations that impact cell growth and metastasis. Substances that cause DNA mutation are known as mutagens, and mutagens that cause cancers are known as carcinogens. There are some particular substances linked to specific types of cancer e.g. Tobacco smoking is associated with lung cancer and bladder cancer while prolonged exposure to asbestos fibers is associated with mesothelioma. (Kleinman, 2001) Such chemicals are thought to promote cancers rate of mitosis through their stimulating effect. Faster rates of mitosis leaves less time for repair enzymes to repair damaged DNA during DNA replication and this increases the likelihood of a genetic mistake.

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A mistake made during mitosis can lead to the daughter cells receiving the wrong number of chromosomes. (Cancer Research UK. 2007).

Decades of research have demonstrated the strong association between tobacco usage and cancers of many sites, making it perhaps, the most important human carcinogen. Hundreds of epidemiological studies have confirmed this association. Further support comes from the fact that lung cancer death rates in the United States have mirrored smoking patterns, with increase in smoking followed by dramatic increases in lung cancer death rates and, more recently, decreases in smoking was followed by decreases in lung cancer death rates in men. (WHO, 2006).

ii. Ionizing radiation

Sources of ionizing radiation, such as radon gas, can cause cancer. Prolonged exposure to ultraviolet radiation from the sun can lead to melanoma and other skin malignancies. Radiation from mobile phones has been conjectured for some time as a cause but this theory has not gained mainstream support. Nevertheless some experts caution against prolonged exposure. (Grange, Stanford, Stanford, 2002)

iii. Infectious diseases

Some cancers can be caused by infection with pathogens. (Pagano, Blaser, Buendia, 2004) Many cancers originate from viral infection; this is especially true in animals such as birds. In humans, viruses are responsible for 15% of cancers infection worldwide. The main viruses associated with human cancers are human papillomavirus, hepatitis B and hepatitis C virus, Epstein-Barr virus, and human T-lymphotropic virus. Experimental and epidemiological data imply a causative role for viruses and they appear to be the second most important risk factor for cancer development in humans, exceeded only by tobacco usage. (Peter and Beglinger, 2007).

The mode of virally-induced tumors can be divided into two, acutely-transforming or slowly -transforming. In acutely transforming viruses, the virus carries an overactive oncogene called viral-oncogene (v-onc), and the infected cell is transformed as soon as v-onc is expressed. In contrast, in slowly-transforming viruses, the virus genome is inserts near a

proto-oncogene in the host genome. The viral promoter or other transcription regulation elements then cause over expression of that proto-oncogene. This induces uncontrolled cell division and because the site of insertion is not specific to proto-oncogenes as chances of insertion near any proto-oncogene are low, slowly-transforming viruses will cause tumors much longer after infection than the acutely-transforming viruses. (Peter and Beglinger, 2007)

Hepatitis viruses, including hepatitis B and hepatitis C, can induce a chronic viral infection that leads to liver cancer at 0.47% of hepatitis B patients per year and at 1.4% of hepatitis C carriers per year (especially in Asia, less so in North America) Liver cirrhosis, whether from chronic viral hepatitis infection or alcoholism, is associated with the development of liver cancer, and the combination of cirrhosis and viral hepatitis presents the highest risk of liver cancer development. Worldwide, liver cancer is one of the most common and most deadly cancers due to a huge burden of viral hepatitis transmission and disease. In addition to viruses, connection between bacteria and certain cancers has been noted. The most prominent example is the link between chronic infection of the wall of the stomach with Helicobacter pylori and gastric cancer. Although only a minority of those infected with Helicobacter go on to develop cancer, since this pathogen is quite common, it is probably responsible for the majority of these cancers. (Wang, Yuan, Hunt, 2007).

iv. Hormonal imbalances

Some hormones can act in a similar manner to non-mutagenic carcinogens in that they may stimulate excessive cell growth. A well-established example is the role of hyper estrogenic states in promoting endometrial cancer. (Wood and Harrington, 2005)

Immune system dysfunction.

HIV is associated with a number of malignancies, including Kaposi's sarcoma, non-Hodgkin's lymphoma, and HPV associated malignancies such as anal cancer and cervical cancer. AIDS-defining illnesses have long included these diagnoses. The increased incidence of malignancies in HIV patients points to the breakdown of immune surveillance as a possible etiology of (Wood and Harrington, 2005) other immune deficiency states (e.g.

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common variable immunodeficiency and IgA deficiency) are also associated with increased risk of malignancy. (Mellemkjaer, Hammarstrom , Andersen , 2002).

v. Heredity

Most forms of cancer are "sporadic", and have no basis in heredity. There are, however, a number of recognized syndromes of cancer with a hereditary component, often a defective tumor suppressor allele. Examples are:

- Certain inherited mutations in the genes BRCA1 and BRCA2are associated with an elevated risk of breast cancer and ovarian cancer.
- Tumors of various endocrine organs in multiple endocrine neoplasia (MEN types 1, 2a, 2b)
- Li-Fraumeni syndrome (various tumors such as osteosarcoma, breast cancer, soft tissue sarcoma. brain tumors) due to mutations of p53
- Turcot syndrome (brain tumors and colonic polyposis)
- Familial adenomatous polyposis an inherited mutation of the APC gene that leads to early onset of colon carcinoma.
- Hereditary nonpolyposis colorectal cancer (HNPCC, also known as Lynch syndrome) can include familial cases of colon cancer. uterine cancer, gastric cancer, and ovarian cancer, without a preponderance of colon polyps.
- Retinoblastoma, when occurring in young children, is due to a hereditary mutation in the retinoblastoma gene.

Down syndrome patients, who have an extra chromosome 21, are known to develop malignancies such as leukemia and testicular cancer, though the reasons for this difference are not well understood. (Mellemkjaer, Hammarstrom and Andersen, 2002).

vi. Other causes

A few types of cancer in non-humans have been found to be caused by the tumor cells themselves. This phenomenon seen in dogs with Sticker's sarcoma and is known as canine transmissible venereal tumor. The closest known analogue to this in humans is individuals who have developed cancer from tumors hiding inside organ transplants. (Murgia, Pritchard , Kim , Fassali , Weiss , 2006).

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2.1 The Cervix

The cervix is the cylindrical, narrow inferior part of the uterus, which protrudes to the uttermost part of the vagina. Located between the bladder and the rectum, it is the structure that dialates during childbirth to allow the baby to transverse the birth canal (Rich, 2003). The cervix has an opening to the endocervical canal. This opening lets blood flow from the uterus into the vagina during a woman's menstrual period. During childbirth, the cervix opens much wider to let the baby pass through(Schoell, Janicek and Mirhacheni, 1999).

The surface lining of the cervix is made up of two different types of cells namely:

- The Tall cells, which are also called glandular cells or columnar cells. They are located toward the top of the endocervical canal. These cells produce mucus, which helps to guard the entrance to the uterus (see Figure 2.1 for details).

- The Thin, flat cells, which are also called squamous epithelial cells or squamous cells. The cells are arranged in layers and they protect the tissues underneath them (Rich, 2003) (see figure 2.1 for details).
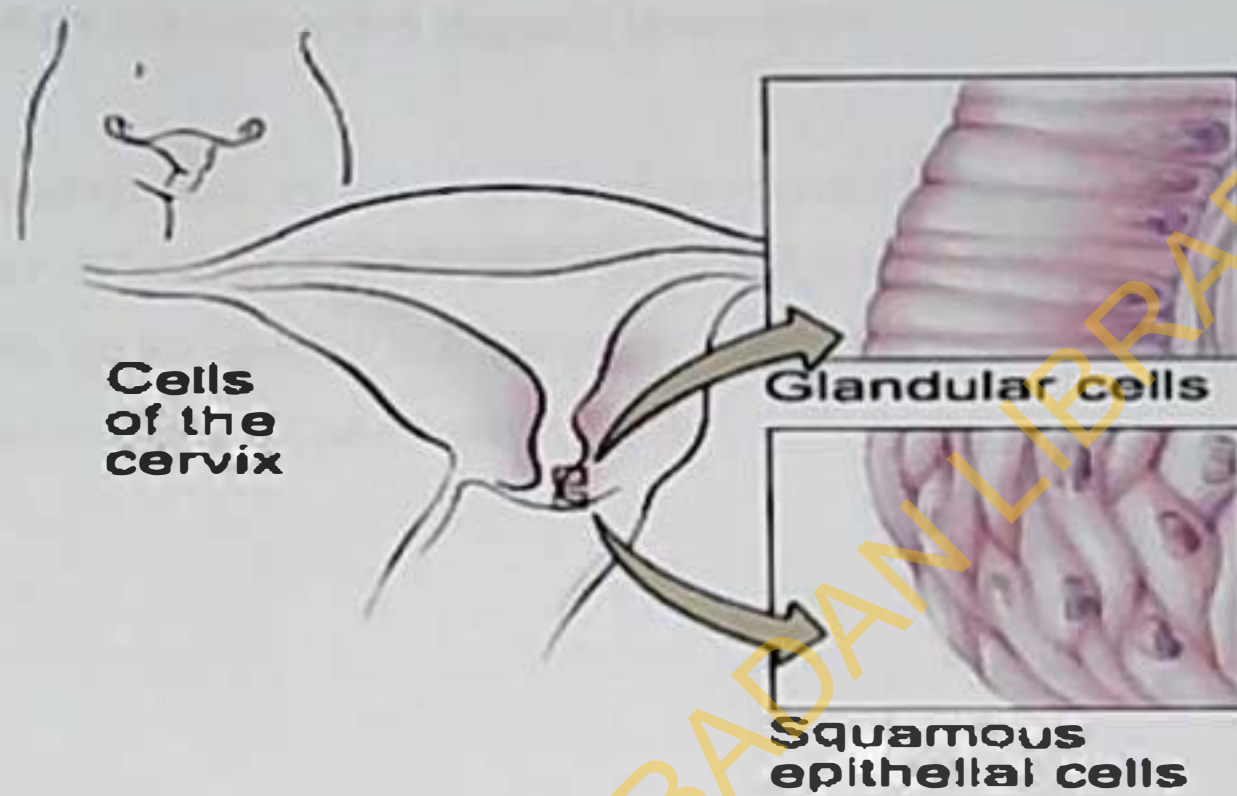
Figure 2.1: A picture Showing the Glandular Cells and the Squamous Epithelial Cells Cells

Source: National Cancer Institute, 2008

Cervical cells can go through many types of changes that are not cancer. Many times these changes will go away on their own. These changes can be caused by the following factors:

- Inflammation (redness and swelling)
- An infection (bacterial, viral, or yeast)
- Growths such as benign polyps or cysts
- Changes in hormones from pregnancy or menopause.

Changes in cervical cells are very common and are not related to cancer, but they sometimes make these cells look like abnormal cells as shown in figure 2.2. Although most cell changes in the cervix are not cancer, it is still important to get a Pap test at least once every three years to be sure (National Cancer Institute , 2008).

Figure 2.2 A picture that compares normal and abnormal cervical tissue

Source: National Cancer Institute 2008

Normal cervical cells　　Normal and precancerous mix　　Precancerous cervical cells

Figure 2.2: A picture showing cells infected with cancer and ones not infected

Source: National Cancer Institute, 2008.

2.2 Cancer of the cervix

Cervical cancer is the most commonest malignancy of the female genital tract in women in developing countries, and second commonest in the world with a high mortality, in spite of being the most preventable and treatable form of cancer. This is due to lack of precursor screening. Cervical cancer is gaining attention now because of the research and development work, mainly initiated in the United States over the past decade, which is aimed towards finding simpler cervical screening techniques to replace Pap smears (Branton ,1992).

Cervical cancer develops in the lining of the cervix. It occurs when cells in the cervix grow erratically and multiply out of control (Imaginis Corporation, 2001). There are two main types of cancers that develop from the cervix: squamous cell cancers and adenocarcinomas (Rich, 2002). Squamous cell cancers develop in the glandular surface cells that line the cervix while adenocarcinomas develop in the glandular surface cells (Principle of Health on the net foundation – HON, 2004). About 80% of cervical cancers are squamous cell cancer and the remainder adenocarcinomas (Rich, 2003).

In 1941, Papanicolaou and Tmut introduced exfoliative cytology as means of early detection of carcinoma of the cervix (Fmnco, 2003). Although screening has become routine in developed countries such as Britain and the United States leading to extensive reductions in mortality, opportunistic screening or no screening at all is the norm in developing coutries like Nigeria such that most cases present late with attendant high mortality. Opportunistic screening in Nigeria is indeed very low (Jaiyeola, Ojelnakinde and Izebvaye, 2002).

2.3 Global Incidence and prevalence of cervical cancer

Cancer of the cervix is the second most common cancer in women worldwide and therefore making it an important reproductive health problem. According to recent data, an estimated 466.000 new cases occur annually worldwide, with the vast majority in the developing countries. Over 80% of the estimated 231,000 deaths which occur annually due to cervical cancer also occur in these countries, where it is the commonest female cancer (Alliance for Cervical Cancer Prevention, 2004).

The huge disparities in wealth between developed and undeveloped counties are well illustrated in the types of cancer prevalence in the different communities. For instance, due to extensive cervical cancer screening of women in many developed countries, whether performed in the context of organised programmes or unorganised programmes, cervical cancer has become a relatively rare disease (Ferlay et al, 2002). However, in countries lacking screening programmes, cervical cancer remains the major cause of death. Thus, it would be accurate to state that cervical cancer is a disease of poor women, representing inequity of access to health care resources, such as cervical cancer screening (Ferlay et al, 2002).

Globally, cervical cancer comprises approximately 12% of all cancers in women, and it is the second most common cancer in women worldwide. The incidence and mortality vary widely between countries with up to a 10-fold difference between high and low risk regions (Clifford, Smith, Plunmer, Munoz and Franceschi, 2003). The high incidence areas include sub-Saharan Africa, Southeast Asia, Latin America and the Caribbean, Melonesia and India, with age-standardized incidence rates (ASR) of 20 to 40 cases per 100,000 women (WHO 2002). An estimated number of new cervical cancer cases in some developing countries is shown below:
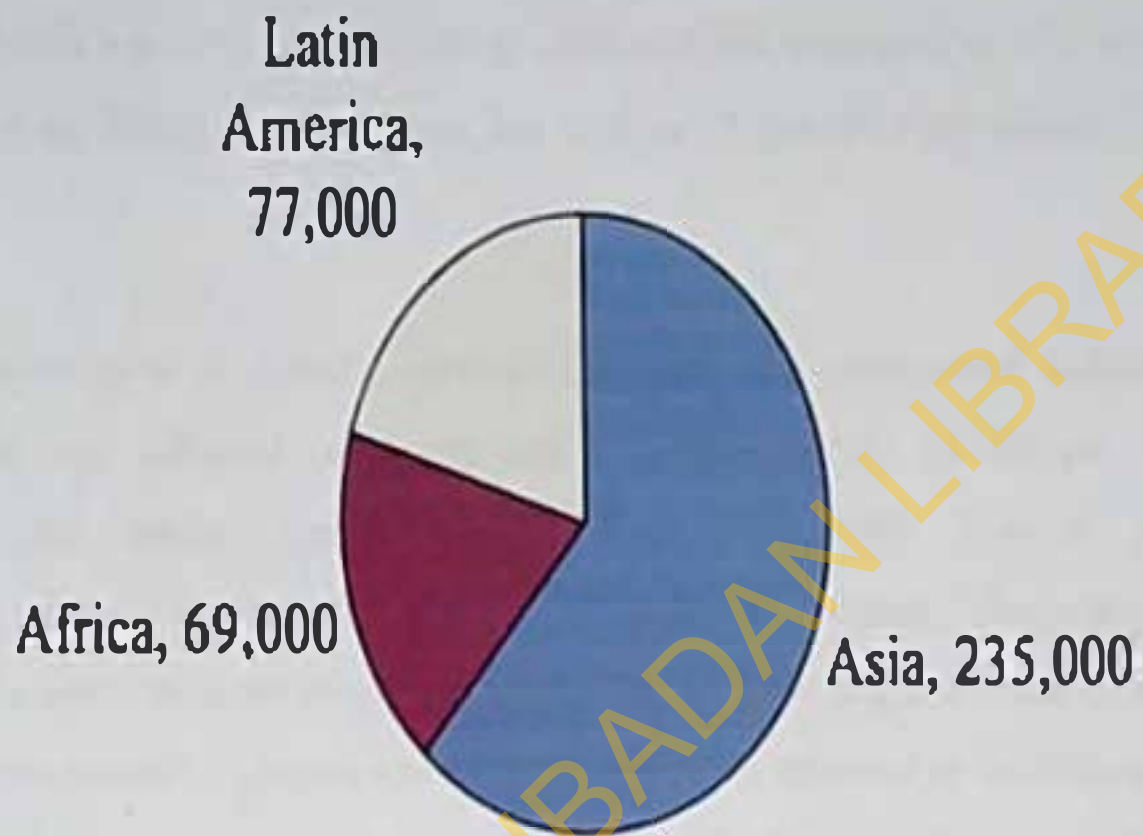
Figure 2.3. Estimated Number of New Cervical Cancer Cases in Some Developing Regions.

