

**KNOWLEDGE AND WILLINGNESS TOWARDS THE UPTAKE AND
RECOMMENDATION OF HUMAN PAPILLOMA VIRUS VACCINE
AMONG NURSES IN THE UNIVERSITY COLLEGE
HOSPITAL, IBADAN, NIGERIA**

BY

Oluwakemi Omolara OJO

B.Ed. Health Education (Ibadan)

MATRIC No: 160645

**A DISSERTATION IN THE DEPARTMENT OF HEALTH
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DEDICATION

I dedicate this work to God Almighty for His grace and faithfulness.

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ABSTRACT

Cervical cancer (CC) is a public health problem in Nigeria associated with the Human Papilloma Virus (HPV). Human Papilloma Virus vaccine (HPVv) was designed to reduce incidence of CC. The vaccine is effective among females aged 9-45 years. Nurses are strategically positioned to provide education about HPVv which can increase the uptake of the vaccine among girls and women of all ages. However, knowledge and willingness to uptake and recommend HPVv among nurses have not been fully investigated. The study was designed to assess the knowledge and willingness to uptake and recommend HPVv among nurses in the University College Hospital, Ibadan, Nigeria.

A cross-sectional study was employed using a two-stage sampling technique to randomly select 308 participants from 13 departments selected out of 26. Data were collected using a semi-structured, self administered questionnaire which included questions on socio-demographic information, 45-point knowledge, 14-point attitude and 15-point practice scales, respectively. Questions on factors influencing nurses' willingness to uptake and recommend HPVv and factors that will enhance their future decisions to use the vaccine were included. Knowledge was assessed under eight domains namely: general knowledge of CC, predisposing factors, symptoms, management, prevention, CC screening, HPV infection and HPVv. Overall knowledge score <21 , $\geq 21-30$ and >30 were classified as poor, fair and good; attitude score of ≤ 6 and >6 were classified as negative and positive while practice relating to HPVv score of ≤ 7 and >7 were grouped as bad and good, respectively. Data were analysed using descriptive statistics, Chi-square test and logistic regression at $p=0.05$.

Respondents' age was 37.6 ± 7.5 years. The overall knowledge score was 33.6 ± 4.6 . Proportion of respondents with good knowledge in the eight domains was as follows: general knowledge of CC-(96.4%); predisposing factor- (83.4%); symptoms- (66.9%); management- (95.5%) and CC screening- (63.6%). All the respondents had good knowledge in domains on prevention of CC and HPV infection. However, majority (74.7%) had poor knowledge of HPVv. Although 83.8% were willing to take the vaccine only 2.9% had received the vaccine. Respondents with good knowledge of HPVv (94.9%) were significantly more willing to uptake HPVv compared with those with poor knowledge (80%). Significantly more nurses

(44.5%) with ≤ 10 years of nursing experience had good practice relating to HPVv compared with those with nursing experience ranging from 11-20 years (28.3%) and ≥ 21 years (25.4%). Exclusion of HPVv from the childhood immunisation schedule was more likely to influence nurses willingness to recommend the vaccine (OR 1.8, CI= 1.07-3.15). Provision of HPVv in the community is more likely to enhance respondents' willingness to uptake and recommend the vaccine in the future (OR 3.5, CI= 1.6-7.3).

There is a gap in knowledge of Human Papilloma Virus vaccine among nurses in the University College Hospital, Ibadan and this has hindered their uptake and recommendation of the vaccine. It is therefore recommended that nurses be further educated through the in-service education programme on the health benefits of Human Papilloma Virus vaccine to promote its uptake.

Keywords: Human Papilloma Virus vaccine, Cervical cancer screening, Human Papilloma Virus, Childhood immunisation schedule

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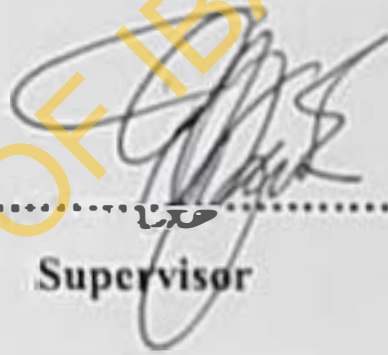
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Oluwakemi Omolara OJO

CERTIFICATION

I certify that this project was carried out, under my supervision, by Oluwakemi Omolara OJO in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.



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Supervisor

Dr. O.E. Oycwole

B.Sc. (Ibadan), M.Sc. (Ibadan), M.P.H. (Ibadan), PhD (Ibadan)

Senior Lecturer

Department of Health Promotion and Education,

Faculty of Public Health, College of Medicine

University of Ibadan

Ibadan, Nigeria.

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LIST OF ABBREVIATIONS/ ACRONYMS

HPV	-	Human Papilloma Virus
HPV _v	-	Human Papilloma Virus virus
HIV	-	Human Immunodeficiency Virus
STIs	-	Sexually Transmitted Infections
STDs	-	Sexually Transmitted Diseases
CC	-	Cervical Cancer
A&E	-	Accident and Emergency
A&E Theatre	-	Accident and Emergency Theatre
ICU	-	Intensive Care Unit
O&G ward	-	Obstetrics and Gynaecology ward
OPD & MDR	-	Out Patient Department and Multidrug Resistant ward
UCH	-	University College Hospital
RN	-	Registered nurse
RN/RM	-	Registered Nurse/Registered Midwife
FDA	-	Food and Drug Agency
GSK	-	GlaxoSmithKline
GP	-	General Practitioner
PN	-	Practical Nurse
IARC	-	International Agency for Research on Cancer
GAVI	-	Global Alliance for Vaccines and Immunisations
EPI	-	Expanded Programme on Immunisation
WHO	-	World Health Organisation
CDC	-	Centre for Diseases Control and Prevention
NGO	-	Non-Governmental Organisation
LEEP	-	Loop Electrical Excision Procedure
IFGO	-	International Federation of Gynaecology and Obstetrics
RPV	-	Rabbit Papilloma Virus
HSV	-	Herpes Simplex Virus

MSM	-	Men who have sex with men
RAs	-	Research Assistants
IREC	-	Institutional Ethics Review Committee
SEER	-	Surveillance Epidemiology End Report
ACIP	-	Advisory Committee on Immunization Practices
FDA	-	Food and Drug Administration
NACC	-	National Agency for Cancer Control
AAP	-	American Academy of Family Pediatrics
AAFP	-	American Academy of Family Physicians
PHC	-	Primary Health Care
UCH	-	University College Hospital

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OPERATIONAL DEFINITION OF TERMS

Cervical Cancer: Cervical Cancer (CC) is the term used for a malignant neoplasm arising from cells originating in the cervix uteri.

Cervical Cancer Screening: A Pap test is commonly used to screen for cervical cancer.

Human Papilloma Virus (HPV): HPV is a group of more than 150 related viruses. Some HPV types can lead to cancer. They are transmitted sexually.

Human Papilloma Virus Vaccine: these are vaccines that prevent infection by certain types of HPV. These vaccines also prevent incidence of cervical cancer.

Knowledge: is a familiarity, awareness or understanding of something, such as facts, information, descriptions, or skills which is acquired through experience or education by perceiving, discovering or learning.

Willingness: Disposed or consenting; inclined. It is also the quality or state of being prepared to do something; readiness.

Uptake: This is the action of taking up or making use of something that is available.

Recommendation: A suggestion or proposal as to the best course of action, especially one put forward by an authoritative body.

Nurse: is a person skilled or trained in caring for sick or injured people. Nursing includes the promotion of health prevention of illness and the care of ill, disabled and dying people.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Kumar, Abba, Fausto and Mitchell 2007 reported that Cervical Cancer (CC) is the term used for a malignant neoplasm arising from cells originating in the cervix uteri. In 400 BCE, Hippocrates discovered cervical cancer as an incurable disease; this claim was also supported by Gasparini and Panatto (2009). In 2006, the first HPV vaccine was approved by Food and Drug Administration (FDA). The human papilloma virus infection (HPV) appears to be a necessary factor in the development of almost all the cases of cervical cancer. Pap smear is done to identify precancerous and potentially precancerous changes in cervical cells and tissue. Pap smear screening every 3-5 years with appropriate follow-up can reduce cervical cancer incidence by up to 80%. Abnormal results may suggest the presence of precancerous changes this will necessitate further examination and possible preventive treatment for CC.

Although most women with cervical cancer have the HPV infection, not all women with an HPV infection will develop cervical cancer. Many different types of HPV can affect the cervix but only some of them cause abnormal cells that may become cancer. Some HPV infections go away without treatment. Women who become sexually active at a young age and have many sexual partners are at increased risk for HPV infections (Sasicni, Castanon and Cuzick, 2009).

According to Nwogu, Ezeome, Mahoney, Okoye and Michalek, 2010, there is an impending cancer epidemic in Africa. In Nigeria, this disease is causing untold devastation and therefore control measures are desperately needed. Breast, cervical, prostate and liver cancers are the most common types in Nigerian adults. This statement was also supported by Healthcare Global 2011 when it documented the age distribution of cervical cancer is pyramidal with a higher percentage of younger women being diagnosed with pre-cancer symptoms and invasive disease. Women remain undetected for many years because of lack of opportunistic screening of hospital-visiting women for cervical pre-cancer abnormalities. Cost of treating

CC patients is enormous and also the success rate is very poor. This poses a continuous challenge to healthcare professionals and the government GDP annually.

Hoque, Monokoane and Van Hal 2014 stated in a study carried out in a tertiary hospital in South Africa, that nurses had poor knowledge of HPV infection and the HPV vaccine, hence it was recommended that nurses need to be educated before implementing HPV vaccinations nationwide. This was in line with Bernard, Gilca, Boulianne, Piclak, Haipcrin and Simpson 2009 which reported that willingness of nurses to recommend the HPV vaccines was influenced by their knowledge, perceived self efficacy, societal and colleague support. They also stated that although most nurses support HPV vaccination, thus their active involvement should not be taken for granted. Targeted educational efforts are needed to ensure nurses' involvement in the prevention of HPV-related diseases. Nurses have heterogeneous levels of knowledge of HPV infection and virtually all would like to receive more information about it. Cassidy and Schlenk 2012 also noted that healthcare providers can greatly affect the uptake of HPV vaccine. They identified healthcare providers' recommendation of HPVv as predictor and barrier to HPV vaccination programme. Factors causing the low recommendation include poor knowledge base, time constraints and presence of parents in the room while counseling the preteen girls.

1.2 Statement of Problem

Cervical cancer is the second leading cause of death among women of reproductive age. The World Health Organization (WHO) has estimated that 300,000 deaths occur each year due to cervical cancer, 83% of which occur in resource-poor countries. The overall incidence of cervical cancer has not changed significantly, but an aggressive form of the disease is being detected in younger women 25-40 years, and the old peak at 50-55 years has been replaced by a plateau at 35-55 years (Chhabra, 2006). With the advent of HPV vaccine, the increase in the incidence and mortality rate of cervical cancer among women of reproductive age is of great concern. It seems that women of reproductive age are not being immunized against HPV infection which is the major factor in the development of cervical cancer especially now that the incident of the disease is on the increase among young women (Kjaer, Sigurdsson, Iversen *et al.*, 2009; Healthcare Global, 2011).

Nurses play a major role in health educating women about immunization programmes however, they do not have adequate knowledge about HPV vaccine. This has been found to be a major reason why they do not access HPV vaccine despite the vaccine being easily accessible to them and also they do not educate their client about the vaccine. This has led to low uptake of the vaccine in general. If nurses that are supposed to be role models to their client do not have adequate knowledge about HPV vaccine and also do not access the vaccine it will be difficult for them to recommend it to their clients and thus the incidence of cervical cancer will continue to be on the increase. Warnai, Ayissi and Ogembo (2013) stated that while it is known that Sub-Saharan African countries face multiple obstacles such as cost in adopting vaccination against HPV, the crucial role nurses can play in implementing such programmes has not been adequately examined.

1.4 Justification of Study

Human Papilloma Virus (HPV) infection is the major risk factor for the development of cervical cancer. Although most women with cervical cancer have the Human Papilloma Virus (HPV) infection, not all women with an HPV infection will develop cervical cancer. This is because although many different types of HPV can affect the cervix, only some of

them cause abnormal cells that may develop into cancer. Some HPV infections go away without treatment (Sasien *et al.*, 2009). Poor access to screening and treatment services especially in low resource setting makes the advent of prophylactic HPV vaccines an attractive new opportunity to reduce the global impact of cervical cancer (Katahoire, Jitta, Kivumbi, Murokora, Arube, Siu, Aringutwe, Bingham, Mugisha, Tsu and LaMontagne, 2008). A study carried out in Lagos University Teaching Hospital, Lagos, Nigeria shows that there was poor knowledge of HPV vaccines among female nurses. The main reason given by the nurses for not recommending the vaccines was the lack of information (Makwe and Anorlu, 2011). Perlman, Wamai, Bain *et al* (2014) also stated that there is an urgent need for more education to inform the public (adolescents, parents, and healthcare professionals) about HPV, HPV vaccine and cervical cancer towards successful implementation of HPV vaccination programme.

Nurses are the healthcare providers that have more access to and more encounter with clients accessing any healthcare services, women of reproductive age inclusive than other health practitioners. The knowledge of nurses on HPV vaccine would go a long way in reducing the incidence of cervical cancer in Nigeria; nurses would be able to recommend the vaccine to adolescents and women they came in contact with in the healthcare facility and even in their environment. The uptake of the vaccine by nurses and other healthcare providers would give the general populace the confidence to also accept the vaccine. This would also improve the flow of clients in the cervical cancer screening centers since they can now prevent the occurrence of the disease in the first place. Usually people do not go for screening because of fear of the unknown.

This study was designed to assess the knowledge and willingness towards the uptake and recommendation of Human Papilloma Virus Vaccine among nurses in the University College Hospital, Ibadan which was one of the facilities that offer HPV vaccination programme. It also assessed the nurses' knowledge of causes of cervical cancer, screening methods, prevention (vaccine) and also management of cervical cancer. The dissemination of information about cervical cancer services to their clients and acquaintances was also assessed. The prospect of this study was to provide statistics on the level of knowledge and

willingness towards the uptake and recommendation of HPV vaccine among nurses in the University College Hospital, Ibadan. If the health workers (nurses) maximize these services they were likely to encourage other women outside the facility to make good use of these services.

1.5 Research Questions

- 1. What is the knowledge of nurses on Human Papilloma Virus vaccine?**
- 2. What is the attitude of nurses towards Human Papilloma Virus vaccine?**
- 3. What practice do nurses engage in relation to Human Papilloma Virus vaccine?**
- 4. Which factors influence nurses' willingness to uptake the Human Papilloma Virus vaccine?**
- 5. What are the factors that will enhance the recommendation of Human Papilloma Virus vaccine among nurses?**

1.6 Objectives

1.6.1 Broad objective

The broad objective of this study was to examine the knowledge and willingness towards the uptake and recommendation of Human Papilloma Virus vaccine among nurses in the University College Hospital, Ibadan.

1.6.2 Specific objectives

The specific objectives of the study were to:

- 1. Assess the knowledge of nurses on Human Papilloma Virus vaccine;**
- 2. Determine the attitude of nurses towards Human Papilloma Virus vaccine;**
- 3. Evaluate the practice nurses engage in relation to Human Papilloma Virus vaccine;**
- 4. Identify factors that influence nurses' willingness to uptake the Human Papilloma Virus vaccine; and**
- 5. Identify factors that would enhance the recommendation of Human Papilloma Virus vaccine among nurses.**

1.7 Hypotheses

The following research hypotheses were tested;

1. There is no significant difference between nurses' years of working experience and their practices relating to Human Papilloma Virus vaccine.
2. There is no significant relationship between nurses' knowledge of Human Papilloma Virus vaccine and their willingness to uptake the vaccine to prevent cervical cancer.
3. There is no significant difference between nurses' knowledge of Human Papilloma Virus vaccine and their age.
4. There is no significant relationship between the educational status of the nurses and their attitude towards Human Papilloma Virus vaccine.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Cancer is the term used for malignant uncontrolled growth of cells and tissues. It is also the term used for a malignant neoplasm arising from cells originating in the cervix uteri. It begins with irreparable damage to one or more genes controlling cellular growth, proliferation and apoptosis in a single cell which results in further genetical damage leading to abnormal cellular proliferation and invasion of the body's immune system. Cancer cells are usually localized to a site or region of the body but eventually they acquire the ability to spread to other parts of the body (Nnodu, Erinosh, Jamda, Olaniyi, Adclaiye, Lawson, Odedina, Shuaibu, Odumuh, Isu, Imam, Owolabi, Yaqub and Zamani, 2010).

According to Kumar *et al* (2007), cervical cancer is the term used for a malignant neoplasm arising from cells originating in the cervix uteri. It is the second most common cancer in women. It is also a leading cause of death in women especially in developing countries, with 500,000 new cases yearly (Mangoma, Chirenje, Chunbari and Chandiwana, 2006). Harper and Vierthaler (2011) claim that nearly half a million women throughout the world develop cervical cancer every year; adenocarcinoma is the most difficult to detect and treat with late-stage presentation and higher mortality.