Source: Parkin, 2000

2.4 Incidence of cervical cancer in Africa

The incidence of cervical cancer is still very high in sub-Saharan Africa; the rate can be up to 15 times higher in poor countries compared to industrialised one (Parkin et al, 2003). The incidence rates in Uganda, Mali and Zimbabwe appear to be on the rise (Wabinga, Parkin and Wabwire-Mangen 2000; Parkin, Whelan and Felay 2002). In Uganda, the age-specific incidence rate (ASR) was 17.7 per 100,000 in 1960 and this increased to 44.1 per 100,000 in 1997 (Wabinga et al, 2000). In Zimbabwe, the ASR is 67 per 100,000 women (Parkin et al, 2003).

According to Jayeiola et al (2002), cervical cancer is the conunonest female cancer in Nigeria, and the age adjusted incidence rate is approximately 24.1% per 100 000 as documented in the Ibadan cancer registry from 1998-1999. This is probably an underestimation as there is general under reporting of cancer cases. The true incidence of cervical cancer in many African countries is unknown as there is gross under-reporting. Only a few contries have cancer registries and record- keeping is minimal or non-existent. Some of the figues quoted in literatures are hospital-based, which represents a small fraction of women dying from cervical cancer, as most women cannnot access hospital care and they therefore die at home (Anorlu, 2008).

The low incidence areas could be found in Western Europe, North America, the Middle East and China (Parkin, 2000). Regional variations in incidence also occur in these countries, with higher rates in the rural and less developed areas. Significant declines in the incidence and mortality of cervical cancer have been noted in the last 40 years, particularly in areas where screening programs are better organized. Accessiblity to treatment, early detection, reduction in parity and other risk factors have contributed to this decline. Unfortunately there has been no signif,cant change in most developing countries because the risk factors are still prevalent and the organization as well as the huge material and human resources required for mass cervical screening are lacking (Muiloz, Bosch and de Sanjosé, 2003).

Cervical cancer is the primary cause of cancer-related deaths in women in developing countries. In industrialized countries, systematic, or even opportunistic cervical cancer

screening as led to a successful and dramatic decline in cervical cancer rates (Wright, Schiffman, Solomon et al, 2004). However, even in countries where rates are low, cases not identified early enough for prevention (with early treatment of pre-cancers) are almost exclusivley marginalized women with inadequate access to preventive services (WHO/ICO, 2007). Developing country data also describes stratification in services received, with differencies appearing along lines of race, ethnicity, class and location (Bradley, Barone, and Mahe, 2005). Cervical cancer is the leading cancer-related cause of years of lives lost for women in South-central Asia, sub-Saharan Africa, and Latin America and the Caribbean; in the latter region, deaths from cervical cancer in 2000 outstripped deaths from pregnancy and childbirth in 1995 (Yang , Bray, Parkin, Sellors and Zhang, 2004).

2.5 Epidemiology of cervical cancer

According to Bosch, Lorinez, Muñoz, Meijer, Shah (2002), one of the most important discoveries in the etiologic investigation of cancer over the last 25 years has been the demonstration that cervical cancer is caused mainly due to the persistent infection of the cervix by certain genotypes of the Human Papilloma Virus (HPV). The scientific evidence accumulated from virological, molecular, clinical and epidemiological studies has demonstrated unequivocally that cervical cancer is in fact a sequel to a long term unresolved infection by certain genotypes of the HPV (Bosch, Munoz, and Desarjose, 1997) The increased occurrence of cervical cancer has long been associated with some factors such as women with multiple sex partners, early age at first intercourse, history of venereal disease and women whose male partners have multiple partners.

Human Papilloma Virus prevalence has been reported in cervical carcinoma worldwide Bosch et al, 2002. Over the last 15 years, however, evidence has accumulated indicating that the Human Papilloma Virus (HPV), in particular types 16. 18, 31, 33, are the main causal agents of cervical cancer and its precursors (Bosch, Manos. Muñoz, Sherman, Jansen, and Peto, 1995). Human Papilloma virus, a sexually transmitted virus is extremely common among women of reproductive age. Although prevalence varies in different regions, it generally reaches a peak of about 20% in those aged 20-24 years, with a subsequent decline to approximately 3% among women over 30 years. Furthermore, various studies have

reviewed the role of smoking, sexual activity, obstetric history and health behaviour (lifestyle and nutrition) in the pathogenesis of cervical cancer. Tobacco use, hormonal contraceptive, high parity and nutritional intake are considered as possible independent co-factors in the progression of HPV-associated lesions (Bosch et al. 1995).

Cervical cancer develops in the lining of the cervix. It occurs when cells in the cervix grow erratically and multiply out of control (Imaginis Corporation, 2004). It is usually preceded by a slowly progressive pre-invasion lesion called dysplasia, which may occur after Human Papilloma Virus (HPV) infection (Smith, Herrero, Boselti, Munoz, Bosch et al 2002). Women are generally infected with HPV in their teens, twenties or thirties. Although cervical cancer can develop 20 years or more after HPV infection, the exact proportion of cases progressing to invasive carcinoma from pre-invasive stage is not known (PATH, 2003). There is evidence that some dysplasia spontaneously regress without treatment. Once the invasive stage is reached however, the disease spreads by direct extension into the lymph nodes and pelvis organs (Park, 2002). The clinical stage at presentation with cervical cancer varies, with developed countries recording more localized disease and more advanced disease in older women (Jaiyeola et al, 2002). In Nigeria however, like in most developing countries, cases are diagnosed predominantly at advanced stages (Jaiyeola et al, 2002).

2.5.1 Human papilloma virus (HPV)

The human papillomavirus (HPV) is a sexually transmitted virus. It is spread through sexual skin-to-skin contact. This means that penetration is not required to contact the virus. Vaginal and anal intercourse are also modes of HPV transmission. HPV can also be contracted from having oral sex, however it is less common (Munoz et al, 2003). There are currently over one hundred known strains of HPV. About thirty of these strains affect both male and female genitalia, causing conditions like genital warts and more seriously, cancer.

Although HPV is responsible for both genital warts and cervical cancer in women, they are caused by different strains of the virus. Epidemiologic studies to evaluate risk factors for the development of Squamous Intraepithelial Lesions (SIL) and cervical malignancy demonstrate conclusively a sexual mode of transmission of a carcinogen (Brinton, 1992) It is now widely

accepted that HPV is the primary etiologic infectious agent (Schiffman, Bauer and Hoover, 1992). Other sexually transmitted factors, including herpes simplex virus 2, may play a cocausative role (Brinton, 1992). The finding of HPV viral DNA integrated in most cellular genomes of invasive cervical carcinomas supports epidemiologic data linking this agent to cervical cancer (Reeves, Rawls and Brinton, 2000). However, direct causation has not been demonstrated. More than 80 distinct types of HPV have been identified, approximately 30 of which infect the human genital tract. The types of HPV known can be divided into high-risk types (such as HPV 16, 18, 31, 33, 45, 51, 56, and 58) and low-risk types (such as HPV 6, 11, 42, 43 and 44) (Harper, Franco and Wheeler, 2006). HPV types 16 and 18 are most often associated with invasive disease.

Characterization of carcinogenic risk associated with HPV types is an important step in the process of developing a combination HPV vaccine for the prevention of cervical neoplasia. In a population-based study of HPV infection and cervical neoplasia in Costa Rica, 80% of high-grade squamous intraepithelial lesions (HSIL) and invasive lesions were associated with HPV infection by one or more of 13 cancer-associated types. In this study, the risk of about half (50%) of HSIL and invasive cervical cancer was attributable to HPV-16. HPV-18 was associated with 15% of invasive disease and only 5% of HSIL, suggesting that HPV-18 may have a role in more aggressive cases of cervical malignancy (Herrero, Hildesheim, and Brattit, 2000).

Barrier methods of contraception are associated with a reduced incidence of HSIL presumptively secondary to protection from sexually transmitted disease (Hildesheim, Brinton and Mallin, 1990). The effectiveness of condom use for the prevention of HPV infections has been evaluated in a prospective study of women aged 18 to 22 years who were virgins. The number of vulvovaginal HPV infections was reduced with consistent condom use, and HPV infection rate was 37.8 infections per 100 patient-years among women whose partners used condoms 100% of the time in the 8 months before testing, compared with 89.3 infections per 100 patient-years among women whose partners used condoms less than 5% of the time (P trend = .005). No cervical SIL were detected among women reporting 100% condom use by their partner (Winer, Hughes and Feng, 2006).

Given the etiologic role of HPV in the pathogenesis of cervical cancers, vaccines to immunize against HPV infection would offer a primary prevention strategy for cervical cancer. A quadrivalent (HPV 6, 11, 16, and 18) vaccine using a late protein L1 construct to induce antibody-mediated immunity was approved for use by the U.S. Food and Drug Administration in 2006; a second bivalent (HPV 16, 18) vaccine is awaiting final review (U.S. Food and Drug Administration, 2006).

2.5.2 Symptoms of human papilloma virus

Since abnormal cervical cell changes rarely cause symptoms, it is important to have regular Pap test screening. If cervical cell changes progress to cervical cancer, symptoms may develop. Symptoms of cervical cancer may include:

- Abnormal vaginal bleeding or a significant unexplained change in menstrual cycle.
- Bleeding when something comes in contact with the cervix, such as during sexual intercourse or when a diaphragm is inserted.
- Pain during sexual intercourse.
- Abnormal vaginal discharge containing mucus that may be smeared with blood.

Furthermore, the symptoms that may occur when cervical cancer has progressed include:

- Anaemia because of abnormal vaginal bleeding.
- Ongoing pelvic, leg, or back pain.
- Urinary problems because of blockage of a kidney or urethra.
- Leakage of urine or fecal content into the vagina because an abnormal opening (fistula) has developed between the vagina and the bladder or rectum.
- Weight loss

(http://www.webmd.com/cancer/tc/cervical-cancer-symptoms, accessed 22-09-2009)

Symptoms of an HPV infection are very rare. Genital warts are symptoms of the type of HPV that causes genital warts, however a person can be infected for years before the warts appear. A person can be also be infected with HPV and never have genital warts appear. Women who are infected with a strain of HPV that is linked to cervical cancer do not usually experience

any symptoms Because there are no symptoms, a regular Pap smear is essential for detecting any abnormal cervical changes caused by HPV (Fromer and Margot, 1998)

2.5.3 Prevention of HPV infection

HPV is a very common virus. It is estimated that over twenty million Americans are infected with HPV, making it the most common sexually transmitted disease (Bosch et al, 2002). The only guaranteed means of preventing HPV is through absolute abstinence from all sexual contact, however this is unrealistic for most adults. HPV is difficult to prevent because no penetration is needed to transmit the virus. Studies show that condoms do provide some protection against HPV, but because parts of the genitalia remain exposed during condom use, there is still a risk of transmission (Alliance for Cervical Cancer Prevention - ACCP, 2004). The HPV vaccine is also a method of preventing HPV. The FDA approved vaccine known as Gardasil, has been proven to be effective against four strains of HPV known to cause cervical cancer and genital warts in women. Research is being done to determine the effectiveness of the vaccine in men. Getting vaccinated against HPV, limiting the amount of sexual partners one has in a lifetime, and using a condom each time one has sex are all excellent ways to reduce risk of contracting HPV (Parazzini , Negri and La Vecchia, 2002).

Most people are aware that proper condom use is effective in preventing unwanted pregnancy and sexually transmitted disease, but are unclear about the protection condoms provide against the human papilloma virus (HPV). For many years, it was thought that abstinence was the only means of HPV prevention. A study carried out in the University of Washington in 2006; found that condoms do provide some protection against HPV (ACCP, 2004). Researchers found that women whose partner used a condom each time they had intercourse reduced their chances of contracting HPV by 70%. Women whose partners used a condom more than half of the time, but not during every instance of intercourse, reduced their risk by 50%. The study concluded that condoms do provide some protection against HPV, but not 100% protection (Munoz et al, 2003; http://www.webmd.com/cancer/cervical-cancer/news/20060621/condoms-may-prevent-cervical-cancer.

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Parazzini et al, (1992) stated that HPV is transmitted through sexual, skin-to-skin contact with an infected person therefore no penetration is needed to contract the virus. When a condom is worn, only the penis is protected. Other areas of the genitalia are left exposed and may come in contact with the vagina during intercourse. Though condoms do not provide absolute protection against HPV, it is still important to use a condom. It is far better to have some protection against HPV than none at all.

Persistent infection with oncogenic types of HPV such as HPV-16 and HPV-18 is associated with the development of cervical cancer (Wallin, Wiklund and Angström 1999). A vaccine to prevent HPV infection with oncogenic-type viruses has the potential to reduce the incidence of cervical cancer. A vaccine against HPV-16 using empty-viral capsids called virus-like particles was developed and tested for efficacy in preventing persistent infection with HPV-16 (Mao, Koutsky and Auh, 2006). A multicenter, double-blind, placebo-controlled trial enrolled 2,391 women aged 16 to 23 years and randomly assigned them to receive either 40 µg of HPV-16 L1 virus-like particle (VLP) vaccine or placebo on day 1, at 2 months, and at 6 months. Papanicolaou (Pap) tests and genital samples for HPV-16 DNA were obtained on day 1, at 7 months, and every 6 months for 48 months. Colposcopy and cervical biopsies were obtained when clinically indicated at study exit. Serum HPV-16 antibody titers were obtained at study entry, at 7 months, and then every 6 months. A total of 1,505 women (755 receiving vaccine and 750 receiving placebo) completed all three vaccinations and had follow-up after month 7. After immunization, HPV titers peaked at month 7, declined through month 18, and then stabilized in months 30 through 48. There were no cases of cervical intraepithelial neoplasia (CIN) in the vaccine-treated women, but there were 12 cases in the placebo group (six CIN 2 and six CIN 3). HPV-16 infection that persisted for at least 4 months was seen in seven vaccine-treated women versus 111 placebo-treated women (Mao et al, 2006).

Harper et al (2006) reported that an international, double-blind, placebo-controlled trial of a bivalent HPV-16/HPV-18 VLP vaccine was performed in 1,113 women aged 15 to 25 years. Women received either vaccine or placebo at 0, 1, and 6 months and were assessed by cervical cytology and self-obtained cervicovaginal samples for up to 27 months. Follow-up

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analysis of 776 women showed that vaccinated women had stable serum antibody titers at 4.5 years and continued protection against HPV-16/HPV-18 infection. Incident infections decreased from 28 of 277 control women to 1 of 310 vaccinated women, a decline of 96.9% (confidence interval [CI], 81.3%–99.9%). Persistent infections according to 12-month definition decreased from 10 of 340 control women to 0 of 357 vaccinated women, a decline of 100% (CI, 57.0%–100%). CIN 1+ and CIN 2+ associated with HPV-16/HPV-18 were reduced from 13 of 470 control women to 0 of 481 vaccinated women. Incident infections with HPV-45 and HPV-31 were reduced by 94% and 54%, respectively. Adverse events, serious adverse events, and new-onset chronic disease were similar in vaccinated and placebo-treated women (Harper et al, 2006).

A quadrivalent vaccine (HPV types 6, 11, 16, and 18) was evaluated in a multinational, double-blind, randomized controlled trial of 12,167 women aged 15 to 26 years. Women received either the HPV vaccine or placebo at 0, 2, and 6 months; participants were assessed by clinical exam, Pap test, and HPV DNA testing for up to 4 years. The composite endpoint for cervical disease included the incidence of HPV-16/18-related, CIN 2, CIN 3, adenocarcinoma in situ, or invasive carcinoma (ACCP, 2004).

The HPV has the strongest link to cervical cancer development. It is an extremely common virus that is transmitted through sexual contact. There are over one hundred different strains of HPV and most do not pose any health risk. However, a handful of the strains affect the cervix which could lead to cervical cancer (Castellsague, Klaustermeier and Carla Carrilho, 2008). HPV usually does not present symptoms, therefore a regular pap smear is necessary to detecting cervical damage caused by HPV (Castellsague and Munoz, 2003).

2.5.4 Risk factors associated with carcinoma of the cervix

Researchers have identified several risk factors associated with cervical cancer. A cervical cancer risk factor are factors that increases the likelihood of developing the disease. Though it is not a guarantee that cervical cancer will develop, some risk factors can be avoided such as high risk sexual behavior and smoking, while some other risk factors are out of human control such as genetics and age. Some known risk factors are as follows:

Sexual History: Certain sexual behaviour may increase the risk of developing cervical cancer. Having many sex partners or having sex with someone who has had many sexual partners may increase the risk of developing HPV, thus possibly developing cervical cancer. Having sex at an early age also increases the risk for cervical cancer. It is thought that having sex with an uncircumcised male may increase the risk as well. Studies have shown that women whose partners were circumcised were less likely to develop cervical cancer (Guintoli and Bristow, 2008; Castellsague et al. 2003 Castellsague, Bosch , Munoz, Meijer, Shah, de Sanjose, et al. 2002).

Human Papillomavirus (HPV): HPV has the strongest link to cervical cancer development. It is an extremely common virus that is transmitted through sexual contact. There are over one hundred different strains of HPV, with most posing no health risk. However, a handful of strains affect the cervix, which could lead to cervical cancer. HPV usually does not present symptoms, so a regular Pap smear is vital to detecting cervical damage caused by HPV (Moreno, Bosch and Muñoz, 2002; Franco, Schlecht and Saslow, 2003 ;Shastri, Dinshaw, Amincl et al. 2005).

Reproductive Behaviour: High parity has long been recognized as a risk factor for cervical cancer, but the relation of parity to HPV infection was uncertain. A meta-analysis of 25 epidemiologic studies including 16,563 women with cervical cancer and 33,542 women without, showed that the number of full-term pregnancies was associated with increased risk, regardless of age at first pregnancy. This finding was also true if analyses were limited to patients with high-risk HPV infections (relative risk = 4.99 [3.49-7.13] for seven or more pregnancies versus no pregnancies; linear trend test $x2 = 30.69$; $P < .001$) (Moreno et al, 2002).

Long-term use of oral contraceptives has also been known to be associated with cervical cancer, but its relation to HPV infection was also uncertain (Woodman, Collins, Winter, Bailey, Ellis, Prior, et al, 2001) . A pooled analysis of HPV-positive women from the studies described above was undertaken. Compared with women who have never used oral contraceptives, those who have used them for fewer than 5 years did not have an increased

Sexual History: Certain sexual behaviour may increase the risk of developing cervical cancer. Having many sex partners or having sex with someone who has had many sexual partners may increase the risk of developing HPV, thus possibly developing cervical cancer. Having sex at an early age also increases the risk for cervical cancer. It is thought that having sex with an uncircumcised male may increase the risk as well. Studies have shown that women whose partners were circumcised were less likely to develop cervical cancer (Guintoli and Bristow, 2008; Castellsague et al, 2003 Castellsague, Bosch , Munoz, Meijer, Shah, de Sanjose, et al, 2002).

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Reproductive Behaviour: High parity has long been recognized as a risk factor for cervical cancer, but the relation of parity to HPV infection was uncertain. A meta-analysis of 25 epidemiologic studies including 16,563 women with cervical cancer and 33,542 women without, showed that the number of full-term pregnancies was associated with increased risk, regardless of age at first pregnancy. This finding was also true if analyses were limited to patients with high-risk HPV infections (relative risk = 4.99 [3.49-7.13] for seven or more pregnancies versus no pregnancies; linear trend test $x2 = 30.69$; $P < .001$) (Moreno et al, 2002).

Long-term use of oral contraceptives has also been known to be associated with cervical cancer, but its relation to HPV infection was also uncertain (Woodman, Collins, Winter, Bailey, Ellis, Prior, et al, 2001) . A pooled analysis of HPV-positive women from the studies described above was undertaken. Compared with women who have never used oral contraceptives, those who have used them for fewer than 5 years did not have an increased

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risk of cervical cancer (odds ratio [OR] = 0.73; 95% CI, 0.52–1.03). The OR for women who used oral contraceptives for 5 to 9 years was 2.82 (1.46–5.42), and for 10 or more years, the OR was 4.03 (2.09–802) (Moreno et al 2002). A meta-analysis of 24 epidemiological studies confirmed the increased risk associated with oral contraceptives, which is proportionate to the duration of use. Risk decreases after cessation and returns to normal risk levels in 10 years (Appleby, Beral and Berrington de González, 2007).

HIV Infection: Women infected with the human immunodeficiency virus (HIV) are at a greater risk of developing cervical cancer. HIV compromises the immune system, making it harder for the body to ward off an HPV infection. A weakened himmune system may also cause cervical cancer to develop at a more rapid pace (Herrero et al, 2000).

Genetics: Having a family history of cervical cancer may increase the risk for cervical cancer. It is estimated that if an immediate family member, like a mother or sister, has had cervical cancer, the risk is increased two to three times (Holowaty, Miller, and Rohan, 1999).

Multiple Births: Studies have shown that women who carry seven or more full-term pregnancies are at a higher risk of developing cervical cancer (Chirenje, 2005).

Oral Contraceptives: There is a small cervical cancer risk in using birth control pills for longer than five years. Many physicians agree that the benefits of oral contraceptives far outweigh the risks. (Chirenje, 2005).

Diethylstilbestrol Exposure (DES): is a drug used in the past for women who were at high risk of having a miscarriage. It was used between 1940 to 1971. Women born to those who were given DES are at a slight risk of developing a rare form of cervical cancer because of the DES exposure. One out of 1,000 women who were exposed in utero will develop this type of cancer (Herrero et al, 2000).

Cigarette Smoking: When people think of smoking, lung cancer usually comes to the mind first, not cervical cancer. Tobacco smoking has been classified as a cause of cervical cancer, but the effect of different patterns of smoking on risk is unclear (International Collaboration of Epidemiological Studies of Cervical Cancer, 2006). The carcinogens in cigarettes can cause damage to the cervical cells, possibly leading to cervical cancer (Trimble et al. 2005). Cigarette smoking by women is associated with an increased risk for squamous cell carcinoma (Hellberg, Nilsson and Haley, 1998). Studies have shown that smoking can accelerate the cervical damage caused by HPV. Smoking by women is associated with an increased risk for squamous cell carcinoma. This risk increases with longer duration and intensity of smoking and may be present with exposure to environmental tobacco smoke, being as high as four times than that of women who are nonsmokers and are not exposed to environmental smoking (Ho, Kadish, Burk, 1995). Case-control studies of women infected with HPV have examined the effect of various types and levels of tobacco exposure and found similar results (Hellberg et al 1998, International Collaboration of Epidemiological Studies of Cervical Cancer, 2006)

Dietary Factors: Multiple case-control studies show an association between intake of some micronutrients and lower risk of cervical cancer, but results are conflicting and difficult to control for other risk factors (Garcia-Closas, Castellsague, Bosch, Gonzalez, 2005). Two randomized trials of oral folate as a chemopreventive agent have shown no protective effect (Eifel, 2004).

General knowledge of these risk factors and subsequent behaviour change is necessary for the prevention of cervical cancer. One point however is worthy of note. No doubt, primary prevention of cervical cancer through prevention of HPV infection will contribute to reducing cervical cancer mortality. However primary prevention of HPV presents greater challenges than prevention for most other sexually transmitted infections (PATH, 2004). HPV is generally asymptomatic and easily transmitted. The virus can remain infectious for years and can exist throughout most of the anogenital area. Therefore it is not easy to estimate the degree to which standard STI prevention methods can affect the over all incidence of cervical cancer (PATH, 2004).

2.6 Screening methods for cancer of the cervix

Screening is a means of accomplishing early detection of a disease in asymptomatic people (Akinremi, 2004). It involves the application of relatively simple inexpensive test to a large number of asymptomatic people in order to classify them as likely or unlikely to have the disease of interest (Sankaranayan, Gaffikin and Jacob, 2005). Screen positive persons are then subjected to further investigative and/or treatment procedures (Sankaranayan et al 2005). In the case of cervical cancer, it involves testing for the presence of cancer before there are many symptoms or finding on examination (Rich 2003, Connistra, 2007). Cervical cancer takes many years to develop and changes can be detected in the cervix for some time before the appearance of cancer (WHO, 2006). In principle, screening of women for these changes can allow treatment of those with early signs of developing the disease. thus preventing cervical cancer (WHO, 2006). When cancer is detected early, treatment is more effective and prognosis is better (Rich, 2003; Chan, Sung and Sawaya, 2003).

Cervical cancer is the first malignancy for which population screening has been demonstrated to significantly reduce the mortality attributed to it (Cannistra, 2007; Goldie, Kuhn, Denny et al, 2001). Regular cytologic screening for cervical cancer reduces both the mortality and incidence of cervical carcinoma in the screening population (Royal Thai College of Obstetricians and Gynaecologists (RTCOG), 2003). Case control studies have established the effectiveness of screening in the control of cancer of the uterine cervix (Akinremi 2002, Harper, Franco and Wheeler, 2004). Population studies have also shown that countries with formal screening programs and wide population coverage experienced substantial drops in incidence and mortality. On the other hand neighbouring countries with limited population screening did not experience this (Hakama, 1993). The first evidence that screening in a particular population is effective will be an increase in the number of early cancer detection, with earlier shifts in stage and increased survival rates. Later, a reduction in deaths may occur (Miller, Nazeer, Fonn, 2000). The ultimate proof of the success of cervical screening is its ability of reduce the incidence of and deaths from cervical cancer in a cost effective manner (Sakarannyanan et al, 2005). Significant declines in the incidence and mortality of cervical cancer have been noted in the last 40 years, particularly in areas where screening programs are better organized (Jayciola, 2000, Parkin et al, 2003).

Screening and dysplasia treatment are cost effective interventions when compared with expensive, often futile hospital based treatment of invasive cancer (PATH, 2003). A world Bank analysis suggested that in 1993, cervical cancer screening cost about one hundred US Dollars per disability-adjusted life years (DALY) gained. This is cost effective when compared with about a thousand and six hundred US dollars per DALY for treatment of invasive cancer and palliative care. (Jameson, 1993).

Annual screening reduces the probability of developing invasive carcinoma by over 95% (ACCP 2004). Most cases of invasive cervical carcinoma occur because a patient is not screened, not screened at appropriate interval, or there is inadequate follow up for an identified abnormality (McCarty, 1999). Studies have shown that up to 92% of those dying from cervical cancer had never been tested (Neilson and Jones, 1998).

2.6.1 Screening methods

Tests to confirm a diagnosis of cervical cancer are as follows:

*   A colposcopy and cervical biopsy, to find out whether and where cancer cells are on the surface of the cervix.
*   An endocervical biopsy (or curettage), to find out whether cancer cells are in the cervical canal.
*   A cone biopsy or loop electrosurgical excision procedure (LEEP). These tests are sometimes recommended to remove cervical tissue for examination under a microscope.

Tests to determine the extent (stage) of cervical cancer include:

*   A cone biopsy or loop electrosurgical excision procedure (LEEP). These tests are sometimes recommended to determine the spread of cancer in cervical tissue.
*   A cystoscopy, to look at the interior lining of the bladder and the urethra to determine whether the cancer has spread to the urinary system.
*   A proctoscopy, to look at the lower part of the large intestine (colon) to determine whether the cancer has metastasized.
*   An intravenous pyelogram, to see whether there is any blockage of a kidney.

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- A chest X-ray, to check for cancer cells that have spread from the cervix. Other surgeries may be done to determine the extent of cervical cancer.

Tests to guide treatment decisions include:

- A complete blood count (CBC), to check for anemia and other abnormal blood values.
- A chemistry screen, to find out how the liver and kidney are working.
- A computed tomography (CT) scan of the abdomen and pelvis, to determine which treatment choice is needed depending on the spread of cancer in the abdomen and pelvis.
- A magnetic resonance imaging (MRI) of the abdomen and pelvis. This test can also help determine which treatment will be recommended depending on the spread of cancer in the abdomen and pelvis.
- A positron emission tomography (PET). This test is sometimes used to evaluate which organs the cancer has spread to

(http://www.webmd.com/cancer/tc/cervical-cancer-screening, Benedet et al, 2000).

Screening by cervical cytology (pap smear): The Pap smear test is a routine screening test used to identify abnormal cell changes of the cervix and to screen for cervical cancer and regular Pap test screening is the single most important tool in identifying and treating cervical cell changes before they progress to cervical cancer (Blumenthal, Lauterbach, Sellors, 2005, Jayciola et al, 2002).

If cervical cancer is suspected, the doctor will take a medical history and perform a physical examination, including a pelvic examination and a Pap test is done. Several follow-up tests may be needed for evaluation and treatment (Lartey, Joubert and Cronje, 2003)

This technique is a cytological test designed to detect abnormal cervical cells (Jayciola et al, 2002) It involves the collection of cervical cell samples (cervical cell scrapings), followed by slide preparation, staining, reading and reporting. In three reviews of the accuracy of cervical cytology, the sensitivity of the test in detecting cervical intraepithelial neoplasia

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(CIN) ranged from 47% to 62% and the specificity ranged from 60% to 95% (Nanda, McCrory and Myers, 2000)

Visual Inspection with Acetic Acid (VIA): With this method, 3-5% acetic acid (vinegar) is applied to the cervix, which is then inspected with the naked eye for evidence of the disease (acetowhite lesion). This method has tremendous advantage in low resource settings as the test can be done by well-trained non-physicians (Bragane, Derchain and Sarian, 2005; WHO, 2004). Studies from Zimbabwe and India have shown that VIA sensitivity is comparable to that of conventional pap smear, but less specific (Sakarananyan, 2002; University of Zimbabwe, 1999).

Magnified Visual Inspection with acetic acid (VIAM): This involves the use of low-level magnification (x2-4) to visualize the acetowhite changes in the cervix after the application of acetic acid. It was hypothesized that low-level magnification could reduce the proportion of false-positive identification without significant reduction in sensitivity. However, a study of 2754 women in South Africa under the Alliance for Cervical Cancer Prevention (ACCP) portfolio using both VIA and VIAM showed that magnification did not improve the test performance over and above naked eye visualization (Denny, Kuhn and Pollack, 2006)

Visual Inspection with Lugol's Iodine (VILI): This involves the naked eye examination of the cervix to identify mustard-yellow iodine-nonuptake areas after the application of Lugol's iodine (Sakarranayanan, 2005). Recently the use of this method was re-evaluated by a group of investigators in India and Africa, prompted by the ease with which the test providers recognized the yellow stain after iodine impregnation. (Sakaranayanan et al 2004). Ten cross-sectional studies involving 49,080 women from different countries in Africa and India, under the ACCP portfolio were carried out to evaluate the accuracy of VILI. The ranges of sensitivity and specificity for VILI among the ten study sites were 77.8%98.0% and 73.0-91.3% respectively. The results showed that VILI is a more sensitive test than VIA, but these results need to be reproduced in other settings (Sakaranarayanan, 2005).

Downstaging: This has been defined as "the detection of the disease in an earlier, curable stage, in asymptomatic women, using a simple speculum for visual examination of the cervix" (Shastri, Dinshaw, Amin et al, 2005.). It involves looking at the cervix during a speculum examination to detect early stage cancer. The aim is to detect cervical cancer at an early stage in asymptomatic women, to improve their prognosis. It can also be used to selectively screen women who would require a Pap-smear, where that facility is available, albeit in limitation (Shastri et al, 2005).

Colposcopy: A colposcopy is a procedure in which the vagina and cervix are examined using a lighted magnifying instrument called a colposcope (National Cancer Institute, 2005). During this procedure, a physician inserts a colposcope into the vagina to magnify the region for inspection. For this procedure, a Schiller test, a rinse of acetic acid solution applied with a cotton swab, is administered to turn abnormal areas yellow or white. Small portions of these abnormal areas can then be removed for biopsy with a special punch instrument so that tissue samples can be examined under a microscope for abnormal cells. A colposcopy may be prescribed if a Pap smear detects certain abnormal cellular conditions (National Cancer Institute, 2005).

LEEP or electro surgical excision procedure: This method is used after there is confirmation that abnormal cells exist in the cervix. An electric wire loop is used to slice off a thin layer of outer tissue from the cervix. This tissue will then be viewed under a microscope to determine whether it is cancerous or not. In most women, there is no need for further treatment after this procedure, provided the tissue removed is abnormal but not cancerous. The LEEP procedure is quick and simple because it is done under local anaesthesia (Sarian, Derchain, Naud, Roteli-Martins, Longatto-Filho et al, 2005).