Holguin (2009) also states that cervical cancer is rated the second most common malignant tumor globally, and is aetiologically linked to HPV infection. Worldwide, nearly 250,000 women die of cervical cancer annually. Cervical Cancer begins in the lining of the cervix and gradually develops from precancerous lesions to invasive cancer over time. Two types of CC include squamous cell carcinomas and adenocarcinomas which are classified by how the cells look under a microscope. Approximately 80% to 90% of CC are classified as squamous cell carcinomas, which are composed of cells that resemble the flat, thin cells that cover the

surface of the endocervix. Precancerous lesions are diagnosed more frequently than invasive CC and can easily be detected early with routine screening tests. The diagnosis of CC can be staged in order to determine how far the cancer has spread.

2.2 Epidemiology of Cervical Cancer

Worldwide, CC is the second most common and the fifth most deadly cancer in women. It affects about 16/100,000 women per year and kills about 9/100,000 per year. Approximately 80% of CC occur in developing countries. Worldwide in 2008, it was estimated that there were 473,000 cases of CC and 253,500 deaths per year. In the United States, it is the 8th most common cancer of women. In 1998, about 12,800 women were diagnosed in the US and about 4,800 died. Approximately 4,600 women were projected to die in 2001 in the US of CC and the annual incidence was 13,000 in 2002 as calculated by Surveillance Epidemiology End Report (SEER). Thus the ratio of deaths to incidence is approximately 35.4%. In 2004, the incidence of new cases of CC was 7/100,000 women. In 2008 in the US an estimated 11,000 new cases were expected to be diagnosed, and about 3,870 patients were expected to die of CC. Cervical cancer deaths decreased by approximately 74% in the last 50 years; this is largely due to wide spread Pap smear screening (Armstrong, 2010; Kent, 2010).

In the European Union, there were about 34,000 new cases per year and over 16,000 deaths due to CC in 2004. In the UK, it is the 12th most common cancer in women, accounting for 2% of all female cancers, and is the 2nd most common cancer in females under 35 years of age, after breast cancer. About 1,000 women die of CC yearly in the UK. Figures suggest that cervical screening is saving 5,000 lives each year in the UK. There was a 42% reduction from 1988-1997. The National Health Survey implemented screening programme has been highly successful, screening the highest risk age group (25-49 years) every 3 years and those ages 50-64 years every 5 years. In Canada, an estimated 1,300 women would be diagnosed with CC in 2008 and 380 will die (MacDonald, Stanbrook and Hebert, 2008; Arbyn *et al.*, 2010; and Cancer Research UK, 2012).

According to Beydag (2011), Turkish Ministry of Health data for 2003 shows that CC is in the 10th place among all cancer types seen in women and also it is in the 3rd place among the

gynaecological cancers. Two thousand and two data show that incidence of CC is 4.5/100,000 while there were 1364 new cases and 726 deaths. In the US, 2005 data show that 500,000 cases of CC were seen and 260,000 deaths had occurred.

In New Zealand (NZ), approximately 200 women are diagnosed with CC each year and about 70 will die from it. In Australia, there were 734 cases of CC in 2005. The number of women diagnosed with CC has dropped on average by 4.5% each year since organized screening began in 1991. Regular two yearly Pap tests can reduce the incidence of CC by up to 90% and save 1,200 Australian women dying from the disease each year (Henninger, 2009).

The Surveillance Epidemiology End Report (SEER) from 2000-2004 in Holguin (2009) show that the median age at diagnosis for cancer of the cervix was 48 years of age. Approximately 0.1% of women were diagnosed under the age of 20; 15.5% between 20 and 34 years; 26.2% between 35 and 44 years; 23.3% between 45 and 54 years; 15.1% between 55 and 64 years; 10.3% between 65 and 74 years; 7% between 75 and 84; and 2.5% 85+ years of age.

2.2.1 History of Cervical Cancer

Renolds and Tansey 2009 reported that in 400 BC, Hippocrates discovered CC as an incurable disease. Hinselmann in 1925 invented colposcope. Papanicolaou developed the Papanicolaou technique in 1928. In 1935, Syverton and Berry discovered a relationship between Rabbit Papilloma Virus (RPV) and skin cancer in rabbits. This led to the suspicion that cervical cancer could be caused by a sexually transmitted agent. Initial research in the 1940s and 1950s put the blame on Smegma. In 1941, Papanicolaou and Trout developed Pap smear screening. In 1946, the Aylesbury Spatula was invented which is used to scrape the cervix to collect sample for Pap smear. In 1949, a description of HPV was given by use of electron microscopy. In 1951, first successful in-vitro cell line called HeLa which was derived from biopsy of CC by Henrietta Lacks (Kumar *et al.*, 2007).

Smith 2014 reported that the potential link between a viral infection and CC was first noticed in the 50s and 60s by scientists searching for clues to things that might trigger CC. They

compared the lifestyles of women with CC to those without the disease and observed that CC seems to be more common among women who started having sex at a younger age or who had multiple sexual partners. Alexander 2008 also stated that in the 1960s and 1970s, it was suspected that infection with Herpes Simplex Virus (HSV) was the cause of the disease. It was also implicated in other malignant diseases including Burkitt's lymphoma, nasopharyngeal carcinoma, Marck's disease and Lucke renal adenocarcinoma. HSV was also recovered from cervical tumor cells. In 1963, HPV DNA was identified. In 1976, Zur Hausen and Gissel found HPV DNA in cervical cancer and warts. In 1980s, work was initiated to develop HPV vaccines by researchers at Georgetown University Medical Center, the University of Queensland in Australia and the US National Cancer Institute. In 1988, Bethesda system was developed for reporting Pap results. In 2006, first HPV vaccine was approved by Food and Drug Administration (FDA), and marketed by Merck & Co. under the trade name Gardasil.

Epidemiologists in the early 20th century noted that cervical cancer behaved like sexually transmitted disease. They summarized that:

- Cervical cancer is common in female sex workers.
- It is rare in nuns, except for those who had been sexually active before entering the convent (Rigoni in 1841).
- It is more common in the second wives of men whose first wives had died from cervical cancer.
- It is rare in Jewish women (Kumar *et al*, 2007).

Poor women in rural areas are especially vulnerable to HPV infection and CC because of low access to regular gynaecological care and subsequently low access to timely follow-up care to irregular Papanicolaou (Pap) test results and HPV positivity. A study conducted by Radecki-Breitkopf, Pearson, and Breitkopf (2005) as cited in Holguin (2009) shows that 338 women undergoing CC screening at two clinics in Texas were surveyed on their knowledge of Pap testing. Overall, minority women and those of low socioeconomic status had poor understanding of Pap testing, thus making them a very vulnerable population. It is important to evaluate the knowledge base and informational needs of women of lower socioeconomic

status, to ensure that they will continue screening as recommended, despite financial hardships.

HPV has been established as the central cause of CC. It has been reported that over 95% of invasive CC cases worldwide have HPV markers. One of the most important reasons for the high incidence of cervical cancer in developing countries is the lack of early detection of precancerous lesion and treatment of the lesions before they progress. Although cervical cancer is preventable and curable if detected early, its morbidity and mortality continues to increase (Mangomn *et al.*, 2006). Cancer control describes the totality of activities and interventions that are intended to reduced the burden of cancer in a population. This can be done by reducing cancer incidence or mortality or by alleviating the suffering of people with cancer. Prevention, early detection, diagnosis, treatment, psychosocial support and palliative care are components of cancer control. The primary cause of cervical cancer is infection with one or more types of high risk Human Papilloma Virus (HPV) which is transmitted sexually. Most new HPV infections resolve spontaneously; however persistent infection can lead to the development of precancerous cells and subsequent cancer over many years (Nnodu *et al.*, 2010).

Poor access to screening and treatment especially in low resource countries makes the advent of prophylactic human papilloma virus (HPV) vaccines an attractive new opportunity to reduce the global impact of cervical cancer (Katahoire *et al.*, 2008). Introduction of the HPV vaccine will reduce not only the morbidity and mortality related to cervical cancer but also the financial burden brought about by the diagnosis and treatment interventions. The vaccine prevents infection when given to those with no previous exposure to HPV. It needs to be administered to adolescents before their sexual debut (Urasa and Darj, 2011).

Cervical cancer screening tests have contributed significantly to the decline in incidence and mortality rates from cervical cancer in developed countries. However the situation has been further enhanced by the development and deployment of vaccines as a form of primary prevention. The burden of cervical cancer, difficulties with secondary prevention and deployment of screening and treatment frameworks on a nationwide basis in resource poor

countries suggest that HPV vaccination may be a veritable strategy. The HPV vaccines are the first group of vaccines developed to prevent cancers caused by a virus. WHO recommends that routine HPV vaccination should be included in national immunization programmes, provided that prevention of cervical cancer or other HPV-related disease or both constitute a public health priority (Bello, Enabor and Adewole, 2011).

2.3 Causes of Cervical Cancer

Human Papilloma Virus (HPV) infection appears to be a necessary factor in the development of almost all cases, that is, over 90% of cervical cancer (Sasieni, Castanon and Cuzick, 2009). Although most women with cervical cancer have the HPV infection, not all women with HPV infection will develop cervical cancer. Many different types of HPV can affect the cervix but only some of them cause abnormal cells that may become cancer. Some HPV infections go away without treatment. HPV infections are mainly sexually transmitted. Women who become sexually active at a young age and have many sexual partners are at increased risk of HPV infections. Other risk factors include smoking, HIV, multiple sexual partners, genital warts (which are a form of benign tumor of epithelial cells), chlamydia infection, stress and stress related disorders, dietary factors, hormonal contraceptives, multiple pregnancies, exposure to the hormonal drug (e.g. Diethylstilbestrol), family history of CC, early age at first intercourse, early age at first pregnancies, early use of oral contraceptives, giving birth to many children, multiple sexual partners and weakened immune system (Kumar *et al.*, 2007; Sasieni, Castanon and Cuzick, 2009).

2.5 Signs and Symptoms of Cervical Cancer

Sometimes, there may be no obvious symptoms until the cancer has progressed to an advanced stage. Signs and symptoms include abnormal vaginal bleeding, contact bleeding, vagina mass (rarely), and moderate pain during sexual intercourse and vaginal discharge. In advanced cases of CC, metastases may occur in the abdomen, lungs etc. Other symptoms are loss of appetite, weight loss, fatigue, pelvic pain, back pain, leg pain, swollen legs, heavy bleeding from the vagina, bone fracture and leakage of urine and faeces from the vagina which rarely occurs (Kumar *et al.*, 2007).

2.6 Cervical Cancer Screening

Screening is looking for cancer before a person has any symptoms. It helps to find the cancer at an early stage, so as to make it easier to treat. Usually by the time symptoms appear, cancer may have begun to spread. If a screening test result is abnormal, the patient may need to have more tests done to find out if she has cancer. These are called diagnostic tests. It was also reported that screening for CC with Pap test has decreased the number of new cases of CC and the number of deaths due to CC since 1950. For some types of cancer, the chance of recovery is better if the disease is found and treated at an early stage. Regular CC screening of women between the ages 25-60 years with Pap test decreases their chances of dying from CC. In women younger than 25 years, screening with the Pap test may show changes in the cells of the cervix that are not cancer but lead to further testing and possibly treatment. Screening with Pap test is not helpful in women older than 60 years who have had recent Pap test results. Other tests for CC include biopsy and liquid-based cytology (Sasienu, Castanon and Cuzick 2009).

According to Henninger (2009), in New Zealand (NZ), the National Cervical Screening Programme has driven the dramatic decline in cervical cancer incidence and mortality since 1990. Pap smear is done to identify precancerous and potentially precancerous changes in cervical cells and tissue. In developed countries, the increase in CC screening programmes has reduced the incidence of invasive CC by 50% or more. Approximately 200 women are diagnosed with CC each year and about 70 will die from the disease.

Kumar *et al* (2007) also reported that Pap smear screening every 3-5 years with appropriate follow-up can reduce cervical cancer incidence by up to 80%. Abnormal results may suggest the presence of precancerous changes allowing examination and possible preventive treatment. If premalignant disease or cervical cancer is detected early, it can be monitored or treated relatively non-invasively, with little impairment of fertility. Pap smear test is recommended starting three years or more after first sex or starting at age 21-25 years. Recommendations for how often a pap smear should be done vary from once a year to once every five years in the absence of abnormal test results. Guidelines vary on how long to continue screening, but well-screened women who have not had abnormal smears can stop

screening about age 60-70 years. Yanikkerem and Koker (2014) reported that the U.S. Preventive Services Task Force (USPSTF) recommends screening for CC in women age 21 to 65 years with pap smear every three years, for women 30 to 65 years screening with a combination of cytology and HPV testing every five years.

2.7 Prevention of Cervical Cancer

According to Beydag (2011), due to the increasing importance and cost of cancer, cancer prevention, early diagnosis and scanning programmes gain more importance. Preventive measures include:

- **Condom:** Evidence on whether condoms protect against HPV infection is mixed, but they may protect against genital warts and precursors to CC. They also provide protection against STDs, such as HIV and Chlamydia, which are associated with greater risk of developing CC. They may also be useful in treating potentially precancerous changes in the cervix. Exposure to semen appears to increase the risk of precancerous changes and use of condom helps to cause these changes to regress and helps clear HPV infection. Some studies suggest that prostaglandin in semen may fuel the growth of CC and uterine tumors and affected women may benefit from the use of condoms.
- **Nutrition:** Foods rich in vitamins A, B12, C, E and beta-carotene are associated with lower risk of CC.
- **Vaccination:** Vaccination with HPV vaccines is associated with lower risk of CC (Prevent Cancer Foundation, 2012; FIGO, 2009).

2.8 Human Papilloma Virus Infection

Human Papilloma Virus (HPV) is the most common sexually transmitted infection (STI) in the United States with 20 million Americans currently infected and another 6.2 million people estimated to get newly infected annually. About 50% of sexually active men and women acquire genital HPV infection at some point in their lives. HPV infection in women has been associated with genital warts as well as cervical, vaginal, and vulval cancers, whereas HPV infection in men has been associated with genital warts, anal and penile

cancers. Furthermore, oral HPV infection has also been established as an important cause of head and neck cancers (Nandwani, 2010).

Bcydag (2011) also reported that generally, at least fifteen types of HPV virus are linked to the development of CC. It is the most common sexually-transmitted disease and 20 million people are currently infected with HPV in the United States. Seventy five percent (75%) of sexually active individuals get infected with HPV at some point in their lives and 32-74% of new infections occur in the 15-24 years age group. All women are susceptible to oncogenic HPV infection which may later lead to CC.

HPV infection poses a significant public health concern. It is the most common sexually transmitted virus in the United States, causing genital warts, cervical cell abnormalities and CC in women. Roughly 20 million Americans are currently infected each year. It is so prevalent that most sexually active adults will have become infected with HPV sometimes in their lives; although most will never know it because it is asymptomatic and resolves on its own without clinical consequences (Beatty, O'Connell, Ashikaga and Cooper, 2003; Friedman and Sheppard, 2007).

In Holguin (2009) HPV was described as a small, double stranded DNA virus that is epitheliotropic that is it has a special affinity for epithelial cells. It usually affects the epithelium in the genital area. There are over 100 types of Papillomaviruses. About 40 affect the genital tracts while the rest infect skin on other areas of the body such as hand and feet. There are many different types of HPV that are associated with a wide variety of tumors some of which are harmless or benign such as warts while others are malignant or cancerous.

A study carried out in Zaria, Northern Nigeria, by Ogoina, Musa and Onyemelukwe (2013) reported that HPV infection is high in HIV-infected patients especially among AIDS patients. This shows that there is a need for routine and early screening of all HIV infected patients for HPV-related manifestations.

Agida, Akaba, Isah and Ekele (2015) reported that HPV infection is common in Nigeria. A study carried out in Ibadan shows an overall prevalence of 26.3% while the prevalence

among women without cervical lesions was 24.8%. It is estimated that about 23.7% of women in the general populace in Nigeria harbor HPV infection at a time. The researchers carried out a study amongst women attending the ANC at the University Teaching Hospital, Abuja. It was reported that only 9% of the respondents had heard about HPV infection.

Another study carried out among 278 women at Abuja Nigeria showed that the overall prevalence of HPV was 37%. Fifty-two percent of women ≤ 30 years of age had HPV infection compared to 23% of those women who were older than 45 years (Akarolo-Anthonny, Famoolo, Dareng, Olaniyan, Offiong, Wheeler and Adebamowo, 2014).

2.9 Human Papilloma Virus Vaccine (HPVv)

HPV vaccination is a part of a series of coordinated strategies which are used in the prevention of cervical cancers. It is a primary precautionary tool in decreasing the behaviours carrying a risk for the transmittance of HPV infections (Beydag, 2011).

The approval of the HPV vaccine marked the beginning of a new stage in preventing sexually transmitted diseases (STDs) and their sequelae, in this case CC. Shortly after the approval of the vaccine, the National Advisory Committee on Immunization Practices, New Mexico recommended that the vaccine be given to girls aged 11 to 12 years. The availability of these vaccines will have important implications for adolescents who are at higher risk for contracting these diseases, and are the targeted recipients for these preventive strategies. However, previous researches have shown a less-than-desirable vaccination rates, indicating that the availability of an effective vaccine does not ensure its use and acceptability (Sussman, Helitzer, Sanders, Urquieta, Salvador and Ndiaye, 2007).

Public health officials noted that the vaccine will not replace other prevention strategies since it will not work to prevent all genital HPV strains to which people may become exposed (Holguin, 2009).

According to Henninger (2009) HPV vaccination is expected to ultimately reduce CC incidence, the frequency of cytology testing in the future, and the number of women who will

be subjected to the stress of abnormal test results and treatment. To obtain these positive effects, a high level of vaccination uptake is necessary, preferably before the onset of sexual activity. The HPV vaccine is effective against the two strains of HPV viruses that currently cause approximately 70% of cases of CC. The vaccines only cover some of the cancer-causing types of HPV; therefore women should seek regular Pap smear screening even after vaccination. There are two types of HPV vaccines which reduce the risk of cancerous or precancerous changes of the cervix and perineum by about 93%. They are Gardasil and Cervarix which are currently the two HPV vaccines marketed internationally. The vaccines have been demonstrated to be almost 100% efficient in preventing persistent infection and the development of precancerous lesions caused by high-risk HPV types.

Yanikkerem and Koker (2014) reported that there is no need to screen for HPV before offering vaccine to women. The duration of protection has not been known yet; however there is evidence of protection for at least five years after vaccination. There are on-going studies to evaluate the long-term protection of the vaccine. It was also said that the cost of HPV vaccines will be a major determinant of the cost-effectiveness of vaccination.

Ezenwa, Balogun and Okafor (2013) stated in a study carried out among 290 mothers in Shomolu Local Government Area, Lagos State, Nigeria that because HPV vaccine is a relatively new development, majority of the populace are yet to learn about it. In Nigeria, HPV vaccine was just launched and inaugurated by the Federal Government in 2011 and only six pilot centers were currently commissioned to give HPV vaccines apart from those offered by private facilities. This can be achieved with the development of health promotion and education strategies for the public. HPV vaccine is advocated for adolescents and young adults; however the immunization schedule in Nigeria has not made provisions for routine immunization of adolescents against any disease except tetanus vaccine for child-bearing women aged at least 15 years. It is possible to incorporate HPV vaccination of adolescents into the routine immunization schedule in use in Nigeria. Government and stakeholders, especially those in primary care, should use every means and opportunity to deliver this very important vaccine to the at risk population and consistently rectify any misconceptions and

confusions about HPV vaccines in order that Nigerians may benefit maximally from the vaccine, thereby reducing the incidence of CC in Nigeria.

2.9.1 Nigerian Health Policy on Human Papilloma Virus Vaccine

Vaccination policy refers to the health policy a government adopts in relation to vaccines. Vaccinations are compulsory in some countries and mandatory in others as part of the public health system. Some governments pay part or all of the costs of vaccinations for vaccines in a national vaccination schedule. The goals of the policies are to provide immunity to individuals and herd immunity in the community against vaccine preventable diseases. It also aims to eradicate some diseases nationally and globally. The policy also allows for compulsory vaccination where necessary, however this is difficult to implement because it requires authorities to balance public health with individual liberty (Wolfe and Sharp, 2002; Salmon, Teret, MacIntyre, Salisbury, Burgess and Halsey, 2006).

The Expanded Programme on Immunization (EPI) was established by the World Health Organization (WHO) in 1974 to provide protection against six vaccine preventable diseases through routine infant immunization. The target diseases were tuberculosis, poliomyelitis, tetanus, pertussis, measles and diphtheria. Since then, many new vaccines have become available and global public funding for immunization, including the Global Alliance for Vaccines and Immunizations (GAVI Alliance) has increased accessibility to these vaccines. However some of the new and under-used vaccines such as cholera vaccine, human papilloma virus vaccine, meningococcal vaccine etc are intended for older or at-risk populations (CDC, 2014).

According to Human Papilloma Virus and Related Diseases Report Nigeria of 2014 (www.hpvcentre.net; accessed on 9/1/2017), the quadrivalent and bivalent vaccines have been licensed for use in Nigeria. However; Human Papilloma Virus (HPV) vaccination programme is available only through pilot or demonstration projects organized by the Ministry of Health or Non-Governmental Organization (NGO) partners. HPV vaccines have not been included in routine immunization programme in Nigeria. The target age for routine immunization, delivery for primary target group and catch-up age group has also not been set.

The Minister of Health, Prof Isaac Adewole, recently rolled out a new set of policies by the Federal Government aimed at strengthening the nation's cancer management and control in a speech to commemorate the 2016 World Cancer Day in Abuja. He disclosed that the current administration had recognized and prioritized cancer interventions as a signature project of the health sector. In addition to the planned establishment of the National Agency for Cancer Control (NACC), he also announced new measures towards the control and management of the disease in the country. These include the strengthening of the Primary Healthcare Systems across the nation to ensure a strong referral system and a revision of the Nation Strategic Plan of CC control that will lead to the inclusion of HPV vaccination in the routine immunization programme. He also announced that arrangements were underway to commence a pilot of GAVI-supported demonstration on HPV vaccination in some selected states in Nigeria. HPV immunization of girls for CC prevention was introduced in 2011 into Nigeria by Government as an additional means of CC control and prevention (Eferoro, 2016). However, the Nigerian health policy on HPV vaccine is difficult to access by healthcare professionals nurses included hence making the implementation of the policy in the healthcare system difficult.

2.10 Importance of HPV Vaccine

"Herd immunity" occurs when there is a reduction in vaccine-preventable illness by directly protecting those vaccinated as well as the indirect protection of others in the community. Vaccinating men against HPV not only may reduce male HPV-associated disease burden but but also may be effective in reducing female HPV-associated disease because men's sexual behaviour has been shown to affect women's risk for cervical neoplasia even when controlling for female sexual activity. This supports the notion of herd immunity by suggesting that vaccinating both sexes may be the most effective strategy for reducing the incidence of genital warts, cervical intraepithelial neoplasia, and CC as well as HPV-associated healthcare costs compared to vaccinating women alone (Elbasha, Dasbach and Insinga, 2007).

Economic and emotional burden may also be reduced through male HPV vaccination. Infection with HPV has been associated with significant morbidity and substantial healthcare

costs. In 2000 alone, direct medical cost associated with HPV infection in 15-24 year old Americans was \$2.9 billion. In addition, men who have sex with men (MSM) are a unique population who also stand to greatly benefit from HPV vaccination. Studies have demonstrated a high prevalence of HPV infection in MSM along with a high rate of HPV-related anal cancer (Nandwani, 2010).

Holguin (2009) reported that the American Academy of Pediatrics (AAP), the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control, and the American Academy of Family Physician (AAFP) have produced a recommended immunization schedule for children and adolescents living in the United States. The schedule reflects the addition of the HPV vaccine for girls 11-12 years of age who have not yet become sexually active, with "catch up" vaccines for girls 13-18 years of age. The vaccine is also recommended for women up to 26 years old and/or women who have received or completed the vaccination series. The FDA is currently examining the effectiveness of the vaccine for women over 26 years old, but the conclusions of this examination could take up to five years. The vaccination series consists of three intramuscular injections at 0 (zero) month, 2 months, and 6 months. Current researches indicate that the vaccine is not recommended for pregnant women or women already infected with HPV.

2.11 Role of the Nurses/ Clinicians in the Prevention of Cervical Cancer

The most effective method in the prevention and early diagnosis of CC is education. Health care personnel have important duties in the struggle against cancer. It is especially obvious that the education of nurses, who have an important role in the prevention and treatment of clients with CC, is paramount in improving public awareness about the disease. Nurses are in a suitable position to be the tools of change in the healthcare system and the general public because they work in all kinds of healthcare environment and are in contact with all parts of the population; thus they act as intermediaries of change. They also act as role models to members of the society because they apply their knowledge to real-life situations. With these roles, they are in a key position in helping women gain positive knowledge and develop positive attitudes towards health (Beydog, 2011).

In Henninger (2009), studies have repeatedly shown that the public trusts their primary health care providers to give them the best information about HPV, CC and the HPVv. Primary health care providers are in ideal position to discuss perceived barriers to immunization with girls and their parents, allay their fears, clarify any misunderstandings and thus support informed consent for the vaccine.

Sussman *et al.* (2007) reported that clinicians' recommendations influence parental acceptance of preventive care. It is clear that primary care clinicians will continue to play an important role in the success of HPV and CC prevention programmes. However, clinicians will likely face counseling challenges in their efforts to integrate these vaccines into practice.

2.12 Knowledge of Human Papilloma Virus Vaccine

Globally, studies have shown the level of knowledge of the HPV vaccination programme. A study carried out by Henninger (2009) shows that doctors and nurses who are charged with providing HPV vaccines need information on current understanding of HPV natural history, epidemiology, prevention, treatment and vaccination. The study shows that out of 155 respondents, 43% were GPs and 36% were PNs. Most of them were aware that HPV vaccination will not eliminate the need for continued cervical screening. Over half of the participants knew that HPV was the most common STI and majority knew that persistent HPV infection is a necessary cause of CC. One-third of GPs and half of PNs incorrectly agreed that anogenital warts induce by HPV types 6 and 11 are CC precursors. Approximately 50% of all participants knew that most HPV infections will clear without medical treatment. However, significantly more PNs than GPs answered this question incorrectly. Twelve percent of GPs and 17% of PNs indicated that they had not received enough information.

Tiro, Meissner, Kobrin and Chollette (2007) also conducted a cross-sectional survey among 3,076 women aged 18-75 years old in the U.S. Results from the study indicate that knowledge about HPV among U.S women was relatively low as 40% of the subjects reported that they had never heard of HPV. Less than half of those that had heard of HPV knew that it causes CC. Although, awareness of HPV has increased over the past decade, knowledge of its link to cervical cancer remains low. In a study conducted by Hopenhayn, Christian, Christian,

and Schoenberg (2007) on knowledge of HPV among women, 44.4% of the respondents stated they had heard of HPV from either a health professional or the media.

Yanikkenem and Koker (2014) reported in a study carried out among 145 nurses in Turkey that 90.5% and 14.5% of the respondents had heard about HPV and its vaccines respectively. They also reported that 71.4% of nurses were aware of the relationship between CC and HPV infection. The study shows that 36.2% and 45.75 of the nurses knew HPV infection occurs in both men and women and that it is generally asymptomatic, respectively. Only 12.45% of the respondents knew that HPV infection can resolve on its own within 1-2 years. Only 13.3% of the nurses knew that HPV can be through sexual intercourse. The study shows that in South Africa, 73.3% of the nurses were aware of HPV. However they had poor knowledge of HPV infection and vaccine. On the other hand, the researchers also reported that in Cameroon, nurses had moderately low levels of knowledge about HPV infection but moderately high levels of knowledge about HPV vaccine.

Studies in the USA documented high levels of awareness to HPV and its vaccine in the general populace. A study carried out in Brazil shows that 50% of all their study subjects had some knowledge of HPV or CC. In a survey of British women aged 16-97 years only, 2.5% of the subjects mentioned HPV and 7% mentioned unspecified sexually transmitted virus/infection as causes of CC. In Malaysia, only 26% of the study population had ever heard about HPV or its vaccine and it was also noted that lack of awareness constituted an important barrier to the use of the vaccine in the country. In Nigeria, various studies have shown that awareness of HPV infection and vaccines, and the acceptability of the vaccines among the general public are low even among health care providers. Researchers have shown that knowledge of HPV is directly correlated to vaccine acceptance.

Shah, Vyas, Singh and Shrivastava (2012) carried out a study among 620 nursing staff members of a tertiary health institute in Ahmedabad, Gujarat, India on the awareness and knowledge of cervical cancer and its prevention. It was reported that recent qualitative studies recorded a low level of knowledge on HPV and cervical cancer among children.

parents, teachers, community leaders and even health service providers of four developing countries (India, Peru, Uganda and Vietnam).

Very similar result on lack of proper knowledge on cervical cancer was found in several studies conducted in other countries in the world. In the study, 69% of the nursing staff had some knowledge of cervical carcinoma. On information regarding knowledge of the symptoms of cervical cancer, the nursing staff stated vaginal discharge (94.2%), menstrual abnormality (86.9%) and pain (66.6%) as some of the symptoms of CC. Only 11.5% of the respondents were aware of multiple sexual partners as one of the risk factors of cervical carcinoma. Out of 69 respondents who had some knowledge regarding cervical carcinoma, 61 (88.4%) had knowledge regarding Pap test as one of the preventive measures for CC. In the present study, 86.9% and 94.2% of the respondents mentioned menstrual abnormality and abnormal vaginal discharge respectively, as symptoms of cervical cancer. Only 11.5% of the respondents mentioned multiple sexual partners as one of the risk factors. It was also reported that 73.9% of the respondents mentioned early age at pregnancy as one of the risk factors for cervical cancer. Knowledge regarding Pap test was present in 88.4% of respondent. Only 5% of the respondents underwent Pap test.

Syed, Samia, Nauman, Sidra, Munazza, Nida, Wassi, Imran, Syed and Najam (2010), in a study carried out amongst Interns and Nursing Staff in Tertiary Care Hospitals in Karachi, Pakistan reported that of all the interviews conducted, 1.8% of the respondents did not know cervical cancer as a disease. Only 23.3% of them were aware that cervical cancer is the most common cause of gynecological cancers and 26% knew it is second in rank in mortality. Seventy-eight percent (78%) were aware that infection is the most common cause of cervical cancer. Of these, 62% said that virus is the cause and 61% of the respondents knew that the virus is Human Papilloma Virus (HPV). Only 26% of the study sample were aware of one or more risk factors. Thirty seven percent (37%) recognized Pap smear as a screening test. In total, only 37 out of 400 respondents were aware of the HPV vaccine. Seventy-eight percent (78%) were aware that infection is one of the causes of cervical cancer, 39% said genetics and 13% opted for environment. Only a small percentage (6%) of the sample said that they "don't know" the cause of cervical cancer. Sixty-one percent (61%) of the respondents who opted for virus were aware that HPV is that virus.

Majority of the respondents, who said HPV, were aware that it is transmitted sexually (89%), while few thought that blood (10%), oro-fecal (3%) and environment (4%) are also possible modes of transmission. Slightly above half (55%) of all who knew about HPV were aware that HPV can cause some other diseases apart from cervical cancer. Cervical Wax (70%) was the most common disease quoted; others were penile cancer, pox disease, lymphoma, and other cancers. Ninety-one percent (91%) knew that HPV can be detected but out of these only 41% were aware of the correct technique to detect it, which is PCR. Majority of the interns and nurses thought that Pap smear (61%) can be used to detect HPV. More than 35 risk factors were reported.

Sexual practices, which included unprotected sex, multiple partners and other promiscuous behaviours, were the most common risk factor observed (45%). Sixteen percent (16%) of the sample was of the opinion that poor hygiene can be a risk factor for cervical cancer. Other stated risk factors were infection, nulliparity, multiparity, early stage at first coitus, family history, smoking, age, contraception, etc. Most common presenting complaint reported was lower abdominal pain (42%) and per vaginal bleeding (40%). Few respondents thought discharge (20%), fever (15%) and menstrual irregularity could also be the initial symptoms patients with cervical cancer can present with. Awareness about the best treatment of cervical cancer was widespread amongst study population. Seventy-two percent (72%) answered the correct treatment option which was "to treat according to the stage of the disease". Twelve percent (12%) were of the opinion that only surgery is required to cure cervical cancer, whereas 6% were in favour of chemotherapy and 5% for radiotherapy only. Fifty-four percent (54%) of both interns and nurses were aware that there is a screening test for cervical cancer and, out of these, 75% knew the correct screening test, which is Pap smear.

Biopsy (8%), ultrasound (3%), HVS (2%) and Radiological scans (10%) were few of the incorrect responses observed. Majority of the interns and nurses were aware of the correct time to start screening which is after first coitus (37%) but very few were aware that Pakistani guidelines recommend screening after 3 years (10%) and not yearly (52%). In total only 37 out of 393 were aware of the vaccine against HPV. Nearly all (91%) of the

interviewees wanted to learn more about the vaccine. Majority of the respondents opted for mass media (63%) and health professionals (63%) as a source through which knowledge concerning cervical cancer can be dissipated. Thirty-three percent (33%) found pamphlets to be a good source to obtain information from, whilst few were of the opinion that special lectures, conferences and seminars can also be useful.

Boyce and Holmes (2012) reported that HPV vaccine was introduced as a primary prevention strategy to reduce the incidence of cervical cancer. Many countries (including the UK, Australia, Canada, France, Greece, New Zealand, Norway and Sweden) offer the HPV vaccine as part of their national immunisation programme. In many of these countries the HPV vaccination programme is delivered by school nurses. The HPV immunisation programme is expected to have a significant impact on public health. It is estimated that the programme will reduce deaths from cervical cancer by two-thirds if uptake reaches 80%. In their study carried out among 80 health professionals from across the UK, it was reported that HPV immunisation programme was embedded in the adolescent vaccination schedule and it is essential that health professionals and local management bodies of the vaccination programme monitor HPV vaccination uptake to understand and eradicate inequalities.