2.7 Stages of cervical cancer
Stage I: Cervical carcinoma is only found in the cervix.
- Stage IA. Invasive carcinoma is diagnosed by microscopy, with the extent of the tumor into cell layers (stromal invasion) no more than 5mm in depth and 7mm wide.
- o Stage IA1 Stromal invasion is 3mm or less in depth and 7mm or less in width
- o Stage IA2 Stromal invasion is between 3mm and 5mm in depth and 7mm or less in width

- Stage IB: Visible tumor only on the cervix or by microscopy is larger than 5mm deep and 7mm wide.
o Stage IB1: Visible tumor is 4cm or less in size.
o Stage IB2: Visible tumor is greater than 4cm in size.

Stage II: Cancer extends beyond the cervix but not onto the pelvic wall. It involves the vagina but not as far as the lower third of the vagina.
- Stage IIA. Tumor does not involve the connective tissue (parametrium) around the uterus, but does involve the upper two-thirds of the vagina.
- Stage IIB. Tumor does involve the parametrium but not the pelvic sidewall.

Stage III: Cancer has extended onto the pelvic sidewall and involves the lower third of the vagina. Stage III includes tumors that block urine so it cannot flow out of the kidney or that cause a nonfunctioning kidney.
- Stage IIIA. Tumor involves lower third of vagina but no extension into the pelvic wall.
- Stage IIIB. Tumor extends onto the pelvic sidewall or causes a blocked kidney or nonfunctioning kidney.

Stage IV: Tumor invades the lining of the bladder or rectum, or extends beyond the pelvis.
- Stage IVA. Tumor has spread into other pelvic structures such as the bladder or rectum.
- Stage IVB. Cancer has spread to distant organs (http://wikepeadia.org/cervical cancer accessed 22-09-2009).

2.8 Treatment of cervical cancer

Cervical cancer detected in its early stages can be cured with treatment and close follow-up. Treatment choices for cervical cancer may include one or more of the following therapies:

- Surgery to remove the cancer
- Radiation therapy to treat the cancer itself or other organs affected by the cancer
- Chemotherapy to help make the cancer more sensitive to radiation therapy and to treat cancer that has spread (metastasized)

(Waggoner, 2003; Benedet, Bender, Jones, Ngan and Pecorelli 2000.).

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Initial Treatment

The choice of treatment and the long-term outcome (prognosis) of cervical cancer depends on the type and stage of cancer. Age, overall health, quality of life, and desire to be able to have children must also be considered Treatment choices for cervical cancer may be a single therapy or a combination of therapies, such as:

- Cone biopsy to remove the cancer.

- Simple hysterectomy to remove the uterus and cervix.

- Modified radical hysterectomy and lymph node dissection to remove the cancer

- Radiation therapy, which uses high-dose X-rays or implants in the vaginal cavity to kill cancer cells

- Chemotherapy, which uses medicines to kill cancer cells.

- Radical trachelectomy to remove the cervix and the pelvic lymph nodes (lymph node dissection). But the uterus is left in place. This treatment is done less often (Sundar, 2008).

Chemotherapy may be given at the same time as radiation therapy (chemoradiation). Studies show that chemotherapy given at the same time as radiation treatment (chemoradiation) improves survival rates in stages IIB, IIIA, IIIB, and IVA cervical cancer without significantly increasing the side effects of either treatment. Chemoradiation may also improve survival rates in stages IB and IIA for women with large tumors (Thigpen, 2003). Compared with radiation alone, chemoradiation improves survival. It is usually used as the primary therapy or after a hysterectomy (Sundar, 2008).

Microinvasive squamous cell carcinoma (stage IA1) with minimal invasion into deeper cell layers is the most treatable stage with the highest survival rates. This stage is treated with a cone biopsy or loop electrosurgical excision procedure (LEEP) or simple hysterectomy. Five-year survival rates are close to 100% (Janicek and Averette, 2001). Most treatments for cervical cancer cause side effects. Side effects may differ, depending on the type of treatment used, age and overall health. Side effects may include the following:

- Side effects of chemotherapy may include loss of appetite, nausea, vomiting, diarrhea, mouth sores, or hair loss.

- Side effects of radiation therapy may include fatigue, skin irritation, or changes in your bowel or urinary habits.
- Side effects of surgery depend on the surgery used to treat the stage of the cancer (Waggoner, 2003).

Home treatment measures may help relieve some common side effects of cancer treatment. Most women will feel some denial, anger, and grief. There is no "normal" or "right" way to react to a diagnosis of cancer. Some women find that talking with family and friends is comforting, while others may need to spend time alone to understand their feelings about their disease (Waggoner, 2003).

Treatment for pregnant women

Recommended treatments are the same for pregnant women as for nonpregnant women. Treatment for early stage IA cervical cancer may be delayed until after delivery if the pregnancy is in the third trimester. A vaginal delivery may be possible (Guintoli and Bristow, 2008).

For all stages of cervical cancer, treatment will be managed by a team of doctors specializing in cancer and high-risk pregnancies. The baby does not appear to be affected by cervical cancer, but treatment for the cancer may cause problems such as an early delivery or even the loss of the baby (Holschneider, 2007). Treatment will consider the recommendations for the specific stage of cancer, the development of the baby, and the mother's preferences (Guintoli et al 2008).

Depending on the extent (stage) of cancer, surgery may be combined with radiation therapy and chemotherapy. Radiation or chemotherapy given after a surgery is called adjuvant therapy (Eifel et al, 2004). Cervical cancer progresses more rapidly, has higher recurrence rates, and has a poorer prognosis in women with human immunodeficiency virus (HIV). After initial treatment for cervical cancer, it is important to receive follow-up care. Reactions may continue throughout the course of treatments depending on the prognosis, the treatment methods used, and the quality-of-life decisions (Sundar et al, 2008).

Oncologist or gynecologic oncologist will schedule regular checkups that will include:

- A pelvic exam and Pap test every 3 months for the first 2 or 3 years.
- After the first 2 or 3 years, a pelvic exam and Pap test every 6 months until 5 years after treatment.

Follow-up tests that may be recommended by the oncologist include an abdominal and pelvic computed tomography (CT) scan to monitor whether cancer has spread to other organs in the abdomen or pelvis. If respiratory symptoms are present, a chest X-ray may be done to determine whether cancer has spread to the lungs (Holschneider, 2007).

Treatment if the condition gets worse

Cervical cancer can reoccur after treatment. About 35% of women with cervical cancer will have persistent or recurrent disease (American College of Obstetricians and Gynecologists, 2002). The chance that cancer will return depends on the stage of the initial cancer, cancer found early is less likely to come back than cancer found at a later stage. If cancer returns after treatment, it is usually within 2 years of the first diagnosis (Janicek et al, 2001). The long-term outcome (prognosis) for recurrent cervical cancer depends greatly on how much the cancer has spread when the recurrence is diagnosed (Janicek et al, 2001). According to them, overall, fewer than 5% of women with recurrent cancer survive 5 more years even with additional treatment. Women who have had a radical hysterectomy and develop a recurrence that has not spread outside the pelvis have a 5-year survival rate of 30% to 40% when treated with radiation therapy. Chemotherapy may also be recommended. Furthermore, women who develop a local recurrence that has not spread outside the pelvis may be treated with an extensive surgery called pelvic exenteration, which removes all the pelvic organs and surrounding tissue to eliminate the risk of additional recurrences.

The goal of treatment of advanced-stage cervical cancer that has spread outside the pelvis is to control symptoms, reduce complications, and increase comfort (palliative care). It is not intended to cure the disease (Tortolero-Luna and Franco, 2004). According to them, Palliative care may include:

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- Radiation therapy.
- Chemotherapy medicines.
- Medicines for symptoms such as nausea or pain.

Complementary therapies: In addition to conventional medical treatment, the following could also be tried: Acupuncture, Herbs, Biofeedback, Meditation, Yoga, Visualization and Vitamins and nutritional supplements. Complementary therapies are not a substitute for the standard treatment recommended for cervical cancer (National Cancer Institute, 2008). Some women with advanced-stage disease that is not curable may choose not to have cancer treatment because the time, costs, and side effects of treatment may be greater than the benefits. Making the decision about when to stop cancer treatment aimed at prolonging life and shift the focus to best supportive care can be difficult (Centers for Disease Control and Prevention (CDC), 2002; Schiffman, Castle, Jeronimo, Rodriguez, Wacholder, 2007)

2.10   Screening Practices Among Women

Despite several advantages of screening, it has been observed that screening is still generally poor especially in developing countries (Akinremi, 2004, Holmes, Hemmett and Garlield, 2005). This is one reason why about 80% of the 466,000 new cases occurring annually is found among women of developing countries (PATH, 2004). Screening rates in developing countries is still   generally as low as 5% (Agurto and Arrossi, 2005, Akinremi, 2004) although there are variations in different countries and among different groups of people.

Cervical cancer screening (cytology based mainly) is practiced opportunistically in Nigeria. As in most developing countries, the concept of screening for cancer and its pre-emptive treatment is underdeveloped (Thomas, Herrero, Omigbodun, Ojemakinde., Ajayi, et al, 2001). In places where it is practiced, it is most often linked with family planning and antenatal practices, Sometimes it is practiced in an adhoc manner on symptomatic patients and a few who request for it and sometimes small-scale screening progmms are also organized (Gage, Ferreccio and Gonzales, 2003) Several factors affect the attitude and practice of women as regards screening. Some of such factors are discussed below.

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2.11 Factors That Influence Cervical Screening Behaviour

The major factors that affect the attitude and practice of women as regards cervical cancer and cervical screening can be grouped either as personal/individual factors and health care provider factors.

1. Individual factors that affect screening behaviour

a. Lack of disease knowledge and information

Studies have shown that in many areas where screening behaviour is poor, there is generally poor disease knowledge among the people. Many women today still lack adequate knowledge about cervical cancer and the purpose of screening. In a study carried out among 38 Southeast Asian women living in the United States, 71% of women in the study did not know what cancer was. (Phipps, Cohen, Sorn and Braitman, 1999). Also 74% were unable to identify a cancer prevention strategy (Phipps et al, 1999).

A study of screening procedures for cancer of the cervix among health service users in Lagos, Nigeria found that only 26.2% of them were aware of cervical cancer. Out of these, only 29% knew it was possible to detect cervical cancer early (Oladepo, Ricketts and John Akinola, 2008). A study carried out to assess Korean-American women's knowledge about cervical cancer using focus group discussion revealed that there was misinformation and lack of knowledge about cervical cancers (Lee, 2000). Similarly the knowledge of cervical cancer risk factors among Chinese immigrants in Seattle was found to be low (Ralston, Taylor, Yasui, Kuniyuki, Jackson and Tu, 2003). Maaita and Barakat (2002) also reported similar findings among Jordanian women attending gynaecology clinics in Jordan. Among other study participants, 77% were not aware of the causes of cervical cancer and 34.5% did not know the significance of a positive cervical smear.

In Nigeria, the National HIV/AIDS and Reproductive Health Survey - NARHS (2003) revealed that only 12.8% of women and 4.3% of men have ever heard about cancer of the cervix (Oladepo et al, 2008). Likewise, in Nigeria a cross sectional study was carried out among women attending outpatient clinics and their accompanying persons. The study showed that only 15% of them had heard of cervical cancer. (Ajayi and Adewole, 1998). Knowledge about the disease however appears to increase with increasing education

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Daramola (2001), in her study of the awareness were aware of pap smear and about half of these got the definition right. In another study carried out in Maiduguri, less than 10% of the women were aware of the disease or its symptoms (Audu, El-Nafaty, Khalil and Otubu, 1999).

Anderson, Benedet, LeRiche, Matisic, Suen et al (1998) in their assessment of a group of Fumen women found that independent of age and education, the majority (about 90%) had good general knowledge. However specific knowledge was lower and significantly associated with education. In a study carried out by Adanu (2002) among well-educated women in Accra, Ghana, 93% of them said they had heard of cervical cancer. However, only 37% had adequate knowledge of the disease and only 25% had ever had Pap smear.

In another study carried out by Phillips, Johnson, Avis and Whines (2003) among female university students, the majority accurately identified the major risk factors. Also their knowledge of screening programmes was accurate in some respects but inaccurate in others (Phillips et al 2003). Hasenyager (1999) in a study conducted among female university students and workers reported that 90% of them knew that Pap test was for precancerous and cancerous lesions of the cervix. However approximately half of the respondents were unfamiliar with proper preparation for the test (Hasenyager, 1999).

Individuals' level of disease knowledge partly explains screening behaviour. The study of Chinese migrants showed that respondents with higher knowledge had greater odds of ever receiving a pap smear (Ralston et al, 2003).

b. Socio-economic factors

Educational qualification, financial status, social class, marital status and other socio economic educations can all influence screening behaviour. In both developed and developing countries women of low socio-economic status have a higher than average risk of cervical cancer, they also have a lower than average participation in Pap smear screening (Segnan, Senore, Giordano, Ponti and Ronco, 1998). Social class also has an influence on screening behaviour. Generally women in lower social classes tend to have lower screening participation rates than those in higher classes (Segnan, et al 1998) In a study in Aberdeen,

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screening status was also related to social class and education (Nicoll, Narayarn and Paterson, 1991).

In contrast to this general observation, Clarke, Joseph, Deschamps, Hislos, Band and Atleo (1998) observed that first nation's women in British Columbia have less regular and frequent participation in screening programs. This is probably because they have more difficulty in obtaining culturally suitable health care services from respectful and consistent professionals. Brock (1996) in a study carried out in the United States also reported that there are marked differences in age with respect to screening. Older women were reported to have poor screening behaviours than younger women. Mandelblatt, Gold, O'Malley, Taylor, Cagney et al, 1999 also reported this in a study among black and Hispanic women from New York City. women 65 years of age and older were less likely than younger women to have ever had a pap smear). Bonelli et al (1996) in their study of Italian women found that among those who had Pap test, the proportion of young married women was higher.

c. Urban/rural distribution

The National Reproductive Health Survey in Nigeria (NARHS, 2004) revealed that a higher percentage (8.3%) of urban dwellers knew about uterine cancer compared with 7.3% of rural and that low income and older women face important barriers to screening. In the United States, unscreened populations have usually included women residing in rural areas (Brown, Fouad, Basen-Engquist and Tortolero-Luna, 2000). This is probably due to the fact that rural women have poorer access to information and screening services.

d. Psychological barriers

A number of studies have shown that one predominant reason why women are reluctant to go for screening is fear and anxiety. Many women believe that Pap smear is a test for cancer and fear positive result (Neilson and Jones, 1998;). Indeed, Marteau Marteau, Senior, and Sasieni, (2001) cites a study in which women believed that receipt of an invitation to access pap smear indicated that their doctor knew they had cancer. Other fears harbored include fear of embarrassment (Fylan, 1998). Lee's study in 2000 among Korean American Women revealed that psychosocial barriers such as fear, denial and Confucian thinking were

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hindrances to screening (Lee, 2000). Jameson (1993) in his study among Pacific women revealed that anxiety about lack of confidentially within community groups was a major barrier to screening

e. The role of male partners

The role of male partners in influencing the decision to screen should not be overlooked. A study by Lazcario-Ponce, Alonso de Ruiz, Lopez Carrillo, Najem-Aguilar, Avila-Ceniceros, et al (1999) in Mexico showed that one of the reasons for women's non-participation is screening programs was opposition of male sex partners. In South Africa, Abrahams, Wood and Jewkes (1997) also found out from health workers that opposition from male partners was one of the barriers to screening (Castellsague, Bosch, Munoz, 2003). In Zaria, a city in the Northern part of Nigeria, male dominance was revealed to be one of the causes of late presentation of patients for screening (Ajayi and Adewole, 2002).

f. Misconceptions and Stigmas

Sexual health education programmes correctly inform women that sexual activity and promiscuity at early age increases the risk of cervical cancer. However it appears that this information delivers mixed messages (Bailie, 1996). For example positive pap smears may be seen as a result of promiscuous behaviour (Bailie, 1996). The effect of this is that cervical intraepithelial neoplasia (CIN) can carry the same stigma as a sexually transmitted infection. (Bailie, 1996). Fear of being labeled this may has been the reason given by women for not participating in cervical cancer screening programs (Neilson and Jones, 1998)

2.   Health Care Provider Factors

These factors are usually beyond the control of individuals but they still act as barriers to screening behaviour. They include:

a.   The Role of Family Physicians, Nurses and other health care providers:

Many studies have demonstrated the important role that physicians play in informing and influencing women's decision to screen (Check, 1999). Physicians have an excellent opportunity to screen women for cervical cancer. In a study in Canada, Katz (1999) showed that family physicians have a role in reaching out to the minority, rural and low income

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women to provide effective health care, including cancer screening (Katz, 1999). The integral role of Public Health Nurses as cues for obtaining pap smear test through health campaigns, education and promotion is also of great importance in the adoption of cervical cancer screening services in the community (Sedigheh, 2010). In a study of a group of Pacific women, Jameson (1993) discovered that women voiced a strong preference for formal sources of information about cervical cancer. Formal sources included doctors, nurses, clinics, hospitals and women's health centers, (Jameson, 1993).

In Nigeria however, the percentage of family physicians that offer cervical screening services is rather low. In a study carried out among family physicians from different geopolitical health zones in Nigeria, it was discovered that only 55.6% of the family physicians offered screening services for cervical cancer (Ajayi and Adewole, 2002)

According to Guintoli (2008), Health promotion efforts need to focus on increasing women's knowledge on risk factors and enhancing their perceived health control by providing more information on link between screening and early detection with lower incidence rates and mortality for cervical cancer. Most of the perceived barriers such as fear of the test and the believe thatscreening is unnnecessary in the absence of symptoms could be overcome by providing correct information to women and by inviting them directly to motivate them. Educational messages should focus on the preventive nature of pap smear to counter the idea that medicalcare is only necessary in the presence of symyoms.

b. Lack of Organization, Finance and Basic Resources

In many developing countries, the resources required for mass screening of the population is lacking (Jaiyeola, et al 2002). This also partly accounts for poor screening behaviour of the population. Moreover, the fact that facilities and logistics for cervical screening are generally located in hospitals, a place where one goes when ill, according to local beliefs, makes acceptance of screening more difficult. (Thomas, Herrero, Omigbodun, Ojemakinde, Ajayi et al, 2001).

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c. Misuse of available resources and misplacement of priorities

Although cancer is a major health problem in Nigeria, as it is in many other African countries, the importance of cancer as a major health problem as often been underplayed or totally neglected by many agencies that have been advising and/or financing health projects in Africa over the years (Ayinde and Omigbodun, 2003). Many agencies give priority to infant and maternal health, family planning and sexuality, malaria, control of HIV/AIDS and some other infectious diseases (Ayinde and Omigbodun, 2003).

The apparent neglect of these agencies and the consequent lack of emphasis on this problem on the part of Nigerian government have resulted in a lack of adequate cancer prevention and treatment facilities, and cancer therapists (Ayinde and Omigbodun, 2003). In a study carried out by Adesina et al (2003), to obtain information about cervical cytology services in Nigeria, it was discovered that finance and skilled manpower were major obstacles to screening. Only half of the obstetrics and gynaecology units in the hospitals assessed had hospital based cervical cancer programs. Moreover, only four of these had certified gynaecological oncologists (Adesina et al, 2003).

Other factors that influences screening include individual lifestyle factors. The role of friends and families in influencing screening behaviour has also been shown (Cheek, 1999). In a study of determinants of utilization of cervical cancer screening facilities in a low socio economic setting in Nigeria, peers were found to be the most common source of information on cervical smears (Ajayi and Adewole, 1998). Seow, Huang and Straughan (2000) in the study of an Asian population reported that women that have Pap smears were more likely to have close friends with whom they could discuss health. They were also reported to have regular physicians.

2.12. Knowledge, perception and utilization of cervical cancer screening amongs female nurses

Nurses today assume multiple roles, such as patient advocate, care provider, and research investigator. In any community, trained nurses and midwives constitute a knowledgeable class with regards to medical information and intervention (Udigwe, 2006) and they are

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important health personnel that are suppose to educate women on the need for cervical cancer screening (Awodele, Adeyomoye, Awodele, Kwassh, Awodele and Dolapo. 2011). According to Norma and Adelita (2000), in health care field, nurses play many roles, a prominent one being a patient educator. As a result, there is a need to educate nurses about the risks and impact of HPV and cervical cancer. Nurses can be instrumental in educating the public about vaccination and increasing awareness of HPV and cervical cancer among the underserved.

In a study carried out among nurses by Awodele et al, (2011), in Lagos University Teaching Hospital, Lagos, it was made known that nurses have good knowledge of cervical cancer but have limited understanding of the types of cervical cancer screening techniques and poor disposition towards undergoing cervical cancer screening. It was thus recommended that institutions should periodically organize seminars and training for health personnel especially the nurses which form a group of professionals that can give health education to women about cervical cancer. Likewise, Udigwe, (2006) in his study in Nnewi, concluded that the knowledge of cervical cancer screening services among nurses in the environment was fairly good, but the uptake of these screening services by the nurses was very poor. Perception of not being at risk for cervical cancer has been verified as a reason for not obtaining pap smear test in many studies (Ibekwel, 2010). Furthermore, according to a study on awareness of cervical cancer screening among nursing staff in a tertiary institution of rural India by Ekta, Shikha, Vidya and Dhiraj (2012), a quarter of respondents perceived cervical cancer as a terminal illness with no hope for a cure, evenwhen detected in the early stage. The belief that death is inevitable when cancer is present has been identified as a barrier to participation in cancer screening, early detection and treatment (Powe and Finnie, 2003).

In the same study, 89% respondents had never screened because they did not feel vulnerable to the disease and it is unlikely that they would motivate their patients to do so.

Similarly in a study conducted in Ilorin, Nigeria on Knowledge, utilization and compliance rates among various groups of female professional health workers, although the knowledge of Pap smear as a screening procedure for cervical cancer is high, utilization isvery poor. The common reasons for not wanting to be screened included the fact that respondents perceived

that they cannot have cervical cancer, fear of detection of cancer (19.2%) and screening against religious beliefs (14.6%) (Aboyeji, Ijaiya and Jimoh, 2004).

In a study carried out by Twaha, Francis and Elisabete (2006) amongst female medical workers in Uganda, it was revealed that respondents correctly identified cervical cancer as a major public health problem. This was expected as cervical cancer patients represent an important proportion of the gynaecological wards occupants. Of all respondents, 93% thought cancer of the cervix was of public health concern, 68% thought that it was easy to diagnose and 65% of the female participants did not think they were susceptible to cervical cancer themselves, while 60% of males thought that their partners were susceptible. Most nurses and midwives thought that speculum examination and Pap smear were doctors' procedures, while 22% of the medical students thought they were for senior doctors only. Doctors in disciplines other than gynaecology thought that speculum examination was an activity for gynaecologists only. Lack of vaginal specula and absence of indication for speculum examination were common reasons for not screening patients. Among the females respondents, reasons for not having been screened included: not feeling at risk, lack of symptoms, carelessness, fear of vaginal examination, lack of interest, test being unpleasant and not yet being of risky age. Moreover, 25% of the female respondents said that they would only accept a vaginal examination by a female health worker.

In another study carried out by Nwankwo, Aniebue, Aguwa, Anarado and Agunwah (2011) amongst female dwellers in Enugu, it was shown that women in that environment grossly lack knowledge of cervical cancer and its prevention. This now confirms the fact that the knowledge of cervical cancer prevention is very poor in developing nations because of poor education and deficient awareness programmes. This was reflected in the study with higher proportion of the more educated showing better knowledge compared with the less educated. In a study in Nigeria by Ajayi and Adewole (1998), 15% of the respondents had heard of cervical cancer. In South Africa, a similar finding was noted (Wellensiek Moodley and Moodley, 2002).

2.13 The Role of Health Education and Promotion in Cervical Cancer Prevention

Health education has been defined as any combination of learning experiences designed to facilitate voluntary action conducive to health (Green and Kreuter, 2005). It involves teaching individuals, families and communities what to do to be healthy and avoid illness. It is designed to enable people change their attitudes and behaviour and adopt better health habits. It aims to present health teaching in an attractive and acceptable way to assist individuals and conununities take responsibility for their own health as well as encourage people to utilize curative services (Bradley, Barone and Mahe, 2005).

The focus of health education is on behaviour because health status is often as result of behaviour. Behaviour often occurs as a result of several factors, prominent among which is the availability of correct/incorrect information. Health education provides adequate and correct information which, in the context of reproductive health generally and cervical caner in particular, guides individuals and families on what to do to enhance reproductive health and avoid Cancer of the cervix (Ayinde and Omigbodun, 2003). This would involve discouraging behaviors that increase the risk of cervical caner and encouraging regular screening and other behaviours that increase the risk of cervical cancer and encouraging regular screening and other behaviours that help protect against cervical cancer. Health promotion on the other hand entails the empowerment of the community in improving its health through education, provision of preventive services through empowerment of social, physical and economic environment (Moronkola, Ojediran and Amosu, 2006).

Several studies and program have demonstrated the importance of health education and health promotion in improving reproductive health and preventing cervical cancer among different groups of people. A 5-year research was conducted by the North Carolina Native American Cervical Cancer Prevention Project to evaluate the effect of health education in increasing cancer screening among Native American women in North Carolina, it was observed that women who received health education were more likely to have reported to have had a pap smear within the past year than women who did not receive health education (Dignan, Michielutte, Blinson, Bradley, Douglas et al, 1996).

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A study carried out by Vivilaki, Romanidou, Theodorakins and Lionis (2005) in Crete demonstrated the influence of health education on screening behaviour among elderly women. According to them, all the women who were given health education came for screening and also invited other women to go with them. In India, Cervical Screening Strategy, a program designed to provide screening for the women masses; it was found that in addition to health workers who could perform visual inspection of the cervix, there was need for personnel who could provide health education to the masses, which would make women come for screening. This program also revealed the fact that not only the women needed health education. There was a need for more active education of men and family members because many women needed the consent of their husband or mother in laws to have a health test (Agurto, Arrossi, White et al, 2005).

Participatory qualitative research methods such as focus group discussions, in-depth interviews, community mapping with women of various age groups and their partners are important tools used in health education which are useful in providing insights into their needs and concerns (PATH, 2004). These activities can help ensure that women receive adequate, as well as persuasive information from their preferred sources and their preferred delivery sites. They also can help ensure that services are provided in acceptable manner, thereby increasing women's willingness to seek screening and necessary follow up care (PATH, 2003). When adequate and accurate baseline information is obtained, the needs of people in terms of precise information and easy access can be met more effectively.

2.13 CONCEPTUAL FRAMEWORK

To explore the culturally determined beliefs and attitudes shaping one's decisions about health, the theoretical construct of the Health Belief Model (HBM) is used. It was originally developed in 1952 by social psychologists Hochbaum, Rosenstock and Kegels working in the U.S. Public Health Services as a systematic method to explain and predict preventive health behavior by focusing on the relationship between health behaviors, practices, and utilization of health services.

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The HBM is a model that is used to predict and explain the likelihood of taking a preventive health action. The model is a function of belief, which is crucial to predicting and explaining why people take preventive actions. There are four fundamental beliefs or perceptions which constitute the tenets of the model; these are as follows:

1. Individual's perception of vulnerability/susceptibility to a disease condition;

2. Perception that the problem is serious (perceived seriousness);

3. Perception that the recommended preventive action is beneficial;

4. Perception that the benefit of the recommended action by far outweighs the constraints. (See Figure 2.4 for details).

The aforementioned beliefs or perceptions could be modified by the following factors:

1. People's socio-demographic characteristics such as age, sex, marital status, ethnic group, educational status as well as cognitive factors like knowledge.

2. The cues that trigger the initiation of the actions such as positive perceptions, past experiences, mass media, friends, family members and other significant others (see Figure 2.5 for details).

The HBM is applicable and useful in determining female nurses' perception of seriousness of cervical cancer, vulnerability of female nurses' to cervical cancer and predicting the utilization of CCSS as a preventive health behaviour. The components of the HBM adapted to explain the utilization of CCSS and to guide the study include the following:

- Modifying factors – these are demographic characteristics (such as age, level of education, marital status, religion, parity, economic status, social class, knowledge and beliefs about cervical cancer and screening practices. This guided the framing of the questions relating to the participants' socio demographic characteristics (questions 1 to 10); knowledge about cervical cancer (questions 11 to 18) and Knowledge about CCSS (question 19 and 26).

- Perceived susceptibility – these are the beliefs of female nurses about their chances of being affected by cervical cancer. This guided the framing of the questions relating to the participants' perceived susceptibility to cervical cancer (question 13 to 15).

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- Perceived seriousness - these are the beliefs of female nurses about the seriousness of cervical cancer and its complications. This guided the framing of the questions relating to the participants' perceived seriousness of cervical cancer (question 17).

- Perceived benefits of TSE – these include CCSS may be helpful in early detection of cervical cancer; If detected early cervical cancer prognosis is better and can also be a part of routine medical check-up. This guided the framing of the questions relating to the participants' perceived benefits of CCSS (question 33 to 37).

- Perceived barriers – these include cost of cervical screening and fear of the result. This guided the framing of the questions relating to the participants' perceived barriers to the utilization of CCSS (question 30 to 32)

- Cues to action – these are female nurses' information from media and colleagues, previous experience with patients, health education, myths and beliefs which may be negative. This guided the framing of questions 38 to 40.

Modifying factors
Demographic: age, level
of education, marital
status, religion, parity,
economic status, social
class.
Knowledge and beliefs
about cervical cancer
and screening practices

Benefits:
-May be helpful in early
detection,
-If detected early, prognosis is
better,
-Part of routine medical
checkup
Barriers:
-Cost of screening
-Fear of the result

**Perceived
susceptibility**
Personal risk of
developing the disease
not high.
Perceived severity
Cervical cancer is seen
as life threatening

Perceived Threat
Low threat of developing
cancer

Likelihood of taking
recommended action.
Moderate for
screening

Cues to Action:
+Information from media and
colleagues
+Previous experience with
patients
+Health education
- Myths and beliefs which may
be negative

Figure 2.4: Adapted from the Health Belief Model by In Relation to Cervical screening

Source: Glanz K., Rimer, B.K. & Lewis, F.M. (2002).

CHAPTER THREE

METHODOLOGY

3.1   Research Design

This study is descriptive and cross-sectional in design. It was aimed at assessing and documenting the perception and utilization of cervical cancer screening services among female nurses of the University College Hospital, Ibadan. It sought to understand the perception of this population about cervical cancer, its risk factors, severity and prevention. Quantitative method of data collection was adopted.

3.2   Independent and Dependent variables

The variables of interest in the study are cervical cancer, knowledge, perception, and utilization of cervical cancer screening. The independent variables in the study include the socio-demographic characteristics of the study population such as age, marital status, parity, cadre at work and ethnic group. The dependent variables on the other hand include, knowledge of cervical cancer, perceived susceptibility, perceived severity and utilization of cervical cancer screening.

3.3   Description of the study area

Ibadan, a city in southwest Nigeria is the capital of Oyo State. It is the second largest city in West Africa, and is commercial, industrial, and administrative in nature. Founded in the 1830s as a military camp during the Yoruba civil wars, it developed into the most powerful Yoruba city-state. In 1840, Ibadan forces defeated the Fulani invaders from the North at the battle of Oshogbo thus protecting Yoruba land from attack. The city came under British protection in 1893, and was the capital of Nigeria's former Wetstern Region (Arcola, 1994).

University College Hospital (UCH) Ibadan is located in Ibadan and it is the first out of the 15 Federal University Teaching Hospitals in Nigeria. UCH is one of the apex health institutions in

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the referral system inherent in the health care delivery and thus providing tertiary level health care. It was also established to serve as a teaching institution for medical and related training, as part of the university educational system. UCH is affiliated to the College Of Medicine, University Of Ibadan. UCH is located in Ibadan North LGA, it has a total of 16 Clinical departments; these include: Anesthesia, Dental Surgery, Obstetrics & Gynaecology, Ophthalmology, Otorhinolaryngology, Radiology, General Surgery, Community Medicine, Family Medicine, Haematology, Internal Medicine, Microbiology, Paediatrics, Psychiatry, Chemical Pathology and Histopathology. The hospital has other clinical departments such as Pharmacy, Physiotherapy and Nursing, and other non- clinical departments such as Records, and Administrative/Finance Departments. The Nursing Department has a total number of 1064 of Nurses and was used for this study.

The Cervical screening centre in the University College Hospital is situated in the Antenatal Clinic complex. Since its in the 1980s, it has screened over Seven Thousand women between 18-55 years of age in Oyo state and some referred clients from outside the State.

However, the centre faces a lot of challenges which has limited its utilization capacity. Some of which are: Hours of operation limited to 8am – 4pm on weekdays only, not giving room for women that can only have time for screening on evenings or weekends due to the nature their job, limited number of staff, lack of periodic awareness programmes on the importance of cervical cancer screening services and long interval between visit and release of result which made people that screened once not to be motivated to screen after the three years stipulated period.