The research found that delivery of the HPV immunization programme varied but was fairly similar across the UK with many school nurses being flexible and providing girls with many opportunities to be vaccinated. The respondents stated that girls who were more likely to miss all three vaccines or not complete the three doses were the 'usual suspects': coming from areas and communities of high deprivation and from particular vulnerable groups such as travelers. The relationship between income and vaccination decisions is not straightforward as some studies show having more education and higher income is associated with decreased likelihood of having the HPV vaccine. The study findings support researches that observe that those with lower education levels and/or from less wealthy families are less well vaccinated. To minimise inequalities in the HPV vaccination programme, school nurses stated that they often needed additional time to vaccinate vulnerable girls. This additional time was needed to give girls as many opportunities as possible and to develop trust between the girl/her family and the school nurse. The research highlights the importance of maintaining accurate vaccination registers. Inaccurate lists affect both uptake statistics and

staff morale. In contrast to the published research, interview analysis with school nurses showed that in the interviewees' experiences, religion and ethnicity had little effect on HPV vaccination uptake. School nurses stated that uptake was sometimes lower in schools with a large religious population and that uptake in some Muslim and Catholic schools was low. In a very small number of these schools, school nurses struggled as head teachers in religious schools decided not to offer the HPV vaccine.

However in many other areas, school nurses stated they had good uptake in schools with high percentages of Muslim or Catholic students or religious schools. In many areas school nurses reported religious leaders had a significant impact on the uptake of the HPV immunization programme, either in encouraging or rejecting the vaccine. In one area where uptake was low in a school with a large Muslim population, school nurses made links with the local Imam and Muslim leaders. In a few areas, head teachers of Catholic schools told parents and girls that the Pope supported the HPV vaccine and school nurses stated this consequently increased uptake. Support from religious leaders was not consistent, even within the same religion. In another area, uptake in the Catholic school was low and school nurses said the local priest and head teacher had rejected the vaccine. Goyal, Voishnav, Shrivastava, Verma and Modi (2013) carried out a study among 200 nurses in a Teaching Hospital at Surat. Majority (88%) were married; most common age of marriage being 21 to 25 years. Nurses linked multiple sexual partners (61%), sex at an early age (44%), Human Papilloma Virus infection (38.6%) and heredity (31%) to cervical cancer. Approximately 70% believed that Ca cervix is preventable, detectable and curable if detected early. Pap smear was recognized as major screening technique by 74% nurses. Major (84%) source of information was health professional. Eighty percent (80%) nurses never took cervical screening while 87.5% did not recommend it to others.

Shekhar, Shanna, Thaku and Raina (2013) in a survey carried out among nursing staff of a tertiary care teaching and referral institute of rural India show that a large number (18.4) of participants perceived cancer of cervix as a public health problem; however their knowledge about the risk factors for development of cancer cervix was not adequate. Less than a quarter (23.4%) knew human papilloma virus as a risk factor and only one third (36%) were aware of four or more risk factors. None of them knew all the risk factors for cancer cervix. Majority

(81 %) of nurses knew that Pap smear is used for cervical cancer screening; however less than half (48.9%) of them knew that Pap smear can also detect precancerous lesions of the cervix. Two-thirds (71.7%) of respondents knew that early cervical changes are easily curable.

Asked about the timing of the Pap test, only 34% participants gave a correct answer. On periodicity of Pap test, majority (79%) of the respondents believed that Pap smear should be repeated only in the presence of symptoms. Almost all of them (225) knew cervical biopsy as an alternate modality; however only 34% were aware of the visual inspection after acetic acid as a tool for cervical cancer screening. Only 25% of participants had heard of vaccines to prevent cervical cancer. On knowledge about cervical cancer and its prevention, only 26.7% of nurses were adjudged as having adequate knowledge. Despite reporting a family history of cervical cancer by 21 respondents, only 7.1% had got Pap smear done on them. Most (43.5%) of respondents cited "no reason" for not undertaking a Pap test, while nearly half of never screened respondents believed that they were not vulnerable to the disease.

Yoshino, Ohta, Kawashima, Wada, Shimizu, Sakaguchi, Okada and Aizawa (2012) carried out a study among 532 nurses of a university-affiliated hospital in Japan. The study reported that 87.8% of the participants were unaware of the fact that more than 2,500 women die from cervical cancer in Japan every year. As much as 83.1% of the participants were unaware that prophylactic vaccines against cervical cancer have been available for many years. And 79.7% of the participants were unaware that it is recommended to undergo cervical cancer screening once every 2 years. Moreover, 67.7% of the participants were unaware that the target age for cervical cancer was lowered to women ≥ 20 years in 2004. But only 4.7% were unaware that cervical cancer can be detected early by regular examinations. Only one-third of the participants understood that smoking, increased number of pregnancies, early sexual debut, multiple partners, and failure to use a condom during sexual intercourse were all associated with an increased risk for cervical cancer. HPV infection is a cause of cervical cancer (92.3%), the target age for cervical cancer screening to lowered to 20 years and older in 2004 (89.7%), and it is recommended that women undergo cervical cancer screening once every 2 years (89.4%).

A study carried out by Kress, Sharling, Owen-Smith, Desalegn, Blumberg and Goedken (2015) among 334 health care providers at three government hospitals in Addis Ababa,

Ethiopia and three Family Guidance Association clinics in Awassa, Adama, and Bahir Dar. General awareness of cervical cancer was high among all respondents with 81% identifying cervical cancer as an important cause of morbidity and mortality for women in Ethiopia. Almost all providers recognized cervical cancer as a preventable disease (85%), with a detectable precancerous stage (87%) and understood the role of cervical cancer screening in detecting precancerous lesions (91%). Awareness of the link between human papilloma viruses (HPV) and cervical cancer was high among all doctors (96%) and medical students (92%) and the knowledge that the virus is spread sexually was nearly as high in these two groups (93% and 88% respectively). Although HPV was correctly identified as a risk factor for cervical cancer by most nurses and midwives (75%), only 32% thought cervical cancer was caused by a virus that was spread sexually, revealing a limited understanding regarding cervical cancer etiology among these providers.

Similarly, only 36% of nurses and midwives understood the slow progression from precancerous lesions to cancer. Also, only 43% understood there were no early symptoms of cervical cancer. Knowledge of the major risk factors for cervical cancer was generally high and significantly associated with occupation. Less than half of medical students (48%) and nurses and midwives (36%), but 70% of doctors were able to correctly identify all four risk factors. More than half (54%) of respondents incorrectly identified at least one non-risk factor for cervical cancer, the most common being poor hygiene (45%). There were also significant differences across provider type in the correct identification of the four non-risk factors included in the survey; misidentification was high amongst medical students (67%) and nurses/midwives (61%) and lowest amongst doctors (27%). With respect to screening and prevention of cervical cancer, the majority of respondents (92%) had heard of the Pap smear, but awareness of alternative cervical cancer screening methods was low and differed significantly by provider type. For example, only 49% of all providers had heard of visual inspection with acetic acid (VIA). When stratified by provider type, 82% of doctors were familiar with VIA compared with 60% of medical students and 31% of nurses and midwives. Knowledge of a vaccine to prevent cervical cancer was also lower among nurses and midwives (18%) compared to medical students (44%) and higher among doctors (76%).

In Africa, the knowledge of HPV vaccination programme shows that Hoque, Mokokoane and Van Hal (2014), in a study carried out among 345 nurses working at a tertiary hospital in South Africa discovered that nurses (the study subjects) had poor knowledge on HPV infection and the HPV vaccine. Majority (73.3%) of the nurses were aware of HPV and among them, 38.3% knew that HPV is the most common sexually transmitted virus. Periman *et al* (2014), in a study carried out in Sub-Saharan Africa, aimed at assessing knowledge and awareness of cervical cancer, HPV infection and HPV vaccine and willingness and acceptability to vaccinate show that there was high level of willingness and acceptability of HPV vaccine but low levels of knowledge and awareness of cervical cancer, HPV infection and HPV vaccine. It was concluded that there was urgent need for more education to inform the public about CC, HPV and HPVv.

McCarey, Pirek, Tcheu, Boulvain, Doh and Peltignat (2011) carried out a study on awareness of HPV and cervical cancer prevention among Cameroonian healthcare workers. They stated that most of their respondents (86%) agreed that cervical cancer is one of the two most common cancers in Cameroonian women, and identified it as a major public health concern for the country. The causative link between high-risk Human Papilloma Virus (HPV) and cervical cancer was well identified by most respondents. On the other hand, only 45% were aware that HIV infection is a risk factor for HPV infection and cervical cancer. Multiple sexual partners was correctly identified as being a risk factor by 71% of respondents, although fewer (44%) were aware of the logical follow-up to this, that a partner who has or has had many sexual partners is also a risk factor. Only 36% believed that HPV infection is most often cleared by a competent immune system and does not usually cause cancer. The more recent graduates were more likely to be aware of the immune system's ability to clear away infection than the older. Most respondents knew that cervical cancer is preceded by dysplasia, which can be treated to avoid progression towards cancer. However, approximately half considered that HPV infection and dysplasia are generally asymptomatic. Pap smear was the most widely and consistently known screening method for cervical cancer. Other methods such as VIA or HPV testing were not recognized as such. Only 44% of respondents believed vaccination helps prevent cervical cancer. Most healthcare workers

(75%) did not believe the vaccine had been proven to be effective yet, but 89% of those who did would recommend it for young women aged 10-25 years.

Mutyaba, Mmiro and Weiderrpass (2006) carried out a study amongst 288 respondents who accepted to participate in the study. The participants were specialists (19), medical officers (39), final year medical students (63), and nurses/midwives (167) in Uganda. Most participants knew that cancer is curable if detected at an early stage, and that Pap smear screening could detect early cervical lesions. However, knowledge of risk factors for cervical cancer and details of screening activities was very low. Among the female 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.

Locally knowledge of HPV vaccination programme was reported. Adejuyigbe, Balogun, Sekoni and Adegbola, (2015) carried out a study amongst the Medical and Dental students at the College of Medicine, University of Lagos. The study report indicates that majority of the respondents had heard of cervical cancer (95.4%), HPV (85.4%) and HPV vaccination (69.3%). Their sources of information were mostly from school teachings. Most of the respondents knew that cervical cancer is the most common gynaecological cancer (59.3%) and less than half (44.3%) knew that it has the highest mortality among gynaecological cancers. The most common risk factors for cervical cancer known were infection of the cervix (75.4%), early age at first sexual intercourse (71.8%) and positive family history (59.6%). A little over half (51.8%) of the respondents had good knowledge of cervical cancer. Majority of the respondents knew that HPV is sexually transmitted (71.8%) and it is the primary cause of cervical cancer (73.9%), and also that a person might be infected without knowing (71.1%). Less than a third of respondents (31.4%) knew that HPV can cause penile cancer. Most (67.1%) of them had good knowledge of HPV. Most (66.4%) of the respondents knew HPV vaccine is used for prevention of HPV infection while only 9.3% mentioned that it is used for prevention of cervical cancer. Overall, most (78.9%) of the respondents had poor knowledge of HPV vaccination.

According to Agida *et al* (2015), although awareness of HPV is low, majority of the women want their girls vaccinated against HPV infection. The researchers also reported that studies had shown that the knowledge of HPV infection and vaccine is low, and even if available, the cost is beyond the reach of average Nigerians. A study carried out in Lagos University Teaching Hospital, Lagos, Nigeria shows that there was poor knowledge of HPV vaccines among female nurses and the main reason given by the nurses for not recommending the vaccines was the lack of information (Makwe and Anorlu, 2011). Ezenwa, Balogun and Okafor (2013) reported in a study carried out among 290 mothers in Shomolu Local Government Area, Lagos State, Nigeria that there was low awareness of HPV (27.9%) and HPV vaccines (19.7%) among the women included in the study. However awareness and utilization of HPV vaccines increased with increasing educational level. Although majority of the respondents had heard of CC, only 34.5% of them knew the route of transmission for HPV and the main aim of HPV vaccination while 48.1% knew the recommended age for HPV vaccination in Nigeria. It was also stated in the report that knowledge of HPV and awareness of HPV vaccines by the general populace vary. Different regions of the world reported different awareness levels regarding HPV and its potential to cause cancer in the general public.

Awodele, Adeyomoye, Awodele, Kwashi, Awodele and Dolapo (2015) carried out a descriptive cross-sectional survey of the knowledge, attitude and practice of 200 nurses in LUTH towards cervical cancer screening. The results obtained showed that 99% of the respondents were aware of cervical cancer and that 92% of the respondents were also aware of the causative organism of cervical cancer (Human Papilloma Virus). The respondents were quite aware of Pap smear (91%) as one of the screening techniques of cervical cancer and had good attitudes (89%) towards Pap smear, but most of them had never done it before. Of the respondents, 60% understood that Pap smear could be used to detect precancerous state of cervical cancer, while 18.5% (37) respondents felt Pap smear could be used to prevent cervical cancer. The results further showed that 54% of the respondents knew that Pap smear should be done once in a year, while 11.5%, 2.5% and 13.5% felt that it should be done once in 2 years, 3 years and lifetime, respectively.

Of the respondents, 18.5% did not know the uses of Pap smear. A poor response of 34% of the respondents was that women above 65 years of age should have Pap smear done. The study reveals that majority of the respondents did not know colposcopy as one of the screening techniques for cervical cancer. Of the respondents, 54% associated cervical cancer with having multiple sexual partners, and 47.5% linked cervical cancer with having sex at early age, while 52% of the respondents understood Human Papilloma Virus to be a causative agent in cervical cancer. However, 18.5% and 19.5% of the respondents felt that excess alcohol and smoking could cause cervical cancer, respectively. The results further show a good understanding of the signs of cervical cancer and the various screening techniques. Finally, it has been made known from this study 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.

Kothari (2014) reported that although the Human Papilloma Virus vaccination programme is successful, some girls are still not being vaccinated. In addition, the programme may have a negative impact on the uptake of cervical screening, as young women may not realise they are still vulnerable to cervical cancer after vaccination. Public perception of the need for cervical screening following vaccination has implications for its uptake. The leaflet given to girls at the time of vaccination (NHS Immunisation Information, 2012) explains that cervical screening is important regardless of whether they (girls) have received the HPV vaccine.

The falling trend in cervical screening uptake is a cause for concern nationally, but nurses can play a part in raising awareness of the importance of HPV vaccination and the fact that cervical screening is still a potentially life-saving test, even in women who have had the HPV vaccination. While they are not in a position to influence ethnicity or socioeconomic resources, nurses can recognize that these factors may be indicators of low vaccination and screening uptake. Nurses can influence women's perception of their susceptibility to cervical cancer and the perceived severity of the disease by discussing the link between HPV infection and cervical cancer.

2.13 Attitude of Nurses towards HPV Vaccine

Ferris, Waller, Owen and Smith (2008) carried out a study on HPVv acceptance among women in Southern U.S. It was reported that though the vaccine was currently recommended for 9-26 year old women, mid-adult women (>27years old) had expressed a keen interest in receiving the vaccine to stay healthy and lower their risk of CC and genital warts. A convenience sample of 472 mid-adult women completed a survey that included demographics, knowledge, and behavioural variables as potential correlates of vaccine acceptance. An inclusion limit of women older than 25 years was considered, and this range was selected before FDA approval for current vaccination recommendations. Mid-adult women with a history of an abnormal Pap test also expressed various motives for wanting the vaccine. The results of the study reinforced the necessity of education aimed at mid-adult women on HPV and HPV vaccines.

Another study carried out among 155 GPs (43%) and PNs (36%) in Christchurch, New Zealand showed that most of the participants agreed that their patients would heed their advice about cervical screening and comply with counseling about receiving the HPV vaccination. Half of the GPs and two-thirds of PNs agreed that their patients would comply with counseling regarding safe sexual behaviours. Most participants reported that they were comfortable addressing sexual behaviours with adolescents.

However, significantly more GPs indicated that they were more comfortable discussing sexual behaviours compared with PNs. When asked if vaccination against an STI might encourage risky sexual behaviours in adolescents, significantly more PNs (37%) than GPs (10%) agreed with the statement. GPs were most likely to recommend HPV immunisation for girls aged 13-15 years, pre-adolescent girls aged 9-12 and young women aged 16-26 while PNs were most likely to recommend the HPV vaccine for young women aged 16-26, girls aged 13-15 and pre-adolescent girls aged 9-12 years. GPs were significantly more likely than PNs to recommend HPV vaccine to girls aged 9-12years. About half of all participants were likely to recommend the vaccine to boys aged 9-15 years (Henninger, 2009).