In February 2006, through a grant from ExxonMobil, the Operation Stop Cervical Cancer in Nigeria project in the five of the six geopolitical zones was carried out. This brought an increase in the awareness of the screening services and the utilization of the screening centre by women.

3.4   Sample size

The sample size was determined by using EPI-info as shown below:

Size of population – 1064

Desired Precision (%) – 50%

Expected Prevalence (%) – 5.7 (Udigwe, 2006)

Sample size – 218

Half of the population (532) of the nurses was however used as the sample size to improve validity and take care of possible attrition based on previous experiences of earlier researchers.

3.5 Sampling Procedure

In order to obtain a sample of the population for the study, stratified, proportionate and simple random sampling techniques were adopted. The procedure involved three key steps or stages as follow:

Step 1 –The Establishment Department of UCH was visited to document the total number of female nurses in UCH and their various cadres. The study revealed that there were a total of 1,064 nurses working in UCH.

Step 2 – The female nurses were then stratified into the five cadres in UCH as shown in Table 3.1.

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Table 3.1 Cadre of Nurses in UCH

SN	Cadre of Nurses	Total
1	Assistant Directors of Nursing	56
2	Chief Nursing Officers	154
3	Principal Nursing Officers	170
4	Senior Nursing Officers	102
5	Nursing Officers	280
6	Staff Nurses	302
	TOTAL	1064

Source: UCH Establishment Department (2009)

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Step 3 – A proportionate and stratified random sampling technique was used in selecting the respondents. Respondents were selected across all the cadres based on their relative proportion to the total population of female nurses in UCH using this formulae:

$$N = \frac{W}{Y} \times Z$$

Where:

N = Proportionate Sample size by Cadre

W = total number of nurses in a Cadre

Y= total number of female nurses in UCH (1,064)

Z = sample size (532)

This gives the following sample sizes per cadre and the numbers for each cadre were selected randomly is shown in table 3.2.

Table 3.2 Cadre of Nurses in UCH

SN	Cadre of Nurses	Sample Size
1	Assistant Directors of Nursing	28
2	Chief Nursing Officers	77
3	Principal Nursing Officers	85
4	Senior Nursing Officers	51
5	Nursing Officers	140
6	Staff nurses	151
	TOTAL	532

AFRICAN DIGITAL HEALTH REPOSITORY PROJECT

3.5 Instrument for data collection

The instrument used for data collection was a self administered semi-structured questionnaire. It was divided into five sections.

Section A sought information on the socio-demographic information like age, marital status, religion e.t.c while questions on section B centered on knowledge on cervical cancer. Section C contained questions on knowledge of cervical cancer screening services, Section D focused on information on attitude and perception towards utilization of cervical cancer screening services and determinants of utilization and non-utilization of cervical cancer screening services were sought in the last section of the questionnaire.

A copy of the questionnaire is in Appendix 1.

3.6 Validity and Reliability of instrument

In other to ensure the validity and reliability of the instruments for data collection, the following steps were taken:

Review of instrument by experts: The instrument was reviewed by Lecturers in the Department of Health Promotion and Education including the research supervisor. The suggestions made were used to modify the instrument.

Pre-testing of instrument: Validity of the instrument was ensured by pre-testing of the instrument among a homogenous population similar to that of the sample population. A total of 55 questionnaires were pre-tested among female nurses at Oyo State Hospital, Ring Road, Ibadan with the assistance of a professional colleague who works in the hospital. The pre-test was carried out on 2nd-13th March, 2009. It took an average of 5 minutes to administer each questionnaire. The pre-test was carried out to determine if the questions were understandable to the nurses and a number of questions were slightly modified as a result of the pre-test survey. The modifications were made with the assistance of research supervisor. The questions were modified to be closed ended because open ended questions were perceived to be cumbersome for the nurses.

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3.8 Data Collection Process

The investigator moved from ward to ward to interview the proportionate number of female nurses from April to July, 2009. Each interview started with an introduction and overview of the research including the objective of the study. The respondents were told not to write any name on the self-administered questionnaire. Respondents were encouraged to ask questions on what they do not understand in the questionnaire. The investigator encouraged the respondents to complete all sections of the questionnaire applicable to them. Explanations were given to respondents as required to aid their understanding of unfamiliar terms. The questionnaires were retrieved back from each respondent immediately after completion and they were reviewed for completeness.

3.9 Data Management, Analysis and Presentation

The quality of the information collected was checked by the researcher in the field. This entails reviewing the pattern of responses of each participant as recorded in the questionnaire. Problem discovered during data collection were resolved immediately in the field. A serial number was assigned to each of the questionnaires for easy identification and recall of any instrument with problems. Administered questionnaires were edited and coded by the investigator with the use of a coding guide. The data in each questionnaire were entered into a computer for analysis using the Statistical Package for Social Sciences (SPSS) version 15.0.

Frequency counts was carried out on all the variables while categorical variables were analysed using ANOVA and Logistic regression. The overall knowledge of participants was pooled and assessed on a 40 point scale. This was further categorized into ranges with those who scored 0 – 19 points as having poor knowledge, those with 20 -29 points as having average knowledge and those with 30 – 40 points as having very good knowledge of cervical cancer. The copies of the questionnaire were stored in a place that would be safe from destruction by water or fire and where unauthorized persons would not have access to them. They would be destroyed after the final defense of the dissertation.

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3.10 Ethical Consideration

The study followed the ethical principles guiding the use of human participants in research. The following steps were taken to address ethical issues in this study:

1. The study was approved by the Ethical Review Board of the University of Ibadan/ University College Hospital (UI/UCH)(see appendix 11).

2. Verbal Informed consent was obtained from each respondent. This has been used in previous studies by researchers in the institution.

3. All research respondents were informed that the survey was voluntary, and that they did not have to participate if they chose not to or could withdraw at any time.

4. Respondents were assured that confidentiality of responses would be maintained during and after data collection. Only numbers were assigned to each questionnaire and no name was required on the questionnaire. The numbers were to facilitate data entry and analysis and no one can link the identity of the participants with the registration numbers.

5. All completed forms will be destroyed after defense of dissertation.

3.11 Limitation of Study

Collecting data from the health personnel was really challenging. Some were unwilling to participate in the study for no reason at all while some attributed the reluctance to lack of time. Some nurses were on night duty and the researcher had to leave the questionnaires for them only to find out that they had misplaced them but the researcher was persistent in visiting respondents to make sure the administered questionnaires were properly completed and retrieved.

CHAPTER FOUR

RESULTS

A total of 503 questionnaires out of 532 questionnaires were retrieved yielding a response rate of 94.5%.

4.1 Socio-demographic characteristics of the respondents

A total of five hundred and three (503) nurses in the University Colledge Hospital were surveyed. Over a quarter 144(28.6%) of the respondents were staff nurses followed by nursing officers 136 (27.0), while 19(3.8%) were assistant directors of nursing. Most 456 (91.8%) of the respondents were Christians, while few were Muslims (8.0%). Many 407 (80.9%) of the respondents disclosed that they were married, while 85 (16.9%) were single. Yoruba 434 (86.3%) ranked first as the most dominant ethnic group, followed by the Igbo's 28 (5.6%), Hausa 21 (4.0%), and others (4.1%). The mean years of experience was 12.5 ± 8.9 years. Details of the socio-demographic characteristics of the respondents are shown in table 4.1.

Table 4.1: Socio-demographic characteristics of respondents

Characteristics	Frequency	Percentage
Age group*:		
21 – 30	92	20.0
31 - 40	195	42.2
41 - 50	116	25.2
51 - 60	58	12.6
Total	461	100.0
Religion**:		
Christianity	456	91.8
Islamic	40	8.0
Traditional	1	0.2
Total	497	100.0
Ethnic group:		
Yoruba	434	86.3
Hausa	20	4.0
Igbo	28	5.6
Others***	21	4.1
Total	503	100.0
Marital Status:		
Single	85	16.9
Married	407	80.9
Divorced	2	0.4
Widowed	9	1.8
Total	503	100.0
Years of Experience:		
1-5	120	23.9
6-10	148	29.4
11-15	67	13.3
16-20	75	14.9
21-25	41	8.2
26-30	33	6.6
31-35	19	3.8
Total	503	100.0
Cadre in Nursing:		
Assistant Director Nursing	19	3.8
Chief Nursing Officer	70	14.0
Principal Nursing Officer	85	16.9
Senior Nursing Officer	49	9.7
Nursing Officer	136	27.0
Staff Nurse	144	28.6
Total	503	100.0

*Non responses excluded, **Non responses excluded.

***Others include izon(0.8%),ebira (1.0%), ibibio(0.8%),edo(1.6%) and asante(1.5%)

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4.2   Respondents knowledge on cervical cancer

Majority 407 (80.9%) of the respondents affirmed that cervical cancer is the commonest cancer of the female reproductive tract, while 40 (8.3%) were uncertain. All this are presented in Table 4.2. The respondents were asked about the primary cause of cervical cancer, 54.5% responded correctly that it is Human Papiloma Virus (HPV), while 210 (41.8%) do not know. Many of the respondents 188 (37.3%) said that cervical cancer mostly affects women from the age of 50 years and above, while 166 (33.0%) reported that cervical cancer is common in women between 40 and 49 years. Very few 40 (8.0%) said that cervical cancer is common in women below 30 years of age. Details can be seen in Table 4.2

Table 4.2: Respondents knowledge of Cancer of the Cervix

Cancer of the Cervix is the Commonest Cancer of the Female Reproductive Tract	Frequency	Percentage
Yes	407	80.9
No	56	11.1
Don't know	40	8.0
Total	503	100.0
Primary cause in development of cervical cancer		
HPV *	274	54.5
HIV	10	2.0
Old Age	9	1.7
Don't know	210	41.8
Total	503	100.0
Most affected Age group		
Below 30 years	40	8.0
30 – 39 years	109	21.7
40 – 49 years	166	33.0
50 years and above *	188	37.3
Total	503	100

*Correct responses

4.3 Respondents' knowledge about selected risk factors associated with cervical cancer

Majority of the respondents knew that sexual intercourse at early age (77.9%), heredity 365(72.6%), the Human Papilloma Virus (70.4%) were risk factors for cervical cancer. Some respondents (41.9%) wrongly mention HIV has a risk factor for cervical cancer. Other risk factors mentioned include abortion 246(48.9%), old age 256(50.9%), tobacco smoking 223(44.3%) and radiation 308(61.2%). Details are shown in the table 4.3.

Table 4.3: Respondents' knowledge on risk factors associated with cervical cancer

N=503

Risk Factors	Yes	No
Heredity	370 (71.6%)	133 (26.4%)
Old Age	256 (50.9%)	247 (49.1)
HIV	211 (41.9%)	292 (51.1%)
HPV	354 (70.4%)*	144 (28.6%)
Abortion	246 (48.9%)	257 (51.1%)
Sexual Intercourse at Early Age	392 (77.9%)*	111 (22.1%)
Tobacco Smoking	223 (44.3%)*	280 (55.7%)
Radiation	308 (61.2%)	195 (38.8%)
Infertility	116 (23.1%)	387 (76.9%)
Micronutrient Deficiency	182 (36.2%)*	321 (63.8%)
Infection with Chlamydia Trachomatis	330 (65.6%)*	173 (34.4%)

*Correct responses

4.4 Respondents' knowledge about symptoms associated with cervical cancer

When probed about symptoms associated with cervial cancer, most of the respondents mentioned bleeding of the vagina (89.7%), Painful intercourse (87.9%), purulent vaginal discharge (87.1%) and loss of weight (73.4%). See table 4.4 for details.

4.4 Respondents' knowledge about symptoms associated with cervical cancer

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AFRICAN DIGITAL HEALTH REPOSITORY PROJECT

4.4 Respondents' knowledge about symptoms associated with cervical cancer

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AFRICAN DIGITAL HEALTH REPOSITORY PROJECT

Table 4.4: Respondents' knowledge about symptoms associated with cervical cancer

N≈503

Symptoms	Yes	No
Fever	158 (31.4%)	345 (68.6%)
Nausea & Vomitting	112 (22.3%)	391 (77.7%)
Sleeplessness	132 (26.2%)	371 (73.8%)
Bleeding of Vagina	451 (89.7%)*	52 (10.3%)
High BP	96 (19.1%)	407 (80.9%)
Painful Intercourse	442 (87.9%)	61 (12.1%)
Purulent Vagina Discharge	438 (87.1%)*	65 (12.9%)
Irregular Mensturnl Flow	325 (64.6%)*	178 (35.4%)
Loss of Weight	369 (73.4%)*	134 (26.6%)
Pelvic Pain	418 (83.1%)*	85 (16.9%)
Loss of Memory	55 (10.9%)	448 (89.1%)

*Correct responses

4.5 Respondents' opinion on severity of cervical cancer

Respondents were asked questions related to severity of cervical cancer. Majority (90.1%) of the respondents said that cervical cancer can kill, while few (9.9%) said it cannot kill. When asked if cervical cancer can be prevented, 88.0% said it can be prevented, and 12.0% said it cannot. When asked if it can be treated, majority (70.6%) said it can be treated.

4.6 Respondents' knowledge on prevention of cervical cancer

About half of the respondents (51.7%) reported that regular pap smear can be used to prevent cervical cancer. Few respondents (30.8%) reported that early diagnosis can be used to prevent cervical cancer. Likewise, very few were of the view that avoidance of multiple sexual partners (13.9%) and early treatement (11.9%) could prevent the disease. Others ways mentioned include avoidance of sexual intercourse (8.0%), health education (6.6%), and reduction in exposure to radiation (3.4%). Details are shown in table 4.5.

The overall knowledge of participants was pooled and assessed on a 40 point scale. This was further categorized into ranges with those who scored 0 – 19 points as having poor knowledge, those with 20 -29 points as having average knowledge and those with 30 – 40 points as having very good knowledge of cervical cancer. Data on table 4.6 shows that majority (84.9%) of the respondents had average knowledge with scores between 20-29, and very few (0.8%) had very good knowledge with scores between 30 to 40 (see table 4.6 for details). Respondents' overall mean knowledge score was 22.8±4.1.

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Table 4.5: Respondents' knowledge on prevention of cervical cancer

		N=503
*Prevention methods for Cervical Cancer	Frequency	Percentage
Early Diagnosis**	155	30.8
Early Treatment**	60	11.9
Regular Pap Smear**	260	51.7
Report of Regular Menses	10	2.0
Avoidance of Multiple Sex Partners**	70	13.9
Discourage Multiparity**	4	0.8
Reduce Radiation Exposure	17	3.4
Good Personal Hygiene	7	1.4
Avoid Sexual Intercourse	40	8.0
Health Education**	33	6.6
Dont Know	45	8.9

*Multiple responses, **Correct responses

Table 4.6: Distribution of knowledge scores among the participants

Range of scores (in points)	Frequency	Percent
0 – 19 (poor knowledge)	72	14.3
20 – 29 (average knowledge)	427	84.9
30 – 40 (very good)	4	0.8
Total	503	100

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4.7 Awareness of Cervical Cancer Screening Service Centres

Four hundred and twenty-eight (85.1%) of the respondents were aware of one screening centre or the other in the city of Ibadan. Of these 428, 420 (98.1%) were aware of the screening centre in UCH, 52 (12.1%) were aware of the centre in Adeoyo Maternity Centre. details are shown in table 4.7.

Table 4.7: Respondents awareness of CCSS Centres in Ibadan

Awareness of Screening Centres	Yes	No	Total
UCH	420 (98.1%)	8 (1.8%)	428 (100%)
Adeoyo Maternity Centre	52 (12.1%)	376 (87.9%)	428 (100%)
Association for Reproductive & Family Health	23 (5.4%)	405 (94.6%)	428 (100%)
Catholic Hospital Oluyoro	21 (4.9%)	407 (95.1%)	428 (100%)
Judah Centre	19 (4.4%)	409 (95.6%)	428 (100%)
Institute of Reproductive & Family Health Idiape	11 (2.6%)	417 (97.4%)	428 (100%)
Planned Parenthood Foundation of Nigeria	11 (2.6%)	417 (97.4%)	428 (100%)

4.8   Respondents knowledge on Cervical Cancer Screening Services

Figure 4.1 depicts the respondents' awareness of Pap smear. Majority, 465(92.4%) of the respondents were aware of the test called pap smear, which is an important test for detecting cervical cancer, while very few (3.8%) of the respondents were not aware. When asked what the Pap smear was used for, majority, 360(71.6%) of the respondents said that it was used for detection of cancer of the cervix.