In Yanikkerem and Kocer (2014), it was reported that nurses' attitude towards HPV vaccination after education revealed that overall, 71.4% of nurses disagreed that giving the

vaccine would increase risky behaviours and early onset of sexual activity in adolescents. The study also stated that 26.7% of nurses thought it is not necessary to vaccinate boys, whereas only 37.1% of them believed it was necessary to vaccinate boys. Majority of the participants (91.4%) stated that adolescent sex education should be provided before the vaccination. It was stated that nurses' attitude towards the efficacy and safety of HPVv influenced their willingness to vaccinate their daughters. This may be considered as one of the reasons why the vaccination rate was very low among the nurses' daughters.

In Kalin, Ding, Huang, Zimet, Rosenthal and Frazier's (2009) study, mothers reported a higher likelihood of vaccinating an older, compared with a younger daughter. The study showed that 48% of the women were likely to vaccinate a daughter if she were 9 to 12 years of age, 68% if she were 13 to 15 years of age, and 86% if she were 16 to 18 years of age. Forty-eight percent (48%) of mothers were likely to receive the vaccine themselves if recommended for women their age.

Sussman *et al.* (2007) state that some clinicians, however, were concerned that the HPV vaccine would give adolescents a false sense of protection. Additionally, clinicians expressed some level of concern regarding the vaccine's receptivity in the communities they serve based on cultural beliefs regarding sexual activity. Previous researches have found that although parents and clinicians generally favour STD and HPV vaccination, both groups have also indicated potential barriers to vaccine dissemination, including a shared reluctance to vaccinate young pre-adolescents girls.

Ugwu, Obi, Ezechukwu, Okafor and Ugwu (2013) carried out a study among 177 female health-care workers in Enugu. They reported that 101 of the respondents were willing to recommend the vaccine to their adolescent daughters, other adolescents or sexually unexposed young women. Out of the 111 respondents who were aware of the vaccine, 96 were married and 61 of the married respondents with adolescent daughters had immunized their daughters with the vaccine. The acceptability rate of the HPVv was significantly higher than that of Pap smear. The study shows that there is a significant higher level of

acceptability of the HPVv as a method of preventing CC despite the significantly lower level of awareness of the vaccine.

Litton, Desmond, Gilliland, Huh and Franklin (2011) carried out a study amongst caregivers in the USA. From the study findings, they state that information about HPV vaccination from a healthcare provider is more likely to influence the intention of the caregivers to vaccinate their daughters within the next six months compared to caregivers who did not report this source of information.

Ezenwa, Balogun and Okafor (2013) reveal in a study carried out among 290 mothers in Shomolu Local Government Area, Lagos State, Nigeria that there was a high willingness and intention among the mothers to vaccinate their girls (88.9%) and to recommend the vaccine to others (91%). Most of the respondents (96.5%) indicated that they wanted more information on HPV and HPV vaccines. Ninety five percent (95%) of them also wanted their daughters to learn more about HPV and its prevention. For the few who would not want their daughters vaccinated, inadequate information about HPV vaccines was the main reason. Of all the total respondents, 30.3% had no worries or concerns regarding vaccinating their daughters against HPV; however, the remaining respondents had at least one concern that may prevent them from vaccinating their daughters.

Hoque, Mokokoane and Van Hal (2014) carried out a study among 345 nurses working at a tertiary hospital in South Africa. They reported that majority (90.9%) of the nurses intended to recommend the vaccine to their patients. Nurses who mentioned that adolescents and young adults would accept HPV vaccination were more likely to recommend HPV vaccination to their patients.

2.14 Practice of Nurses towards the Uptake and Recommendation of HPV Vaccine

According to Adejuyigbe *et al.* (2015), of the 169 female students in their study, 162 (95.9%) had never received HPV vaccine while only 7 (4.1%) had received at least one dose and 2

(1.2%) had completed the three doses. Most 128 (75.7%) of them were willing to be vaccinated if the vaccine was free, 6 (3.6%) were not willing and 35 (20.7%) were not sure.

Nandwani (2010) conducted a systematic review of studies among men examining HPV-related health beliefs that were likely to influence the decisions of young women and parents of adolescent girls when deciding about HPV vaccination. It was reported that vaccination was more acceptable when people believed the vaccine is effective, a physician recommended it, and HPV infection is likely.

In Yanikkerem and Koker's (2014) study, vaccination status of nurses' daughters and reasons for not receiving vaccination showed that only two of the nurses' daughters were vaccinated after 3 months of education and the main reason listed among nurses' daughters who were not willing to be vaccinated was cost (38.8%), doubts about safety (15.5%) and efficacy (11.4%) related the vaccine. Overall, 35.2% of the nurses stated that they would receive the vaccine for their daughters later. Ezenwa, Balogun and Okafor (2013) also reported that among 290 mothers in Shomolu Local Government Area, Lagos State, Nigeria, only 6.9% had immunized their daughters against HPV.

2.15 Factors that Influence Nurses Willingness to Uptake HPV

According to Sussman *et al.* (2007), clinicians' recommendations influence parental acceptance of preventive care, thus it was clear that primary care clinicians would continue to play an important role in the success of HPV and cervical cancer prevention programmes. Introduction of the HPV vaccine will likely require different counseling approaches and strategies with adolescents and their parents to ensure informed decision making. Clinicians reported that they seldom initiated counseling about HPV infection, either separately or as part of the broader menu of STD counseling, because of the complexity of HPV infection counseling and the low level of baseline knowledge held by most adolescents about HPV infection, their discomfort that resulted from a limited knowledge base of HPV, and time constraints in the typical adolescent visit.

It was also reported that compliance with the 3-dose HPV vaccine series is a potential barrier, given that many adolescents may receive the first dose during an acute or previously scheduled visit but then face challenges in returning for subsequent doses. Inadequate reimbursement from insurance carriers also appears to be placing a strain on limited clinic resources. Financial and logistical challenges for busy primary care practices to feasibly provide the vaccine and ensure that patients return for two additional visits within a six month period will need to be addressed.

Adejuyigbe *et al.* (2015) report obstacles to receiving HPV vaccination among the female respondents included inadequate information (60.9%), high cost of vaccine (56.2%), poor access to vaccine (55.6%), worry about efficacy (38.5%), worry about safety (36.1%) and religious barriers (17.7%). The obstacles to not recommending HPV vaccination to others included inadequate information (50.8%), high cost (41.4%), poor access (40.8%), worry about safety (32.5%), worry about efficacy (27.8%) and religious barriers (23.6%).

Yanikkerem and Koker (2014) report that although the vaccine has been in use since 2007, its cost has not been covered by health insurance. They also report that previous studies indicated that women have desired information about HPV and CC. HPV vaccine recommendation from health professionals was identified to be important predictor of vaccine receipt for their daughters. They added that knowledge and perceptions of health professionals are important factors in influencing vaccine acceptability. They also reported that Turkey studies have examined that barriers against HPVv as stated in a survey carried out among medical students revealed that 80.5% of the respondents said possibility to recommend the vaccine might increase in case the vaccine is free.

High price of the vaccine (51.6%) and the belief about the vaccine would increase unprotected sexual intercourse (45.9%) were found as the most important drawback points of the students in recommending HPV vaccine to parents of girls. Other studies also show concerned that 76.9% of pediatricians were not recommending vaccination while 46.2% of them had concerns considering the worries of parents about the probability for the vaccination to cause risky sexual behaviours. Some studies too underlined the most important

factors for recommending the vaccine were effectiveness (56.6%), safety side effects (11.8%) and cost was less of concern (6.6%).

Ezenwa, Balogun and Okafor (2013) report in a study carried out among 290 mothers in Shomolu Local Government Area, Lagos State, Nigeria that accessibility and affordability of the HPV vaccines were found to be possible barriers to future utilization of the vaccine. Majority (51.5%) of the respondents who showed concern did not know where to access the vaccines while 22.8% of mothers were worried about the cost of the vaccine. Only 6.4% of the mothers were concerned that the vaccines may expose the girls to risky sexual behaviours.

Barlett and Peterson (2011) carried out a comprehensive review of literature conducted to identify the barriers and facilitators, from the parents/guardians and primary care providers' perspective, associated with the uptake of Human Papillomavirus (HPV) vaccine among adolescent females. They reported that 37% of adolescent females, 9 to 17 years of age, initiated the HPV vaccine as compared to the national average of 13 to 15 years old, which is 50%. The overall uptake and completion rates of the vaccine were low. Barriers identified included parents/guardians' knowledge, perceptions, and attitudes toward the HPV disease and the vaccine, along with the convenience in receiving the vaccine.

Chen and Leung (2008) in a study carried out among 247 female university students from a University in Hong Kong on the participation rate for Human Papilloma Virus (HPV) vaccination, determined level of acceptability of HPV vaccination and identification of factors associated with its acceptance. Seven factors associated with HPV vaccination identified included age, knowledge, perceived susceptibility to cervical cancer, acceptability of HPV vaccine, perceived effectiveness of HPV vaccine before sexual experience. The two barriers of HPV vaccination stated were "not likely to have cervical cancer" and cost of the vaccine.

Nandwani (2010) states that to obtain positive effects in the quest to reduce and possibly eradicate the incidence of cervical cancer, a high level of vaccination uptake is necessary. This is however dependent on the willingness of individuals to accept vaccination, parents'

willingness to have their children vaccinated and General Practitioners and Practical Nurses' willingness to administer HPV vaccines.

Perkins, Clark, Apte, Verduyck, Sumner, Wall-Hoas, Rosenquist and Pierre-Joseph (2014) carried out a study among 124 parents/guardians and 37 providers in the USA. Their result shows that fifty-three girls had not initiated HPV vaccination. The most common reason for non-vaccination reported by parents/guardians was never being offered the vaccine (44%); many stated they would have accepted the vaccine if offered. Another common parental perception was that HPV vaccination was optional, not recommended. Other parents described a situation in which their provider indicated that HPV vaccination was unnecessary before sexual debut. A few parents described situations in which providers discouraged vaccination.

Reasons by parents/guardians for declining HPV vaccination included lacking information (21%), believing that their daughters were too young (13%), safety concerns (11%), believing that vaccination was unnecessary due to abstinence (5%), or concerns that vaccination could promote unsafe sexual practices (3%). Of 52 parents who had not initiated vaccination, only 3 stated that they would never accept it. The others described unmet educational needs related to vaccine safety and the rationale for early vaccination as barriers to vaccination. One parent who had read about adverse effects on the Internet said she would accept vaccination if her physician said, "the side effects are so low, we've had no problems with it." Several parents did not understand the rationale for giving HPV vaccination in advance of sexual debut.

Many paediatric providers have little experience with HPV-related diseases thus they underestimate the consequences of HPV infection in their patients, which in turn decreases their perceptions of vaccine benefits. Many lack information or feel uncomfortable addressing parents' concerns about topics such as vaccine safety and vaccination against a sexually transmitted disease. Many missed opportunities for HPV vaccination occur not because parents and providers feel that vaccination is unimportant but because both parties tacitly agree to delay vaccination until there is a perception that girls are at risk for sexual activity.

Gamble, Klosky, Parra and Randolph (2010) state in a study that evaluates existing literature on factors influencing familial decision-making regarding HPV vaccination. It is important to understand and utilize these factors in developing interventions for vaccination uptake. The vaccine is relatively new; therefore little is known about the complexity of familial and other factors that may affect vaccine-related decision-making. The decision-making process for families to vaccinate involves sensitive issues including vaccination history, physician negotiation, and adolescent sexual behaviour.

Health care professionals' recommendations for HPV vaccination are likely to influence both parents and adolescents' decision making in regard to receiving the vaccine. Paediatricians' attitudes and intentions of recommending HPV vaccination appear to promote successful immunization delivery. Immunization recommendations by the pediatrician have been shown to be influenced by personal and professional characteristics such as age, practice location, HPV knowledge, beliefs about patients' sexual experience/history, comfort in discussing sexual behaviours, beliefs regarding impact of immunization on adolescent sexual behaviours, office procedures, vaccine cost and reimbursement.

Other influences were parental factors, such as vaccination requests, denial that child is at risk, concerns regarding vaccine safety and riskier adolescent behaviours, reluctance regarding STI immunization and sexuality discussion with child, and the belief that child receives too many vaccines. Additionally, there is evidence that pediatricians are less likely to recommend vaccination when they are male, uncomfortable discussing sexuality issues with female patients, and not in the practice of prescribing oral contraceptive. Pediatricians' intention to recommend HPV vaccination appears also to be influenced by endorsement of vaccination practices by nationally recognized advisory groups. For example, in a study of HPV immunization and intention to recommend, nearly all surveyed providers indicated intentions to follow immunization recommendations of the ACIP (94.5%) and CDC (98%). Parent socio-demographic variables including ethnicity, age, education, and religion do not appear to be correlated with acceptance of HPV vaccination, although preliminary reports suggest that African-American caregivers may be less aware of and informed about HPV vaccination than Caucasian caregivers.

In a study conducted by Slomovitz and colleagues (2006) as reported in Gamble, Klosky, Perra and Randolph (2010), majority of the women surveyed were accepting HPV vaccine for themselves and their children. A history of abnormal Pap test was not shown to be related to the women's acceptance of the HPV vaccine for either themselves or their children; however, mothers' willingness to vaccinate offspring against HPV was associated with their willingness to obtain the vaccination themselves and with whether their children had received all previously recommended immunizations. A greater belief in the protection of childhood vaccines in general, as well as greater belief in the protection offered by HPV vaccination, has been found to be correlated with HPV vaccine acceptability for both sons and daughters.

In contrast, parental anxiety regarding vaccine safety, conservative religious/cultural views, belief that vaccination encourages sexual activity, specific HPV vaccine and general vaccine matters, moral issues about sexuality, denial of daughter's risk status, lack of disease-specific knowledge, risk of unknown harmful side effects, and low concern for child's HPV acquisition have characterized the opposition that some parents have to HPV vaccination. Mothers who have delayed, refused, or regretted a previous paediatric immunization have also been reportedly less inclined to accept HPV vaccination. Although HPV vaccination acceptance is high among parents, mothers have endorsed the belief that vaccination will result in risk compensation (increased risky sexual behaviours), which may predict non-acceptance of HPV vaccination.

Parent-child communication regarding adolescent protective sexual health is an important component of parental consideration of HPV immunization, as parents who discussed the HPV content with their children are more likely to support vaccination. Furthermore, mothers willing to discuss cervical cancer, sex, STIs, or HPV with their daughters at earlier ages were more likely to accept HPV vaccination and have been shown to be in favour of early age vaccination. Parents finding it difficult to discuss sex with their children are least likely to agree with HPV vaccination. Furthermore, it has been reported that mothers were prepared to discuss the HPV vaccine when discussing cervical cancer, though would not discuss HPV or STIs until their daughters were older. This suggests that some mothers prefer to explain HPV vaccination as one "against cancer" and avoid details about protecting against STI infection until the child is older. Familial decision to obtain HPV immunization involves adolescent

perceptions as well as parental factors, and because it was recommended that healthcare decisions for older children and adolescents strive for assent of the patient in addition to parental and physician's participation, the effectiveness of cervical cancer prevention will rely on improving cancer-related knowledge among adolescents.

Adolescent knowledge of HPV appears to be influenced by physicians and health educators, peer groups and media. Adolescents often contribute to the familial decisions regarding HPV vaccination, and adolescent attitudes have been found to be similar to those of their parents regarding vaccine efficacy, the influence of recommendations by healthcare professionals, and consideration of vaccine cost. Studies on adolescents' acceptance of STI vaccination have shown high levels of acceptance, with acceptance influenced by perceptions of vaccine characteristics (cost, efficacy), adolescents' health beliefs, provider recommendations, increased perceived susceptibility to STIs such as HIV, and perceived benefits of immunisation.

In contrast, greater perceived obstacles (e.g., difficulty keeping clinic appointments), fear of the vaccine causing infection, low perception of risk, and fear of needles have been found to be related to lower acceptability of a vaccine for STIs. Although adolescents reported high levels of acceptance, HPV vaccination intentions, self-efficacy (or belief in their ability to initiate vaccination), and actual vaccination rates were reportedly low. In addition to health beliefs, history of pregnancy and consistent condom use have been associated with adolescents' intent to receive the vaccine, whereas correlates of higher self-efficacy to initiate vaccination have included insurance coverage, history of STI, fewer perceived barriers to vaccination, higher perceived severity of HPV, and current smoking. Although parents may have concerns about vaccinating before sexual debut, 90% of adolescents and young women have reported that the best time for females to receive HPV vaccination is before becoming sexually active.

Among adolescents, greater knowledge, being sexually active, and greater healthcare provider trust have been associated with increased rates of vaccination. In a qualitative study comparing reasons why mothers do or do not vaccinate their adolescent daughters against HPV, lack of knowledge about HPV, age-related concerns, and low perceived risk of

infection were commonly cited reasons for declining vaccination; whereas desire to prevent illness, physician recommendation, and a high perceived risk of infection were commonly identified motivating factors.

2.16 Factors that will Enhance the Willingness to Recommend HPVv

Henninger (2009) carried out a study among GPs and PNs. The study respondents intended to recommend an HPV vaccine to their patients if it was publicly funded. It was also indicated that they would recommend the vaccine even if their patients had to pay for it. The GPs and PNs also favoured the recommendation of the quadrivalent HPV vaccine which is protective against both cervical cancer and anogenital warts.