The respondents were asked at what age should a woman commence screening for cervical cancer, majority (81.7%) mentioned that when a woman starts having sex, while some 62(12.3%) gave the age range of 15-39 years. When asked how often the screening should be done, about a third (30.2%) said twice a year, while (38.0%) of the respondents said once a year. Details of their responces is seen in the table 4.8.

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Table 4.8: Respondents knowledge about cervical cancer screening

Frequency of Screening	Frequency	Percentage
How often the screening should be done		
Once a year	191	38.0
Twice a year	152	30.2
Once in two years	48	9.5
Once in three years*	85	16.9
Onset of screening		
When to start having the screening		
After sexual debut*	411	81.7
15 – 39 years	62	12.3
40 – 49 years	4	0.8
50 and above	2	0.4

*Correct responses

4.9 Respondents' knowledge on why cervical cancer screening is necessary

Majority 419(83.3%) of the respondents reported that cervical cancer screening is necessary for early detection of the disease, while 138(27.4%) said that it is to prevent the spread of the disease. When probed if pap smear is a diagnostic test, majority 455(90.5%) confirmed pap smear to be a diagnostic test, while very few 33(6.6%) said that it is not.

4.10. Respondents' utilization of cervical cancer screening services

Table 4.9a shows the respondents' utilization of cervical cancer screening service. Only 174 (34.6%) of the respondents had made use of cervical cancer screening services out of which 27.0% were Principal Nursing Officers, 23.6% Nursing Officers,, 21.8% Chief Nursing Officers, 10.3% Assistant Director of Nursing and 8.0% Staff Nurse. When the respondents that had ever utilized CCSS were asked how many times they had accessed CCSS, only 80 (46.0%) of them said once, 48(27.6%) said twice while 31(17.8%) said four times or more. The respondents were asked where they had the screening done, majority 149 (85.6%) stated the University Colledge Hospital (UCH). Other health institutions mentioned include Adeoyo Maternity Centre Yemetu 2(1.1%), Saint Nicholas Hospital Lagos 4(2.2%).

4.11 Respondents' perceived reasons for not having the pap smear test done

The respondents that have never assessed cervical cancer screening were asked the reasons for not accessing. Majority 153(46.5%) mentioned lack of time while 42(12.8%) mentioned fear of the result.. Other reason mentioned included cost consideration 27(8.2%), lack of awareness of the test 29(8.8%), procedure being cumbersome 36(10.9%). When the respondents were asked if they will go for the screening in the future, majority 409(81.0%) said they would, while a few 94(19.0%) said they would not. See details in the table 4.9b.

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Table 4.9a: Respondents' utilization of cervical cancer screening services

Utilization of cervical cancer screening services	Frequency	Percent
Ever screened:		
Yes	174	34.6
No	329	65.4
Total	503	100
Number of times ever screened:		
Once	80	46.0
Twice	48	27.6
Thrice	15	8.6
4 or more times	31	17.8
Total	174	100
Place where screening is done:		
UCH	149	85.6
Adeoyo Maternity Centre Yemetu	2	1.1
Lagos State Teaching Hospital	2	1.1
Saint Nicholas Hospital	4	2.2
J-Rapha Hospital	3	2.0
Other places not mentioned	14	8.0
Total	174	100

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Table 4.9a: Respondents' utilization of cervical cancer screening services

Utilization of cervical cancer screening services	Frequency	Percent
Ever screened:		
Yes	174	34.6
No	329	65.4
Total	503	100
Number of times ever screened:		
Once	80	46.0
Twice	48	27.6
Thrice	15	8.6
4 or more times	31	17.8
Total	174	100
Place where screening is done:		
UCH	149	85.6
Adeoyo Maternity Centre Yemetu	2	1.1
Lagos State Teaching Hospital	2	1.1
Saint Nicholas Hospital	4	2.2
J-Rapha Hospital	3	2.0
Other places not mentioned	14	8.0
Total	174	100

Table 4.9b: Respondents' perceived reasons for not having the pap smear test done

Utilization of cervical cancer screening services	Frequency	Percent
Reason for non screening:		
Lack of time	153	46.5
Fear of the result	42	12.8
Procedure is cumbersome	36	10.9
Cost consideration	27	8.2
Lack of awareness about where it can be done	29	8.8
Not sexually active	21	6.4
Lack of awareness of the test	21	6.4
Total	329	100
Likelihood for future screening:		
Yes	409	81.0
No	94	19.0
Total	503	100

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Table 4.9b: Respondents' perceived reasons for not having the pap smear test done

Utilization of cervical cancer screening services	Frequency	Percent
Reason for non screening:		
Lack of time	153	46.5
Fear of the result	42	12.8
Procedure is cumbersome	36	10.9
Cost consideration	27	8.2
Lack of awareness about where it can be done	29	8.8
Not sexually active	21	6.4
Lack of awareness of the test	21	6.4
Total	329	100
Likelihood for future screening:		
Yes	409	81.0
No	94	19.0
Total	503	100

4.11   Significant others who can influence respondents to go for screening

The respondents were asked about the significant others that can influence their decision to go for screening, Husbands (58.1%) topped the list followed by Doctors (49.5%) and colleagues (48.3%). See details in table 4.10.

Table 4.10: Significant others who can influence respondents to go for screening

N=503

Preferred source of information (people)	Yes	No
Husband	292 (58.1%)	211 (41.9%)
Doctors	249 (49.5%)	254 (50.5%)
Colleagues	243 (48.3%)	260 (51.7%)
Parents	132 (26.2%)	371 (73.8%)
Religious leaders	133 (26.4%)	370 (735.6%)
Siblings	118 (23.5%)	385 (76.5%)
Friends	106 (21.1%)	397 (78.9%)
Health Professional	380 (75.5%)	123 (24.5%)

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Table 4.10: Significant others who can influence respondents to go for screening

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Husband	292 (58.1%)	211 (41.9%)
Doctors	249 (49.5%)	254 (50.5%)
Colleagues	243 (48.3%)	260 (51.7%)
Parents	132 (26.2%)	371 (73.8%)
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Siblings	118 (23.5%)	385 (76.5%)
Friends	106 (21.1%)	397 (78.9%)
Health Professional	380 (75.5%)	123 (24.5%)

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4.12 Respondents' preferred sources of information

The respondents were asked specifically about different sources of information from which they would like to learn about cervical cancer. Newspaper (78.5%) topped the list followed by healthcare professional (75.5%). Other sources include health talk (68.2%) radio/television (67.8%), classrooms (60.6%) and Churches/Mosques (53.3%) among the sources of information from media.

4.13 What respondents' would like to know about cervical cancer screening technique

The respondents were asked what they would like to know about cervical screening techniques. Majority, 399(79.3%) said they would like to know about screening procedures. Likewise 387(76.9%) also said eficacy in detection, while 336 (66.8%) said age limit for cervical cancer screening. Three hundred and sixty-seven (73.0%) of the respondents also said that the side effects of the screening technique is what they will like to know, and a large proportion 377(75.0%) of the respondents said what is next after the screening services. Details are highlighted in table 4.11.

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Table 4.11: What respondents' would like to know about CCSS screening technique

What respondents' would like to know	Yes	N=503 No
Screening Procedure	399 (79.3%)	104 (20.6%)
Efficacy in detection	387 (76.9%)	116 (23.1%)
Age limit	336 (66.8%)	167 (33.2%)
Side effect	367 (73.0%)	136 (27.0%)
What next after detection	377 (75.0%)	126 (25.0%)

4.14 Test of Hypotheses

Hypotheses one

The null hypotheses states that there is no relationship between respondents' knowledge of cervical cancer and the utilization of screening services. Results showed that there is no significant relationship between respondents' knowledge of cervical cancer and the utilization of cervical cancer screening services ($p>0.05$). Therefore the null hypothesis is failed to be rejected and the alternative is not accepted. See table 4.12 for details.

Table 4.12 Relationship between knowledge of cervical cancer and the Utilization of cervical cancer screening services

P<0.05

Respondents	Frequency	Mean Knowledge	Std
Assistant Director of Nursing	19	26.7368	1.52177
Chief Nursing Officer	70	23.3714	2.32922
Principal Nursing Officer	85	22.3765	4.11147
Senior Nursing Officer	49	22.9184	2.62866
Nursing Officer	136	23.1846	3.16175
Staff Nurse	144	21.7133	5.32395
Total	503	22.7734	3.92057

ANOVA Variation	SS	Df	MS	F	p-value
Between	498.167	5	99.633	6.860	
Within	7217.996	497	14.523		.000

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4.14.2 Hypotheses two

The null hypothesis states that there is no relationship between cadres of nurses and the utilization of screening services. This study revealed that there is a significant relationship between cadre of nurses and utilization of screening services ($p < 0.05$) as more (94.7%) respondents of the assistant director of nursing utilized cervical screening services compared to 57.6% of respondents of the chief nursing officers, 34.5% of senior nursing officers and 10.0% of staff nuses utilizing cerival screening service as shown in Table 4.13. The null hypothesis is therefore not accepted.

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Table 4.13: Relationship between cadre of nurses and utilization of cervical cancer screening services

CADRE OF NURSES	UTILIZATION		TOTAL	x^2-value	Df	P-value
	YES F(%)	NO F(%)				
ADN	18 (94.7%)	1 (5.3%)	19			
CNO	38 (54.3%)	32 (45.7%)	70			
PNO	47 (55.3%)	38 (44.7%)	85			
SNO	16 (32.7%)	33 (67.3%)	49	101.4	5	0.000
NO	41 (30.1%)	95 (69.6%)	136			*
SN	14 (9.7%)	130 (90.3%)	144			
TOTAL	174 (34.6%)	329 (65.4%)	503			

* p<0.05

4.14.3 Hypotheses three

The null hypothesis states that there is no association between knowledge of cervical cancer and years of experience. This study revealed that there is a significant association between knowledge of cervical cancer and years of experience. The null hypothesis is therefore not accepted. See table 4.14 for details.

Table 4.14: Relationship between knowledge of cervical cancer and years of experience

Years of Experience	Knowledge of Cervical cancer			F(ANOVA)	Sig
	Poor	Average	Good		
1-5years	23(20.5%)	87(77.7%)	2(1.8%)		
6-10years	31(21.5%)	111(77.1%)	2(1.4%)	9.515	0.000
11-15years	4(6.0%)	63(94.0%)	0(0.0%)		
16-20years	13(17.8%)	60(82.2%)	0(0.0%)		
21-25years	1(2.4%)	40(97.6%)	0(0.0%)		
26-30years	0(0.0%)	33(100.0%)	0(0.0%)		
31-35years	1(5.3%)	18(94.7%)	0(0.0%)		

*p<0.05

4.14.4 Hypotheses four

The null hypothesis states that there is no association between knowledge of cervical cancer and cadre of nurses. This study revealed that there is a significant association between knowledge of cervical cancer and cadre of nurses as all (100%) respondents of the Assistant Director of Nursing had better knowledge of cervical cancer compared to 73.6% of respondents of the Staff Nurses and 84.6% of Nursing Officers as shown in table 4.15. The null hypothesis is therefore not accepted.

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Table 4.15: Relationship between knowledge of cervical cancer and cadre of nurses

| Cadre of Nurses | Knowledge of Cervical cancer | | | F(ANOVA | Sig |
	Poor	Average	Good		
ADN	0(0.0%)	19(100.0%)	0(0.0%)		
CNO	3(4.3%)	67(95.7%)	0(0.0%)	10.875	0.000
PNO	12(14.1%)	73(85.9%)	0(0.0%)		
SNO	4(8.2%)	45(91.8%)	0(0.0%)		
NO	18(13.8%)	110(84.6%)	2(1.5%)		
SN	36(25.0%)	106(73.6%)	4(0.8%)		

*p<0.05

The relationship between cadre of nurses and ultilization of screening services was further analysed using bivariate logistic regression. On bivariate logistic regression, Staff Nurses were twice less likely to utilize cervical screening services compered to Assistant Directors of Nursing (OR 0.23, CI 0.117-0442), (p<0.05). Nursing officers were also twice less likely to utilize cervical screening services than Assistant Director of Nursing (OR 0.20, CL 0.092-0.0473). See table 4.13 for details

Table 4.16 Logistic Regression showing the relationship between cadre of nurses and the utilization of screening services

Cadre	Frequency	Odds ratio	95% CL	P-value
Assistant Director of Nursing	19	RC		0.000
Chief Nursing Officer	70	0.006	0.001-0.050	0.000
Principal Nursing Officer	85	0.082	0.039 - 0.171	0.000
Senior Nursing Officer	49	0.076	0.037 - 0.154	0.025
Nursing Officer	136	0.208	0.092 - 0.473	0.000
Staff Nurse	144	0.233	0.117 - 0.442	0.000

* RC – Reference column

CHAPTER FIVE

DISCUSSION

This chapter is organized into five sub-sections, which are socio demographic characteristics of respondents, knowledge about cervical cancer and cervical cancer screening services, attitude and utilization of cervical screening services, conclusion, and recommendations.

5.1 Socio-Demographic Characteristics of Respondents

Majority of the respondents in the study population were between 31 – 40 years of age, followed by some who were between the age of 41 – 50 years. These findings may be due to the fact that all the respondents were professional nurses who were in their prime years of active service. Majority of the respondents were married while a few of the study population were single. This finding may be because majority of the respondents were within the age bracket that are expected to be married in the Nigerian cultural setting.

Majority of the study population are christians while a few were moslems. The ethnic distributions of the population cuts across the three major groups in Nigeria that is Yoruba, Igbo and Hausa, but most of the respondents are Yoruba, probably because the study site University Colledge Hospital (UCH) is located in Ibadan, a city in south western Nigeria.

Many of the respondents were staff nurses followed by some who were nursing officers, and slightly above half of the study population had been in the practise for less than 10 years. This finding may be as a result of UCH management employment policy. This finding may also be due to the decline in the average life-span of Nigerians caused by diseases such as Cancers, HIV/AIDS and so on, which mostly affects women in their most productive years

5.2 Knowledge about Cervical Cancer and Cervical Cancer Screening Services

Majority of the respondents have heard about cancer of the cervix, and that it is the commonest cancer of the female reproductive tract, and more than half of the respondents

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knew that the Human Papilloma Virus (HPV) is the primary cause of cervical cancer. Up to two-thirds of the respondents however knew that heredity is associated with aetiology of cervical cancer. This finding is different from the findings of Phipps, Cohen, Som and Braitman (1999), in a study carried out among Southeast Asian women living in the United States, were majority (71%) of the women in the study did not know what cancer was. The findings of this study also differs from that of the NARHS (2003) and Oladepo, Ricketts and John-Akinola (2008) where majority of the study population were not aware of cervical cancer. This findings may differ from the findings of other studies carried out among women generally because the study population in this study were nurses who have access to information on cancers and diseases generally. According to Udigwe (2006), in any community, trained nurses and midwives constitute a knowledgeable class with regards to medical information and intervention. Likewise, Awodele, Adeyomoye et al (2011) stated that nurses are important health personnel that are suppose to educate women on the need for cervical screening.

Many of the respondents believed that women above the age of 50 years are mostly affected by cervical cancer which is in line with the findings of Guintoli and Bristow (2008), where old age was identified as one of the risk factors associated with cervical cancer . This study revealed that respondents had high level knowledge about some of the risk factors associated with cervical cancer such as early onset of sexual intercourse, infection of Human Papilloma Virus (HPV) and heredity. Despite the high level of knowledge on cervical cancer among the respondents, some gap in knowledge still exists about other risk factors such as Tobacco smoking where only few respondents believed that tobacco smoking was one of the risk factors of cervical cancer. This gap in knowledge may be due to the fact that most people associate tobacco smoking with lung cancer and not with cervical cancer (International Collaboration of Epidemiological Studies of Cervical Cancer, 2006).

Majority of the respondents were of the opinion that only promiscuous women are at risk of cervical cancer. This is a misconception because not only promiscous women are at risk of the disease, women who are faithful but whose husband visit commercial sex workers are equally at risk of being infected with HPV as they might also be infected by their husbands (Thomas et al, 2001). Women whose husbands have also been infected in the past are also at

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risk of being infected with the Human Papilloma Virus. This notion has to be corrected because it could lead to stigmatization and wrong labeling of those who are suffering from the disease. It may also lead to negative attitude towards screening.