Ezenwa, Balogun and Okafor (2013) report in a study carried out among mothers in Shomolu Local Government Area, Lagos State, Nigeria that inclusion of a new vaccine in an immunization programme will require consideration of some technical and social factors, such as the disease burden, vaccine efficacy, safety, immunogenicity, cost and immunization strategy. Public knowledge and acceptance of the vaccine are equally of importance.

Barlett and Peterson (2011) in a comprehensive review of literature conducted to identify the barriers and facilitators, from the parents/guardians and primary care providers' perspective, associated with the uptake of Human Papillomavirus (HPV) vaccine among adolescent females report that six studies stated that HPV vaccine initiation was highly likely if the parents/guardians had received a doctor's recommendation.

Perkins *et al.* (2014) carried out a study among 124 parents/guardians and 37 providers in the USA. Providers reported that >80% of their patients received HPV vaccination were found to have always recommended coadministration of HPV, tetanus, and meningococcal vaccines and emphasizing cancer prevention led to higher uptake. In addition, parents trusted provider recommendations, often citing recommendation as the primary or only reason they vaccinated. Effective and simple ways to achieve vaccination, as described by providers whose vaccination rates exceed 80%, were normalizing the HPV vaccine, encouraging coadministration of HPV vaccine as recommended with the tetanus and meningococcal vaccines, focusing on cancer protection benefits, and emphasizing vaccine safety.

Providers also spoke on the importance of a strong recommendation. Both parents and providers expressed that information in advance of the actual vaccine visit would be helpful. Such anticipatory guidance could be given as handouts at physicals before age 11 years, verbal reminders, or practice-wide informational mailings. These methods would expand the opportunity to reinforce the benefits and proven safety of coadministering all recommended adolescent vaccines at the 11-year-old visit. Mechanisms to improve vaccination rates include national initiatives, such as the Center for Disease Control and Prevention's "You are the Key to HPV Cancer Prevention" education campaign aimed at providers, and the President's Cancer Panel's call for HPV vaccination research as a national priority.

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Table 2.1: Proportion of Women Immunized for HPV from 2012-2013*

Department	Number of women Immunized			
	2012		2013	
	Frequency	Percentage	Frequency	Percentage
Psychiatry/Obstetric&Gynecology	1	3.6	1	1.4
Emergency	0	0	1	1.4
Surgical Out Patient	0	0	1	1.4
Staff Clinic	0	0	1	1.4
General Out Patient	21	75	54	76.1
Obstetric&Gynecology	1	3.6	1	1.4
Cardiothoracic Surgical Unit	2	7.1	1	1.4
Medicine	1	3.6	1	1.4
Family Medicine	2	7.1	1	1.4
Nursing Services**	0	0	9	12.7
Total	28	100	71	100

*Culled from the Immunization Clinic Records at the General Out Patient Department, University College Hospital

** Nursing officers from nursing services of UCH

Table 2.1 showed the frequency of women who had the HPV vaccine between 2012-2013. Of all the 28 (100%) women vaccinated in 2012 none of them were nurses. However, in 2013, out of the 71(100%) women vaccinated only 9 (12.7%) were nurses. This shows that the uptake of HPV vaccine among nurses at the University College Hospital, Ibadan is low.

2.17 Summary

Cervical cancer is the term used for a malignant neoplasm arising from cells originating in the cervix uteri. It is the second most common cancer in women. It is also a leading cause of death in women especially in developing countries. Most CC is caused by the sexually transmitted infection (example, HPV) which is a group of viruses that can infect the cervix. HPV is the cause of nearly all CC; other risk factors include HIV, smoking etc. HPV can cause changes to cells in the cervix. If these changes were found early, CC can be prevented

by removing or killing the changed cells before they can become cancer cells (National Cancer Institute, 2008). Human Papilloma Virus vaccine is effective against the two strains of HPV viruses that currently cause approximately 70% of cases of CC. Gardasil and Cervarix are two HPVv that have been approved by FDA (Kumar *et al.*, 2007; Gostout, 2012). Poor access to screening and treatment especially in low resource countries makes the advent of prophylactic human papilloma virus (HPV) vaccines an attractive new opportunity to reduce the global impact of cervical cancer (Katahoire *et al.*, 2008). Although the quadrivalent and bivalent vaccines have been licensed for use in Nigeria. However, Human Papilloma Virus (HPV) vaccination programme is available only through pilot or demonstration projects organized by the Ministry of Health or Non-Governmental Organization (NGO) partners. HPV vaccines have not been included in routine immunization programme in Nigeria. Health care personnel have important duties in the struggle against cancer. It is especially obvious that the education of nurses, who have an important role in the prevention and treatment of clients with CC, is paramount in improving public awareness about the disease. Nurses are in a suitable position to be the tools of change in the healthcare system and the general public. Studies have shown that nurses who are charged with providing HPV vaccines need information on current understanding of HPV natural history, epidemiology, prevention, treatment and vaccination.

2.18 Conceptual Framework for the Study: Social Cognitive Theory

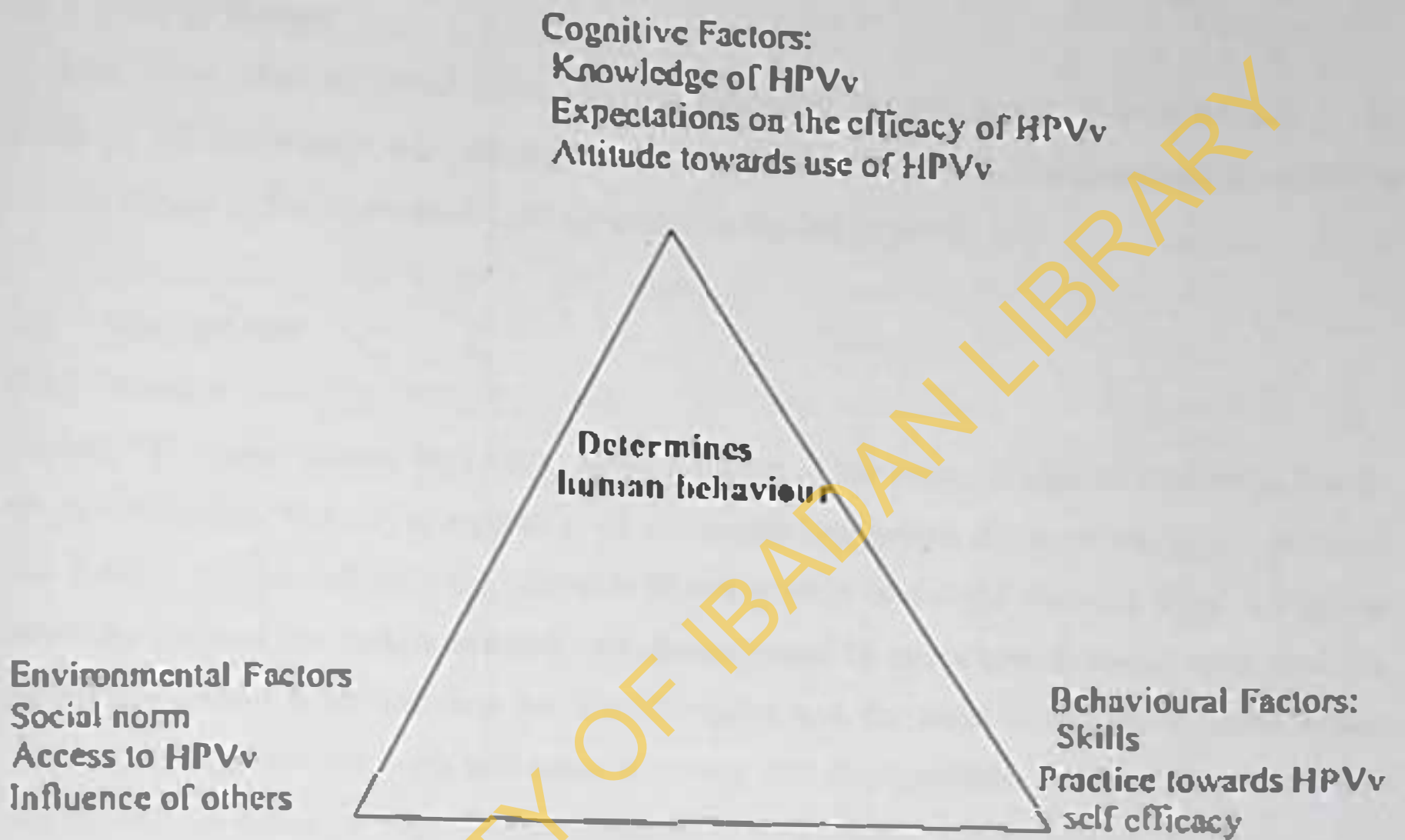
La Motte 2016 reported that the Social Cognitive Theory (SCT) started as Social Learning Theory (SLT) in the 1960s by Albert Bandura. It developed into SCT in 1986. It proposed that learning occurs in a social context with a dynamic and reciprocal interaction of the person, environment and behavior. The unique feature of SCT is the emphasis on social influence and its emphasis on external and internal social reinforcement. The theory takes into account the person's past experiences, which factor into whether behavioural action will occur. These past experience influence reinforcements, expectations and expectancies all which shape whether a person will engage in a specific behavior and the reason why a person engages in the behavior. The first five constructs were developed as part of the SLT; the construct of self-efficacy was added when the theory evolved into SCT.

- Reciprocal Determination
 - Behavioural Capability
 - Observational Learning
 - Reinforcements
 - Expectations
 - Self Efficacy
-
- **Reciprocal Determination:** refers to the dynamic and reciprocal interaction of person, environment and behaviour. The past experiences of the nurses, their access to HPV and the attitude towards the use of HPV vaccination programme.
 - **Behavioural Capability:** refers to a person's actual ability to perform a behaviour through essential knowledge and skills. In order to successfully perform a behaviour, a person must know what to do and how to do it. This is the knowledge of the nurses of cervical cancer, HPV infection and HPV vaccination programme.
 - **Observational Learning:** this asserts that people can witness and observe a behaviour conducted by others and then reproduce those actions. This is often exhibited through "modeling" of a behaviour. Nurse can access HPV vaccination programme through encouragement of their peers, meeting colleagues who have had the vaccine.
 - **Reinforcements:** refers to the internal and external responses to a person's behaviour that affect the likelihood of continuing or discontinuing the behaviour. Reinforcement can be self-initiated or in the environment. It can be positive or negative. Nurses' intention to take the vaccine can be reinforced by including the vaccine in UCH staff immunization schedule. Also the vaccine can be made available in the staff clinic and it can be subsidized by their health insurance (NHIS).

- **Expectations:** refers to the anticipated consequences of a person's behaviour. People anticipate the consequences of their actions before engaging in the behaviour. This can influence successful completion of the behaviour.
- **Self Efficacy:** refers to the level of the person's confidence in his/her ability to successfully perform a behaviour. It is influenced by a person's specific capabilities and other individual factors as well as by the environmental factors. Completion of HPV vaccination programme would encourage nurses to health educate others about the vaccine

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2.1 Diagram of the Social Cognitive Theory adapted for this Current Study



CHAPTER THREE

METHODOLOGY

3.1 Study Design

A descriptive cross sectional survey design was used for this study. It was limited to the scope of the knowledge and willingness towards the uptake and recommendation of HPVv among nurses in the University College hospital, Ibadan Nigeria.

3.2 Study Area

3.2.1 Ibadan

Ibadan, the capital city of Oyo State, is the location of the study. Ibadan is located in South-Western Nigeria. The city is reputed to be the largest indigenous city in West Africa, south of the Sahara. Ibadan had been the centre of administration of the old Western Region, Nigeria since the days of the British colonial rule. It is situated 78 miles inland from Lagos, and is a prominent transit point between the coastal region and the areas to the north. Parts of the city's ancient protective walls still stand till today, and its population is estimated to be about 3,800,000 according to NPC (2006) estimates. The principal inhabitants of the city are the Yoruba.

3.2.2 University College Hospital, Ibadan

The study area is the University College Hospital (UCH), Ibadan. It (UCH) was established by an act of parliament in November 1952 in response to the need for the training of medical personnel and other healthcare professionals for the country and the West African Sub-Region. It is situated in Ibadan North Local Government. UCH was formally commissioned on 20th November, 1957. The hospital has 850 bed spaces and 163 examination couches. The total number of nurses employed was 1,033. The hospital is one of the centres that provide HPV vaccination services hence the main reason for carrying out the study there.

3.3 Study Population

The study population comprised of nurses working in the UCH, Ibadan. The female nurses were the target population. The nurses were chosen from a reference population of health workers working in the UCH, Ibadan.

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion criteria

All female nurses between 20-60 years of age willing to participate in the study were included.

3.4.2 Exclusion criteria

Female nurses who refused to give their consent and male nurses were excluded.

3.5 Sample Size

The sample size was determined using the EPI INFO Statistical Package.

The total population was 1033.

Prevalence rate of 50% was used for the calculation (Were, Nyaberi and Buziba, 2011)

Desired Precision 0.5

Confidence Level 95%

Sample Size 280

To take care of the non-response, 10% of the calculated sample size 28 was added to give a new sample of 308.

3.6 Sampling Procedure

The sampling technique was the multistage sampling technique guided with the following steps.

Step 1: Stratified random sampling was used to classify the nurses by department e.g. surgical department, medical department etc.

Step 2: There were 26 departments in all and 50% (i.e. 13) were included in the study.

Step 3: Departments included in the study were randomly selected by balloting i.e. names of all the departments were written in pieces of paper and folded, and then they were

mixed together and picked one at a time without replacement until 13 departments were picked. All the wards in chosen departments were included in the study.

Step 4: Proportionate sampling technique was used to calculate the number of nurses to be enrolled per department and also per ward (see table 3.1)

Step 5: Purposive sampling technique was used to enroll respondents for the study.

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Table 3.1.1: Proportionate Sampling Table for Determining the Number of Female Nurses to be Included Per Department and Per Ward

S/N	Department	Total no of nurses/dept	Proportionate no of nurses/dept	Name of wards/dept	Total no of nurses/ward	Proportionate no of nurses/ward
1.	Medicine	112	39	SE 3	22	8
				SW3	21	7
				E3	22	8
				W3	21	7
				E2	21	7
				Metabolic	2	1
				HDC	3	1
2.	O&G wards	114	40	W4	30	10
				SW4	25	9
				CI 4th	18	6
				SE4&WV3	28	10
				ANC	13	5
3.	Paediatrics	136	47	SE2	21	7
				SW2	21	7
				CI 2nd	20	7
				SE ground	15	5
				OTCHEW	31	11
				SCBU	28	10
4.	Neuroscience	136	47	FDM	18	6
				NW1	22	8
				WVG	16	5
				ALW	16	6
				WV2	21	7
				NW2	22	8
				RW	15	5
				RC	6	2

Table 3.1.2: Proportionate Sampling Table for Determining the Number of Female Nurses to be Included Per Department and Per Ward

S/N	Department	Total no of nurses/dept	Proportionate no of nurses/dept	Name of wards/dept	Total no of nurses/ward	Proportionate no of nurses/ward
6.	OPD&MDR	70	24	MDR	15	5
				SOP	10	3
				GOP	8	3
				CHOP	7	2
				MOP	9	3
				ENT/Eye	11	4
				Dental	3	1
				IC	2	1
				HDCU/FNAC/CR	5	2
7.	ICU	47	16	ICU	47	16
8.	A&E theatre	19	7	A&E theatre	19	7
9.	A&E	55	19	A&E	55	19
10.	In-service	6	2	In-service	6	2
11.	Hospice	5	2	Hospice	5	2
12.	Geriatrics	11	4	Geriatrics	11	4
13.	LWC	55	19	LWC	55	19
Total		888	308		888	308

3.7 Method of Data Collection

Quantitative data were collected using a semi-structured questionnaire (Appendix I), which was self administered. This was because the respondents were literate and a semi-structured questionnaire would allow for individual privacy and some level of response flexibility. The respondents were assisted where necessary. The questionnaire used to elicit quantitative data from the respondents consisted of six sections labeled A-F.

Section A sought information on Age, Marital Status, Religion, Ethnic group, Highest educational qualification, Years of working experience and other socio-demographic characteristics of the respondents. Section B contained questions on knowledge on HPVv. Section C sought information on attitude of nurses towards the use of HPVv. Section D focused on practice of nurses relating to HPVv. Section E focused on factors that influence willingness to uptake HPVv while section F focused on factors that will encourage the willingness to recommend HPVv.

The instrument was designed after a review of literatures. Each respondent was given a maximum of an hour to complete a questionnaire copy after which it was retrieved. This was to ensure their true responses were collected and also they would not have the opportunity to read about the topic before giving their responses.

3.8 Validity of the Instrument

Validity is the ability of a test or an instrument to measure what the investigator wants to measure. This was done by the following steps:

1. Special care was taken to monitor the quality of data collected through supervision during collection of data.
2. The draft of the questionnaire was developed by consulting relevant literatures.
3. The draft of the instrument was subjected to peer review and expert researchers in the Faculty of Public Health, College of Medicine, University of Ibadan. The experienced researchers consisted of specialists in Health Promotion, Education, Population and Reproductive Health.
4. Supervisor review was used in fine-tuning the instrument.

5. Content validity of the questionnaire was further ensured through the incorporation of the preliminary pretested outputs.

3.9 Reliability of the Instrument

Reliability is the accuracy or precision of a research measuring instrument. The questionnaire was reviewed for quality and consistency. Pretest of the instrument was conducted between 21st October to 3rd November, 2012 at the Obafemi Awolowo Teaching Hospital, Ile-Ife, Osun State based on similarities in characteristic with UCH, Ibadan, Oyo State. Thirty one questionnaire copies were administered in two selected departments (i.e. medical and surgical departments). The completed questionnaire copies were edited and responses coded and entered into a computer. The data were analyzed using descriptive statistic.

Due to the bulky nature of the 8-page questionnaire, average administration time per questionnaire copy was recorded as one hour. Pre-test was done to ascertain suitability and appropriateness to field situations and also to determine whether the questions were clear and simple enough for participants' comprehension. The trend in the response of the participants and the amount of time it took to administer the questionnaire were also noted. At the end of the exercise, questions that were not easily understood were reframed, those that were found to be irrelevant were removed and adequate spaces were provided for responses.

The pretest questions were analyzed using the IBM/Statistical Package Social Science version 15. The reliability of the instrument was determined using the split half reliability method. Here the questions in the questionnaire were split into two. The first part of the questionnaire was administered to the first half of the pre-test sample population and the second half of the questionnaire to the second half of the pre-test sample population. After each group had filled their first part of the questionnaire, the second halves were administered and the results were analyzed. This method was used due to the volume of the questionnaire in order to make it easier for respondents to participate in the study. The reliability was calculated using the Cronbach's Alpha test. The reliability correlation coefficient of 0.91 was obtained, which indicated that the instrument was very reliable.

3.10 Recruitment and Training of Research Assistants for the Study

3.10.1 Criteria for Recruitment

Considering the wide geographical range of this study, involving visits to 13 departments out of the 26 departments in UCH, Ibadan, it became necessary to recruit and train Research Assistants (RAs) who would help in data collection. A 4-man team of researchers comprising of the principal investigator and 3 RAs was constituted. The following selection criteria were used to select the four RAs initially for training with the aim of selecting three thereafter.

1. Educational qualifications of the assistants were at least Ordinary National Diploma (OND), BSc in a health and/or science related field, MSc and MPH.
2. The candidates were fluent in English Language.
3. The RAs were competent in interpersonal and good communication skills.
4. They were proficient in report writing skills.
5. Each RA was able to withstand research rigour.

3.10.2 Training of Research Assistants (RAs)

The research assistants were trained for two days – 13th to 14th May, 2013. A training manual, a plan and a timetable were developed and approved by the project supervisor for the training. A timetable was drawn for the period of 2 hours, 9a.m-11 noon daily at the students' lounge in the Department of Health Promotion and Education, Faculty of Public Health, UCH. The training commenced with introduction of the trainer (that is the principal investigator) and trainees. The trainees received training materials; sessions introduced them to the research study, objectives and methodology, role-plays on the data collection procedure (entry processes, seeking consent of potential respondents for the study, signing of consent form and administration of questionnaire).

The appropriate training methods and materials for facilitation were selected. These methods included a combination of largely active training methods such as participatory discussions, demonstration and return demonstrations, role-play and lectures to make the training participatory. The questionnaire was revised with the RAs during the training after which the RAs were equipped with a copy of the instrument each to be taken home and read over for better understanding with aim of answering any burning question(s) that may result the

following day. The questionnaire was further reviewed to ensure the consistency in the numbering and instructions. In addition, content and construct validity were reviewed during the training of research assistants to ensure uniform understanding and interpretation by all research assistants.

Negotiations and logistic plans for data collection were discussed and stipends paid to RAs. The researcher facilitated the training with supervision by peers in the Department of Health Promotion and Education. This team helped to assess and score trainees and based on the assessment scores, the final three Research Assistants were selected for the study. Each RA was assigned potential dates and units for data collection and was directly supervised by the researcher. Each RA received copies of the questionnaire, one copy of the ethical approval from the UfUCH Institutional Ethics Review Committee (IRC) and writing materials all contained in a clear water-proof bag. All RAs participated in the data collection using questionnaire in the UCH, Ibadan.

3.11 Data Collection Procedure

The study was carried out from June 10th to August 6th, 2013 with the assistance of three trained RAs. The researcher, with the three trained research assistants, administered the questionnaire copies to the respondents in UCH, Ibadan. The quantitative data were collected with the use of a semi-structured self-administered questionnaire. A total of 308 questionnaire copies were administered and retrieved. The data collection process included a visit to each of the departments, coupled with identification visit to each of the Assistant Director of Nursing on each ward to seek a permission to administer questionnaire to the respondents. The semi-structured questionnaire was self administered since the potential participants were able to read and write. A section in the questionnaire included the socio-demographic characteristics of the respondents while other section contained information on variables of the study. The manual of field operation was prepared to explain how entries would be made, the number of questionnaire copies to be administered and how variables would be coded. Short debriefing sessions were also held at the end of each day where the day's work was reviewed and the next plan of action disseminated to the research assistants.

3.12 Data Management and Analysis

In respect to data analysis from the questionnaire the following were done.

1. All the administered questionnaire copies were checked one by one and edited for completeness and accuracy.
2. Serial numbers were written on the questionnaire copies for easy identification and recall of any copy with problems. Serial number was also assigned to each questionnaire copy for identification and correct data entry and analysis.
3. A coding scheme guide was developed after carefully reviewing the responses and appropriate scoring was done.
4. The data were manually coded and entered into the computer for analysis.

Objective 1: The Knowledge section which was divided into 8 domains had 45-points: attitude, 14-points and practice, 15-points. Each question was scored with a mark. Overall knowledge score <21 , $\geq 21-30$ and >30 were classified as poor, fair and good respectively. Each correct response was given one mark while incorrect responses and 'don't know' were scored as zero.

Objective 2: Attitude score of ≤ 6 and >6 were classified as negative and positive respectively. Each correct response was given one mark while incorrect responses and undecided were scored as zero.

Objective 3: Practice relating to HPV score of ≤ 7 and >7 were grouped as bad and good, respectively. Each correct response was given one mark while incorrect responses and no response were scored as zero.

Objective 4: Factors that influenced nurses willingness to uptake HPV vaccine were presented in tables and logistic regression analysis was done to find out the p-value and odds ratio at 95% confidence interval.

Objective 5: Factors that will enhance nurses willingness to recommend HPV vaccine were presented in tables and logistic regression analysis was done to find out the p-value and odds ratio at 95% confidence interval.

Hypothesis 1: This research hypothesis was tested to establish relationship between number of years of working experience of nurses and practices relating to HPV vaccine using the Chi-square test at 5% probability level for rejecting the null hypothesis.

Hypothesis 2: This research hypothesis was tested to establish relationship between nurses knowledge of HPV vaccine and their willingness to uptake HPV vaccine using the Chi-square test at 5% probability level for rejecting the null hypotheses.

Hypothesis 3: This research hypothesis was tested to establish relationship between nurses knowledge of HPV vaccine and their age using the Chi-square test at 5% probability level for rejecting the null hypotheses.

Hypothesis 4: This research hypothesis was tested to establish relationship between the educational status of the nurses and their attitude towards HPV vaccine using the Chi-square test at 5% probability level for rejecting the null hypotheses.

The data were analyzed using IBM/Statistic Package for Social Science (Version 16). The descriptive statistical tools used were mean, standard deviation and the inferential statistics of Chi-square (X^2) and logistic regression. Frequency and percentage tables were generated and Cross tabulations of some variables were done using Chi-square (X^2) test. The results were summarized and presented in chapter four of this dissertation. In addition, narratives statements were further used to present the data.

3.13 Ethical Consideration

Ethical approval was obtained from the UI/UCH Institutional Ethics Review Committee (IRC) (See appendix II). A written informed consent was obtained from each participant (see appendix I). Ethical standard was adhered to, in order to ensure confidentiality. Names of the respondent and any other personal identifiers were not written on copies of the questionnaire. Participants were informed that participation was voluntary and that data collected would be used mainly for research purposes. Anonymity and confidentiality of responses were ensured.

Confidentiality of data: Only identification number was assigned to each copy of the questionnaire for proper recording.

Translation: The official language in University College Hospital was English, thus, the questionnaire was not translated to respondents' native language.

Benefit to participants: The participants would be informed of the outcome of the research which would be used to design an intervention for promoting adoption of HPV vaccine among female health workers in future.

Non-maleficent to participants: The research does not require invasive procedures that can affect participants in any negative way.

Voluntariness: The participants were given the full details concerning the research before taking part in it to ensure that they fully understood the nature of the research before participating.

3.14 Limitations of the Study

The research encountered the following limitations:

- The respondents were reluctant to fill the questionnaire copies due to the number of questions (120); and
- There was time constraint due to the nature of the respondents' job.

This constraint was overcome by visiting the departments as many times as possible and administering questionnaire copies to willing respondents who had not already participated in the study until the sample size was completed.

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CHAPTER FOUR

RESULTS

Basically the findings of this study are presented in this chapter.

4.1 Respondents' Socio-demographic Characteristics

A completion response rate of 100% (308 out of 308) was obtained with the questionnaire among nurses selected for the study. All the 308 respondents were female staff members on pensionable appointment at the UCH, Ibadan. The socio-demographic characteristics of the respondents presented in table 4.1 shows that the ages of the respondents ranged from 20 to 58 years with mean of 37.6 ± 7.5 years. Majority (88%) of the respondents were married. Almost ninety-one percent (90.6%) were Christians and 9.4% were Moslems. The respondents were predominantly Yoruba (87%).

The rest of them were Igbo (9.8%), Hausa (1.3%) and others (1.9%). The distribution of the respondents by years of nursing experience shows that less than fifty percent of the respondents (45.8%) had 11-20 years of working experience. Others were 0-10 years (35.7%), 21-30 years (15.3%) and greater than 31 years (3.2%) of nursing experience. Respondents with RN/RM (42.9%) topped the list followed by first degree (39.9%). The rest were master's degree (9.1%), others (5.5%) and RN (2.6%). See Tables 4.1.1, 4.1.2 and 4.1.3.

Table 4.1.1: Socio-demographic Characteristics of the Respondents

Variables	Response option	Frequency	Percentage
Marital status	Single	34	11.0
	Cohabiting	1	0.3
	Married	271	88.0
	Others	2	0.7
Ethnicity	Yoruba	268	87.0
	Igbo	30	9.8
	Hausa	4	1.3
	Others	6	1.9
Age	20-29 years	39	12.7
	30-39 years	156	50.6
	40-49 years	88	28.6
	50 years and above	25	8.1
Religion	Christianity	279	90.6
	Islam	29	9.4
Educational level	RN	8	2.6
	RN and RM	132	42.9
	First degree	123	39.9
	Masters	28	9.1
	Others	17	5.5
Years of working outside UCH	0-5	198	64.3
	6-10	76	24.7
	11-15	24	7.8
	16-20	10	3.2
Years of nursing experience	0-10	110	35.7
	11-20	141	45.8
	21-30	47	15.3
	> 31	10	3.2

Table 4.1.2: Socio-demographic Characteristics of the Respondents

Variables	Response option	Frequency	Percentage
Department	Medicine	39	12.7
	O and G ward	40	13.0
	Paediatrics	47	15.3
	Neuroscience	47	15.3
	Surgery	42	13.6
	OPD and MDR	24	7.8
	ICU	16	5.2
	A and E theatre	7	2.3
	A and E	19	6.1
	In-service	2	0.6
	Hospice	2	0.6
	Geriatrics	4	1.3
	Labour ward complex	19	6.2
	Cadre	Nursing officer II	70
Nursing officer		36	11.7
Senior Nursing Officer		89	28.9
Principal Nursing Officer		74	24.0
Chief Nursing officer		24	7.8
Assistant Director of Nursing		15	4.9
Marriage Type		Monogamy	264
	Polygamy	15	4.9
	Not married	29	9.4
Number of children	1	40	13.0
	2	70	22.7
	3	85	27.6
	4	68	22.1
	5	2	0.6
	No child	43	14.0

Table 4.1.3: Socio-demographic Characteristics of the Respondent

Variables	Response option	Frequency	Percentage
Number of pregnancy	1		
	2	34	11
	3	54	17.5
	4	70	22.7
	5	78	25.3
	6	22	7.2
	8	9	2.9
	No pregnancy	2	0.7
Annual Income (in naira)	500000-1000000	39	12.7
	1000001-1500000	92	29.9
	1500001-2000000	104	33.8
	2000001-2500000	72	23.4
	2500001-3000000	22	7.1
	>3000001	16	5.2
Age at first sexual debut (in years)	11-15	2	0.6
	16-20	6	1.9
	21-25	23	7.5
	26-30	97	31.5
	31-35	99	32.1
	No response	7	2.3
History of sexually transmitted infection	Yes	76	24.7
	No	19	6.2
	no response	277	89.9
		12	3.9

*Mean Age=37±7.5

4.2 Knowledge of IIPV

4.2.1 Knowledge of Cervical Cancer

Table 4.2.1 shows that on the respondents' knowledge of CC, majority (96.8%) of the respondents were of the opinion that CC is a malignant disease that occurs in the cervix. Many (95.2%) of the respondents opined that CC is the second most common cancer among women worldwide. Most (74%) of them said that CC is one of the preventable cancers. Majority (90.9%) of the respondents were of the opinion that CC is fatal if it remains undetected and not treated early and less than fifty percent (47.7%) of them supported that death from CC occurs more often in black women than in white women.

4.2.2 Knowledge of Causes/Predisposing Factors of Cervical Cancer

Table 4.2.2 represents respondents' knowledge of causes/predisposing factors of CC. It shows that majority (89%) of the respondents agreed that HPV infection is a necessary factor in the development of CC. Slightly over half (57.1%) of them said smoking and alcohol intake can predispose a woman to CC while most (74%) of them disagreed with the statement that said HIV and STIs do not make a woman susceptible to CC. Majority (83.1%) of the respondents agreed that early sexual debut can put a woman at risk of having CC. Many (92.9%) and more than half (52.6%) of the respondents believed that multiple sexual partners and exposure to hormonal drugs and hormonal contraceptives can put a woman at risk of having CC respectively.

4.2.3 Knowledge of Signs and Symptoms of Cervical Cancer

Table 4.2.3 shows that majorities (82.5%), (86.3%) and (79.5%) of the respondents agreed that early stage of CC is asymptomatic, abnormal vaginal bleeding and painful sexual intercourse are some of the signs and symptoms of CC respectively.

When asked to mention other signs and symptoms of CC, a few (35.7%) of the respondents said they 'don't know'. Other responses were chronic pain (6.8%), pain during coitus (1.3%), offensive vaginal discharge (26.9%), cervical erosion/lesion (3.9%), post coital/menopausal bleeding (10.1%), anaemia (0.3%), unexplained weight loss/cachexia (11.6%), hyperemia cervix (0.6%), vomiting/anorexia (0.3%), positive pap smear (0.6%), change in menstrual cycle that is (0.6%), sore/ulceration of perineum (0.3%), vulva unexplained/persistent vaginal bleeding (9.1%), sore/ulceration of perineum (0.3%), vulva itching/vaginal irritation (1.3%), pedal oedema (0.3%), bulging cervix (0.3%) and burning sensation (0.3%).

4.2.4 Knowledge of Management of Cervical Cancer

In Table 4.2.4, surgical intervention, chemotherapy, radiation were agreed upon by majority (82.5%), (97.4%) and (90.9%) of the respondents respectively as management of CC. Over half (59.4%) of the respondents were of the opinion that surgery, chemotherapy and radiotherapy can be combined in the management of severe CC while only (4.9%) of them agreed that there is no treatment modality for the management of CC because death is confirmed.

4.2.5 Knowledge of the Prevention of Cervical Cancer

Table 4.2.5 shows that less than half (48.7%) of the respondents choose that use of condom can be effective in the prevention of CC and 43.2% of them also believed that adequate nutrition cannot protect a woman from developing CC. Almost seventy-nine percent (78.6%) agreed that immunization is effective in preventing CC while 95.9% agreed that health education is effective in preventing it.

4.2.6 Knowledge of Cervical Cancer Screening

In Table 4.2.6, majority (97.1%) of the respondents stated that Pap smear is a screening test done to identify precancerous and potentially precancerous changes in the cervical cells and tissues. Many (95.5%) of the respondents also agreed that CC screening can help in the reduction of incidence and mortality rate of CC. Only a few of the respondents agreed that pap smear is not helpful in women less than 25 years (26.3%) and women greater than 60 years (15.6%) while a little over half (52.3%) of them agreed that pap smear is not useful in women who have had total hysterectomy done. Types of screening methods available for CC show the respondents mentioning colposcopy (64.6%), conization (48.7%), liquid based cytology (64.0%) and visual inspection with acetic acid (71.4%).