Majority of the respondents correctly mentioned that bleeding from the vaginal is a symptom of cervical cancer. Many (89.7%) also stated that painful intercourse and irregular menstrual flow as symptoms. This finding corroborates the statement of Udigwe (2006) who stated that trained nurses and midwives constitute a knowledgeable class with regards to medical information and intervention. Moreover, some other symptoms that are not associated with cervical cancer were mentioned by the respondents such as high blood pressure and purulent vagina discharge. There is therefore a need to educate respondents that cervical cancer is often asymtomatic and is usually suspected when there is abnormal vaginal bleeding. In addtion to this, it is necessary to educate women generally about the various reproductive tract infections that affect women and their symptoms.

Respondents' knowledge on prevention and early detection of cervical cancer through Pap smear was low, only about half of the respondents stated that regular pap smear could be accessed as a means of secondary prevention or early detection of cervical cancer. This finding was similar to the findings of Awodele et al (2011) in their study among nurses in Lagos State University Teaching Hospital. Awodele et al concluded that although nurses have good knowledge of cervical cancer but they have limited understanding of the types of cervical screening techniques. Likewise, Udigwe in 2006 concluded that the knowledge and uptake of cervical cancer screening services among nurses in Nnewi was poor.

A large proportion of the respondents were aware of a cervical cancer screening centers in Ibadan. Majority mentioned the University College Hospital (UCH). This may be due to the fact that all the respondents work in UCH and they are also resident in Ibadan. Also, UCH is one of the biggest tertiary health care facilities in Nigeria and it is also a referral centre for other secondary and primary health care facilities, therefore it is expected to be equipped with most of the medical diagnostic equipments.

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Respondents were asked about who could influence their screening behaviour, respondents had multiple opinions; majority said their husbands could influence them. This gives a clue to the role male partners in influencing screening behavior. Some also said their colleagues at work can influence their screening behavior. A large proportion also reported that medical doctors could influence their screening behaviour. This finding confirms the observation made by Check (1999) and Kant at al (1997). According to Kant et al, personal invitation by a general practioner resulted in 18% higher overall attendance for screening. It should be noted that the major reason why other people can influence respondents' decision to go for screening is the belief that such people know better either through experience or practice. Friends were also chosen as people who could influence respondents screening behaviour which confirms a study by Check (1999) and Daramola (2001) where it was confirmed that friends are an informal but important source of health information in providing health information about cervical cancer.

Newspapers/magazines were the most common source of information where respondents would like to learn about cervical cancer. Respondents also stated that health professional/colleague, radio/television and health talk were other common source where they would like to access information on cervical cancer. This reveals the importance of these sources of information in providing health information. Television is a meduim that provides audiovisual information to a large number of people withing a relatively short period of time, and several studies have demonstated the relevance of television in providing health information, which can lead to positive behavioral change. The role of health workers in providing health information about cervical cancer has been previously described by Daramola (2001) and Jamesoo(1993).

5.3 Attitude And Utilization Of Cervical Screening Services

Only 174 out of the 503 respondents have ever had a Pap smear done, out of which very few (9.5%) had accessed Pap smear screening service twice in their life. This finding corroborates the findings of Awodele et al (2011) where majority of the nurses in Lagos University Teaching Hospital had poor disposition towards undergoing cervical cancer

screening. The findings also confirm the findings of Udigwe (2006) who concluded that the uptake of cervical cancer screening services by nurses in Nnewi was very poor.

Most of the respondents who had assessed Pap smear services did so in the University College Hospital (UCH). This is probably due to the fact that they work in the UCH. The respondents that had never had Pap smear done were asked the reasons for not going for the test, a large proportion stated lack of time, while others said it is fear of the result that has made them not to go for the test. These findings revealed that respondents' profession did not significantly influence their attitude towards screening. This is however not encouraging becausee nurses as health professionals should be advocates for cervical cancer screening in the society. Moreover, these findings is similar to the findings of De Nooijer, Lechner and De Vries (2002) where majority of the women in Holland stated that they had no time to go for cervical cancer screening because of their work schedule aod based on different perceptions of the severity of the disease.

Although a large proportion of the respondents stated that they would go for cervical cancer screening in future, their poor attitudinal disposition towards cervical cancer screening services has serious implication on their health seeking behaviour both at present and in the future. There is therefore a need for health educational intervention among the nurses and other health care providers aimed at increasing their knowledge on the advantages of cervical cancer screening.

5.4   Implications of the findings for reproductive health education

There is no doubt that the results of this study will have far reaching implications for the planning, development, implementation and evaluation of womens' health education programmes especially on issues relating to cancer health education in Nigeria. Health education is the part of health care that is concerned with promoting healthy behaviours. Health education is the combination of learning experiences designed to facilitate voluntary adaptation of behaviour conducive to health (Green and Kreuter, 1991). It is concerned with reinforcing or changing knowledge, attitudes and behaviours of people through effective time tested strategies, with the aim of helping them to ensure an optimum well-being. Health

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education can therefore be used to bridge the gap between the health information acquired and health practices within the context of cervical cancer screening.

One of the key implications of the study is the need for cervical cancer screening education programmes to be carried out among health professionals at all levels especially among nurses. Despite the fact that cervical cancer screening awareness is high among nurses, the utilization of the screening services available and accessible in their place of work (UCH) was very low. Reproductive health education specialists have a significant role to play in reversing this trend among nurses because they constitute one of most authoritative sources of information about health matters for the general populace especially women. The continuing education programme such as institution based health workshops, seminars and in service training provides a golden opportunity for doing this. Nurses need to be trained not only to provide comprehensive health education services routinely to their clients but to also motivate them to practice what they teach and lead by example.

The evidence from this study suggests that the UCH authority should promote cervical cancer screening services among nures in order to have a healthier work force. In this respect, policy brief could be prepared from this document that could be used by UCH Board to promote health. Also, the existing curriculum in the schools of Nursing should be modified to include cervical cancer screening services so that student nurses would incalcate the knowledge and have positive attitude towards utilization of the scervices.

Reproductive health specialists can design and develop information, education and communication materials on cervical cancer such as leaflets or booklets which can be shared among all health professionals. Enlightenment through Nursing journals and magazines is also a useful health education strategy. It had been widely used to disseminate information successfully to raise nurses awareness and knowledge on various health issues. It could be used to upgrade nurses' knowledge about utilization of cervical cancer screening services and its advantages.

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5.5   Conclusion

This study reveals that the knowledge on the usage of cervical cancer screening among the female nurses of the University College Hospital (UCH), Ibadan is deficient, even though they are aware of cervical cancer and the screening services available. It is apparent that there is n huge knowledge gap that needs to be filled in terms of benefits and reasons why they should go for the screening. Even though majority of the respondents know what carcinoma of the cervix is all about, and are aware of the test called Pap smear, knowledge about cervical screening services is very poor and accessing the screening services was generally poor and often taken for granted.

Low knowledge on advantages of uutilization coupled with low perceived susceptibility has resulted in poor screening behavior and poor attitude towards screening. There is therefore an urgent need to positively influence nurses' attitude and behavior towards going for screening through health seminars and workshops so as to effectively address all misconceptions thereby improving preventive behaviors among nurses and women generally.

5.6   Recommendations

From the findings obtained in this study, the following recommendations have been made:

1) Nurses' level of knowledge about cervical cancer should be upgraded through educational interventions and they should be motivated to adopt cervical screening services

2) Interventions should be put in place to increase awareness of cancer of the cervix and preventive health seeking behavior among women.

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APPENDIX I

QUESTIONNAIRE

Dear Respondent,

I am Maxwell, Opemipo Olubunmi, a postgraduate student of the Department of Health Promotion and Education in the Faculty of Public Health, College of Medicine, University of Ibadan and I am carrying out a study on "KNOWLEDGE, ATTITUDE AND UTILIZATION OF CERVICAL CANCER SCREENING AMONG FEMALE NURSES IN UNIVERSITY COLLEGE HOSPITAL, IBADAN". This research is part of the requirement for the award of Masters in Public Health (Population and Reproductive Health Education) and the findings will be used for research purpose only.

Please note that you are not required to write your name on the questionnaire. Kindly feel free to express your opinion and be rest assured that your responses will be kept strictly confidential.

Your honest and sincere response to the following questions will be highly appreciated.

Thank you.

SERIAL NO_____

INSTRUCTIONS (Please give an appropriate answer and tick where applicable)

SECTION A. SOCIO-DEMOGRAPHIC INFORMATION

1. Age in years as at last birthday: ————————————————.

2. Marital status:

    a) Single [   ]   b) Married [   ]   c) Divorced [   ]   d) Separated [   ]

    e) Widow [   ]

3. Religion:

    a) Christianity [   ]   b) Islamic [   ]   c) Traditional [   ] d. Others (Pls specify) --

4. Ethnic group. a. Yoruba [   ] b. Hausa [   ] c. Igbo [   ] d. Others (Pls specify).

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5. Educational background:

     a) RN/RM and other specialties[ ] b) 1st Degree [ ] c) Masters Degree [ ]

     d) Phd [ ]

6. Cadre in Nursing profession

     a) Assistant Director of Nursing [ ]   b) Chief Nursing Officer [ ]

     c) Principal Nursing Officer [ ]   d) Senior Nursing Officer [ ]

     e) Nursing Officer [ ]   f) Staff Nurse [ ]

7. Years of practice: ----------------------

8. Have you ever practised in a gynaecology ward?

     a)Yes [ ]   b)No [ ]

9. If yes, for how long? ----------------------

10. How many children have you ever had? (living and dead) ------------------

SECTION B: KNOWLEDGE ON CERVICAL CANCER

11. Cancer of the cervix is the commonest cancer of the female reproductive tract:

     Yes [ ]   b)No [ ]   c)Uncertain [ ]

12. What is the primary cause in development of cervical cancer?

     a) Unknown [ ]   b) Human Papilloma Virus [ ]

     c) Human Immunodeficiency Virus [ ] d) Old age [ ]

13. The following causes have been associated with the aetiology of cervical cancer
(Pls tick where applicable)

		YES	NO
i.	Heredity		
ii.	Old Age		
iii.	HIV		
iv.	HPV		

14 In which age group does cancer of the cervix most commonly occur?

     a) Below 30 years [ ] b) 30-39 years [ ] c) 40-49 years [ ]

     d) 50 years and above [ ]

5. Educational background:

    a) RN/RM and other specialties[   ] b) 1st Degree [   ] c) Masters Degree [   ]

    d) Phd [   ]

6. Cadre in Nursing profession

    a) Assistant Director of Nursing [   ]   b) Chief Nursing Officer [   ]

    c) Principal Nursing Officer [   ]   d) Senior Nursing Officer [   ]

    e) Nursing Officer [   ]   f) Staff Nurse [   ]

7. Years of practice: ---------—---------

8. Have you ever practised in a gynaecology ward?

    a)Yes [   ]   b)No [   ]

9. If yes, for how long? ——-—---—

10. How many children have you ever had? (living and dead) ----------—

SECTION B: KNOWLEDGE ON CERVICAL CANCER

11. Cancer of the cervix is the commonest cancer of the female reproductive tract:

    Yes [   ]   b)No [   ]   c)Uncertain [   ]

12. What is the pimary cause in development of cervical cancer?

    a) Unknown [   ]   b) Human Papilloma Virus [   ]

    c) Human Immunodeficiency Virus [   ] d) Old age [   ]

13. The following causes have been associated with the aetiology of cervical cancer (Pls tick where applicable)

		YES	NO
i.	Heredity		
ii.	Old Age		
iii.	HIV		
iv.	HPV		

14. In which age group does cancer of the cervix most commonly occur?

    a) Below 30 years [   ] b) 30-39 years [   ] c) 40-49 years [   ]

    d) 50 years and above [   ]

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15. Some risk factors associated with cervical cancer include :

(Pls tick where applicable)

		YES	NO
i	Heredity		
ii	Old Age		
iii.	HIV		
v.	HPV		
vi.	Abortion		
vii.	Sexual intercourse ot early age		
viii.	Tobacco smoking		
ix.	Radiation		
x.	Infertility		
xi.	Micronutrient deficiency		
xii.	Infection with chlamydia trachomatis		

16. What are the specific or diagnostic signs and symptoms of cervical cancer?

(Pls tick where applicable)

		YES	NO
i	Fever		
ii	Nausea and Vomitting		
iii	Sleeplessness		
iv	Bleeding per vaginal		
v	Sleeplessness		
vi	Purulent vaginal discharge		

17. Can cervical cancer

		YES	NO
i	kill ?		
ii	be prevented?		
iii	be treated ?		

18 If the answer to (17ii) is yes, how can it be prevented?

_____

_____

SECTION C. KNOWLEDGE ON CERVICAL CANCER SCREENING SERVICES.

19. Are you aware of a test called Papanicolau's (Pap)smear?

a) Yes [ ]   b)No [ ]

20. If yes, what is it used for? _____

_____

21. Why is cevical cancer screening necessary? _____

_____

22. Cervical cancer screening is a diagnostic test.

a) Yes [ ]   b)No [ ]

23.Are you aware of any screening centre in Ibadan?

a) Yes [ ]   b)No [ ]

24. If yes, pls name the the centre (s)

_____

_____

_____

25. At what age should a womanstart being screened for cervical cancer?

_____

26. How often should the screening be done? _____

SECTION D. ATTITUDE TOWARDS THE UTILIZATION OF CERVICAL SCREENING SERVICES

27. Have you ever had a Pap smear done?

    a)Yes [   ]   b)No [   ]

28. If the answer to (27) is yes, how may times have you had it done?

    a)Once [   ]   b)Twice[   ]   c)Thrice [   ]   d)4 times or more [   ]

29. Where did you have the screening done?————————————————————

30. If the answer to (29) is no, what is the reason for not having Pap smear done?

    a)Cost considerations[   ]   b) Lack of awareness of the test [   ]

    c)Lack of awareness about where it can be done[   ]   d)Fear of the result [   ]

    e) Procedure is cumbersome[   ]   f) Lack of time [   ]

    g)Other reasons (Specify) ————————————————————————

31. Do you intend to go for screening in the future?

    a)Yes [   ]   b)No [   ]

32. If your answer to (33) is oo, why

————————————————————————————————————

SECTION E. DETERMINANTS OF UTILIZATION AND NON-UTILIZATION OF CERVICAL SCREENING SERVICES

33. Have you ever been screened in UCH facility?

    a)Yes [   ]   b)No [   ]

34. If your answer to (33) is no, why?

————————————————————————————————————

35. If your answer to (33) is yes, why did you choose the facility?

————————————————————————————————————

36. Would you like to use the facility again?

    a)Yes [   ]   b)No [   ]

37. If your answer to(36) is no, why?

————————————————————————————————————

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SECTION G. CUE TO ACTION/ SOURCE OF INFORMATION

38. Who do you think can influence you decision to go for screening?
(Pls tick where applicable)

		YES	NO
i	Husband		
ii	Parents		
iii	Colleagues		
iv	Doctors		
v	Religious leaders		
vi	Siblings		

39. From which source of information do you wish to learn about cervical cancer?

(Pls tick where applicable)

		YES	NO
i	Radio/ Television		
ii	Classrooms		
iii	Friends		
iv	Health Talk		
v	Health professional/ Colleagues		
vi	Newspapers/ magazines		
vii	Mosques/ Churches		

40. What will you want to know about cervical cancer screening techniques?

(Please tick answers as many as you find suitable) (Pls tick where applicable)

		YES	NO
i	Screening Procedures		
ii	Efficacy in detection		
iii	Age Limit		
iv	Side effects		
v	What next after detection		

Thanks for taking your precious time to fill the questionnaire, God bless you.

Ethical Review Board of the University of Ibadan/University College Hospital (UI/UCH).

INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IMRAT)
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UI/UCH EC Registration Number: NHREC/05/01/2008n

NOTICE OF EXPEDITED REVIEW AND APPROVAL

Re: Knowledge Attitude and Utilization of Cervical Cancer Screening among Female Nurses in University College Hospital, Ibadan.

UI/UCH Ethics Committee assigned number: UI/EC/09/0022

Name of Principal Investigator: Mrs. Operaipo O. Maxwell

Address of Principal Investigator: Department of Health Promotion and Education,
College of Medicine,
University of Ibadan, Ibadan.

Date of receipt of valid application: 18/02/2009

Date of meeting when final determination of research was made: N/A

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and given full approval by the UI/UCH Ethics Committee.

This approval dates from 18/02/2009 to 17/02/2010. If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study. In multiyear research, endeavour to submit your annual report to the UI/UCH EC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code for Health Research Ethics requires you to comply with all international guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.

Dr. A. A. Adebiyi
Chairman, Medical Advisory Committee,
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