4.2.6.1 Frequency of Pap Smear

Figure 4.1 represents how often Pap smear should be done. 'Once a year' has the highest figure with 31.6%, followed by 'don't know' (26.3%), 'once every 3,4,5 years' (17.2%), 'twice a year' (16.6%), 'once in 2 years' (7.1%), 'every 3 months' (0.6%), 'three times a year' (0.3%) and 'four times a year' (0.3%).

4.2.7 Knowledge of Human Papilloma Virus (HPV) Infection

Table 4.2.7 shows that many (77.6%) of the respondents agreed that HPV infection is an STD. Most (60.7%) believed that all available strains of HPV can cause CC. Less than fifty percent (45.8%) of the respondents opined that HPV infection does not certainly develop into CC. Most (68.8%) of the respondents agreed that nearly all women with invasive CC have evidence of HPV infection while only 43.2% of them said that HPV is carried in the men's semen.

4.2.8 Knowledge of Human Papilloma Virus Vaccine

In table 4.2.8, most (64%) of the respondents were of the opinion that HPVv is effective against the two strains of HPV that cause approximately 70% of cases of CC. Only 36% supported that HPVv is recommended for females between 9-26 years. Most (60.7%) agreed that CC screening is still required after being immunized with HPVv and a little over half (53.3%) of them believed that HPVv is less effective after the woman has been exposed to HPV infection.

4.2.9 Knowledge of Human Papillomavirus Vaccine

Figure 4.2 shows the types of HPVv mentioned by the respondents with Cervarix (7.1%), Gardasil (4.9%), Cervical cytology (0.3%), HPV 1 (3.9%), HPV 2 (3.3%) while majority (80.5%) 'don't know' of any vaccine.

4.2.10 Knowledge of Human Papilloma Virus Vaccine Dosage

Figure 4.3, shows that majority (74.7%) of the respondents 'don't know' the number of HPVv doses required to complete the immunization schedule. Other options mentioned were as follows: 1 dose (0.6%), 2 doses (2.9%), 3 doses (20.5%) and 4 doses (1.3%).

4.2.11 Knowledge of HPV Vaccine Score per Domain

Figure 4.4 represents the respondents' knowledge scores per domain. Majority (96.4%, 83.4% and 95.5%) had good knowledge in domains 1, 3 and 4 respectively. Most (63.6% and 66.9%) had good knowledge in domains 5 and 6 respectively. All the respondents had good knowledge in domains 3 and 6 respectively. All the respondents had good knowledge in domains 5 and 7. Majority (74.7%) of the respondents had poor knowledge in domain 8.

4.2.12 Overall knowledge of HPV Vaccine Score

Figure 4.5 shows that many (76.9%) of the respondents had good knowledge on HPVv while only (23.1%) had fair knowledge.

Table 4.2.1

Domain 1: Knowledge of Cervical Cancer

Variables	Responses						Total Freq %	
	True		False		Don't know			
	Freq	%	Freq	%	Freq	%	Freq	%
Cervical cancer is a disease in which malignant cells form in the cervix*	298	96.8	3	1.0	7	2.2	308	100
Cervical cancer is the 2nd most common cancer among women worldwide*	293	95.1	10	3.3	5	1.6	308	100
Cervical cancer is not one of the preventable cancers**	61	19.8	228	74.0	19	6.2	308	100
Cervical cancer is not fatal if it remains undetected and not treated early**	17	5.5	280	90.9	11	3.6	308	100
Death from cervical cancer occurs more often in black women than in white women*	147	47.7	73	23.7	88	28.6	308	100

*Correct response

** Incorrect response

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Table 4.2.2

Domain 2: Knowledge of Causes/Predisposing Factors of Cervical Cancer

Variables	Responses							
	True		False		Don't Know		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Human Papilloma Virus infection is a necessary factor in the development of cervical cancer*	274	89.0	9	2.9	25	8.1	308	100
Smoking and alcohol intake can predispose a woman to cervical cancer*	176	57.1	81	26.3	51	16.6	308	100
HIV and STIs do not make a woman susceptible to cervical cancer**	66	21.4	228	74.0	14	4.5	308	100
Early sexual debut can put a woman at risk of having cervical cancer*	256	83.1	24	7.8	28	9.1	308	100
Multiple sexual partners can put a woman at risk of having cervical cancer*	286	92.9	9	2.9	13	4.2	308	100
Exposure to hormonal drugs and hormonal contraceptives does not make a woman susceptible to cervical cancer*	115	37.3	162	52.6	31	10.1	308	100

* Correct response

** Incorrect response

Table 4.2.3

Domain 3: Knowledge of Signs and Symptoms of Cervical Cancer

Variables	Responses							
	True		False		Don't Know		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Early stage of cervical cancer is asymptomatic*	254	82.5	40	13.0	14	4.5	308	100.0
Abnormal vaginal bleeding is a sign of cervical cancer*	266	86.3	27	8.8	15	4.9	308	100.0
Painful sexual intercourse can also suggest the presence of cervical cancer in a woman*	245	79.5	44	14.3	19	6.2	308	100.0

*Correct response

** Incorrect response

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Table 4.2.4

Domain 4: Knowledge of Management of Cervical Cancer

Variables

Variables	Responses						Total	
	True		False		Don't Know			
	Freq	%	Freq	%	Freq	%	Freq	%
Surgical intervention can be used in the management of cervical cancer*	254	82.5	30	9.7	24	7.8	308	100
Chemotherapy is a treatment modality in cervical cancer management*	300	97.4	3	1.0	5	1.6	308	100
Radiation is used in the management of advanced cases of cervical cancer*	280	90.9	7	2.3	21	6.8	308	100
Surgery, chemotherapy and radiotherapy cannot be combined in the management of severe cervical cancer**	82	26.6	183	59.4	43	14.0	308	100
There is no treatment modality for the management of cervical cancer because death is confirmed**	15	4.9	272	88.3	21	6.8	308	100

*Correct response

** Incorrect response

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Table 4.2.5

Domain 5: Knowledge of the Prevention of Cervical Cancer

Variables	Responses							
	True		False		Don't Know		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Use of condom can be effective in the prevention of cervical cancer*	150	48.7	120	39.0	38	12.3	308	100
Adequate nutrition cannot protect a woman against cervical cancer**	133	43.2	140	45.5	35	11.4	308	100
Immunization can be given to a woman to protect her from cervical cancer*	242	78.6	37	12.0	29	9.4	308	100
Health education is very effective in the prevention of cervical cancer*	294	95.5	4	1.3	10	3.2	308	100

*Correct response

** Incorrect response

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Table 4.2.6

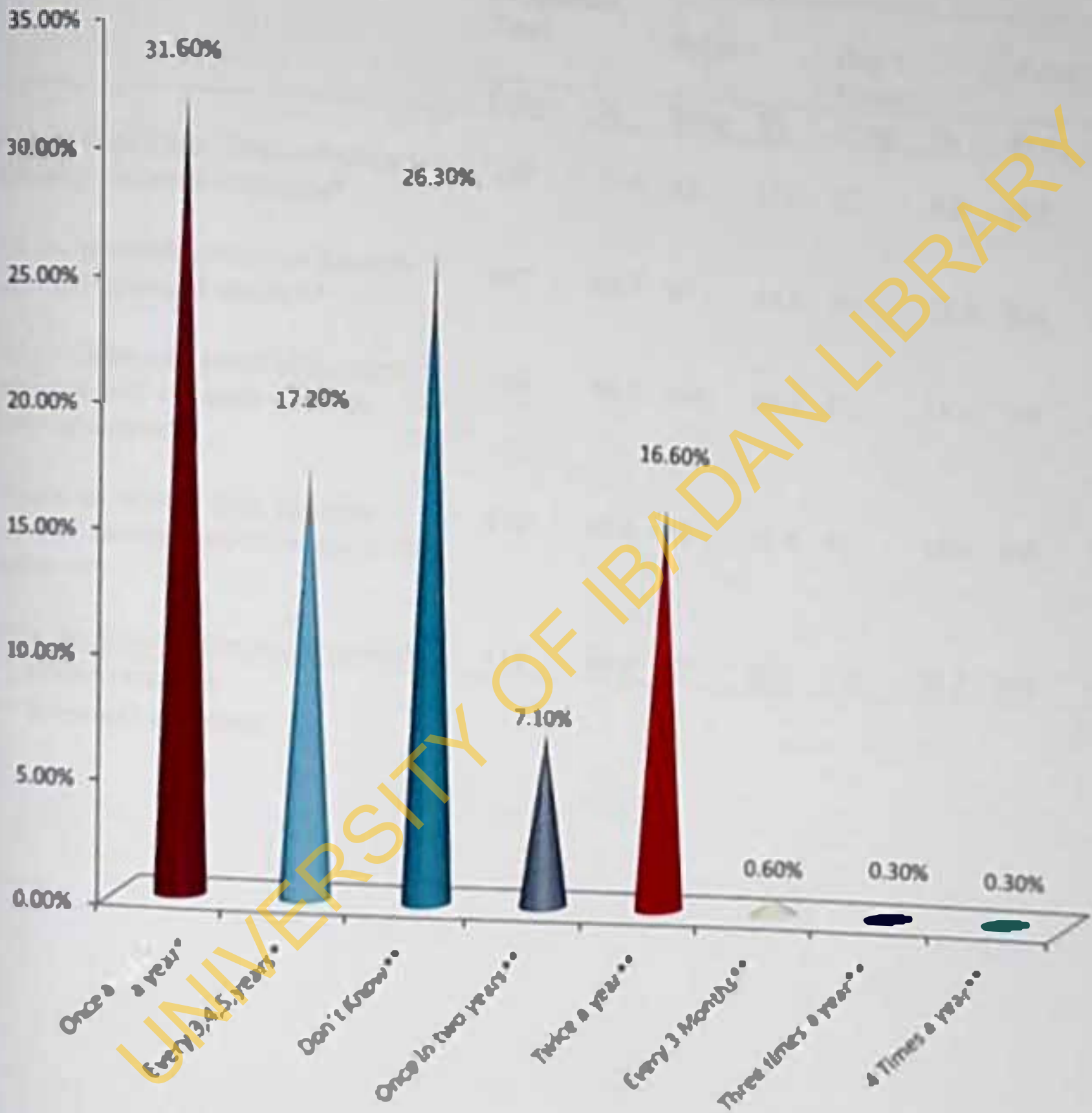
Domain 6: Knowledge of Cervical Cancer Screening

Variables	Responses							
	True Freq	%	False Freq	%	Don't know Freq	%	Total Freq	%
Pap smear is a screening test done to identify precancerous and potentially precancerous changes in the cervical cells and tissues*	299	97.1	5	1.6	4	1.3	308	100
Cervical cancer screening can help in the reduction of incidence and mortality rate of cervical cancer*	294	95.5	3	1.0	11	3.5	308	100
Pap smear is not helpful in women younger than 25 years*	81	26.3	192	62.3	35	11.4	308	100
Pap smear is not helpful in women older than 60 years*	48	15.6	212	68.8	48	15.6	308	100
Pap smear is not useful in women who have had total hysterectomy done*	161	52.3	105	34.1	42	13.6	308	100
Colposcopy is a type of screening method available*	199	64.6	27	8.8	82	26.6	308	100
Conization is a type of screening method available*	150	48.7	37	12	121	39.3	308	100
Liquid based cytology is another type of screening method*	197	64.0	7	2.3	104	33.7	308	100
Visual inspection with acetic acid is also a type of screening method*	220	71.4	14	4.6	74	24	308	100

*Correct response

** Incorrect response

Frequency of Pap Smear



- Correct response
- Incorrect response

Figure 4.1 Frequency of Pap Smear

Table 4.2.7

Domain 7: Knowledge of Human Papilloma Virus (HPV) Infection

Variables

Variables	Responses						Total	
	True		False		Don't Know			
	freq	%	freq	%	freq	%	freq	%
Human Papilloma Virus infection is a sexually transmitted disease*	239	77.6	42	13.6	27	8.8	308	100
All the available strains of the HPV can cause cervical cancer**	187	60.7	61	19.8	60	19.5	308	100
Any woman who has had the HPV infection will certainly develop cervical cancer**	106	34.4	141	45.8	61	19.8	308	100
Nearly all women with invasive cervical cancer have evidence of HPV infection*	212	68.8	35	11.4	61	19.8	308	100
HPV is carried in the men's semen*	133	43.2	62	20.1	113	36.7	308	100

*Correct response

** Incorrect response

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Table 4.2.8

Domain 8: Knowledge of Human Papilloma Virus Vaccine

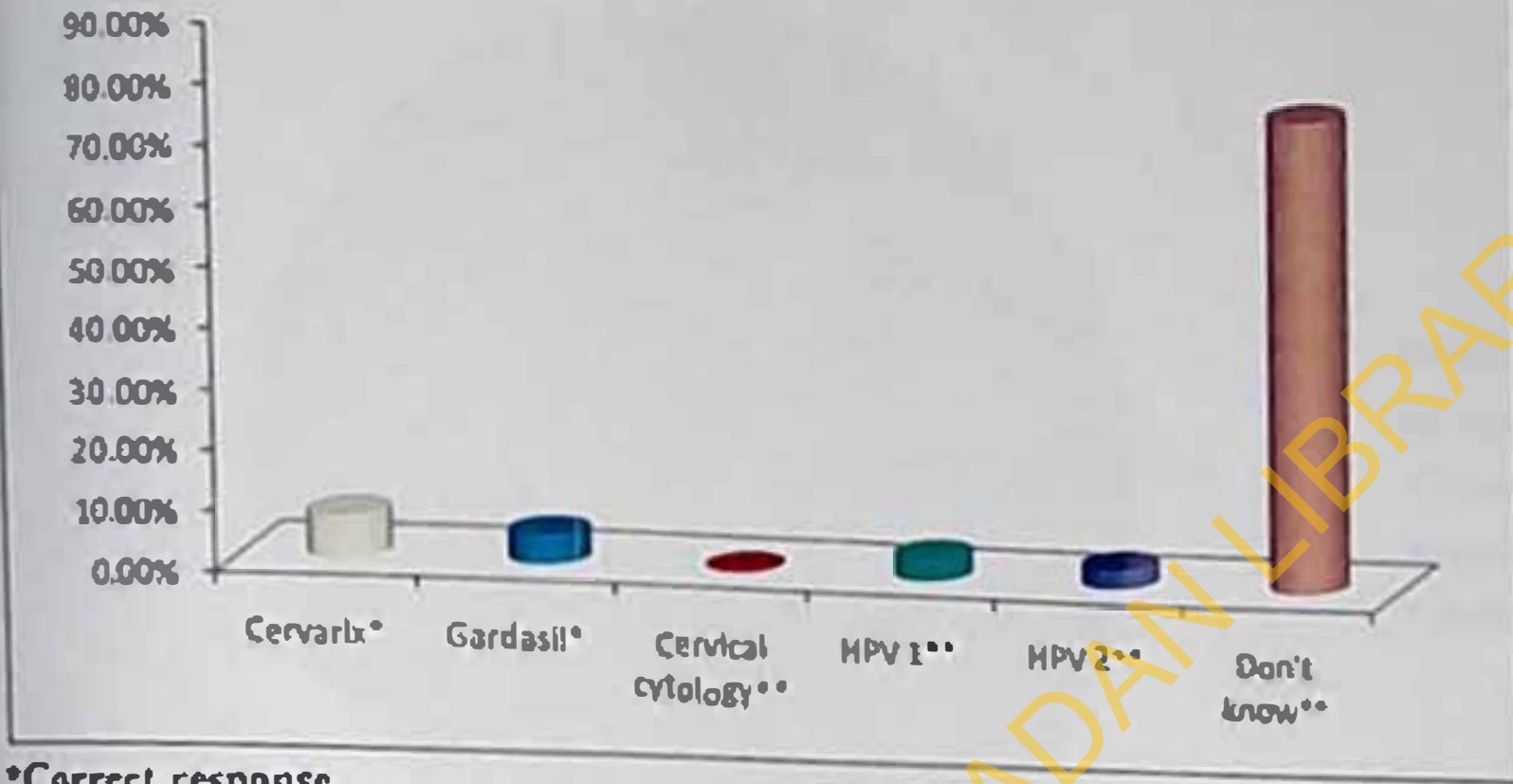
Variables	Responses						Total	
	True Freq	%	False Freq	%	Don't Know Freq	%	Freq	%
HPV vaccines are effective against the two strains of HPV that cause approx. 70% of cases of cervical cancer*	197	64.0	11	3.5	100	32.5	308	100
HPV vaccine is not recommended for female between age 9-26 years**	91	29.6	111	36	106	34.4	308	100
Cervical cancer screening test is no longer required after being immunized with the HPV vaccine**	37	12	187	60.7	34	27.3	308	100
HPV vaccine are most effective after the woman has been exposed to HPV infection**	50	16.2	164	53.3	94	30.5	308	100

*Correct response

** Incorrect response

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Types of HPVv



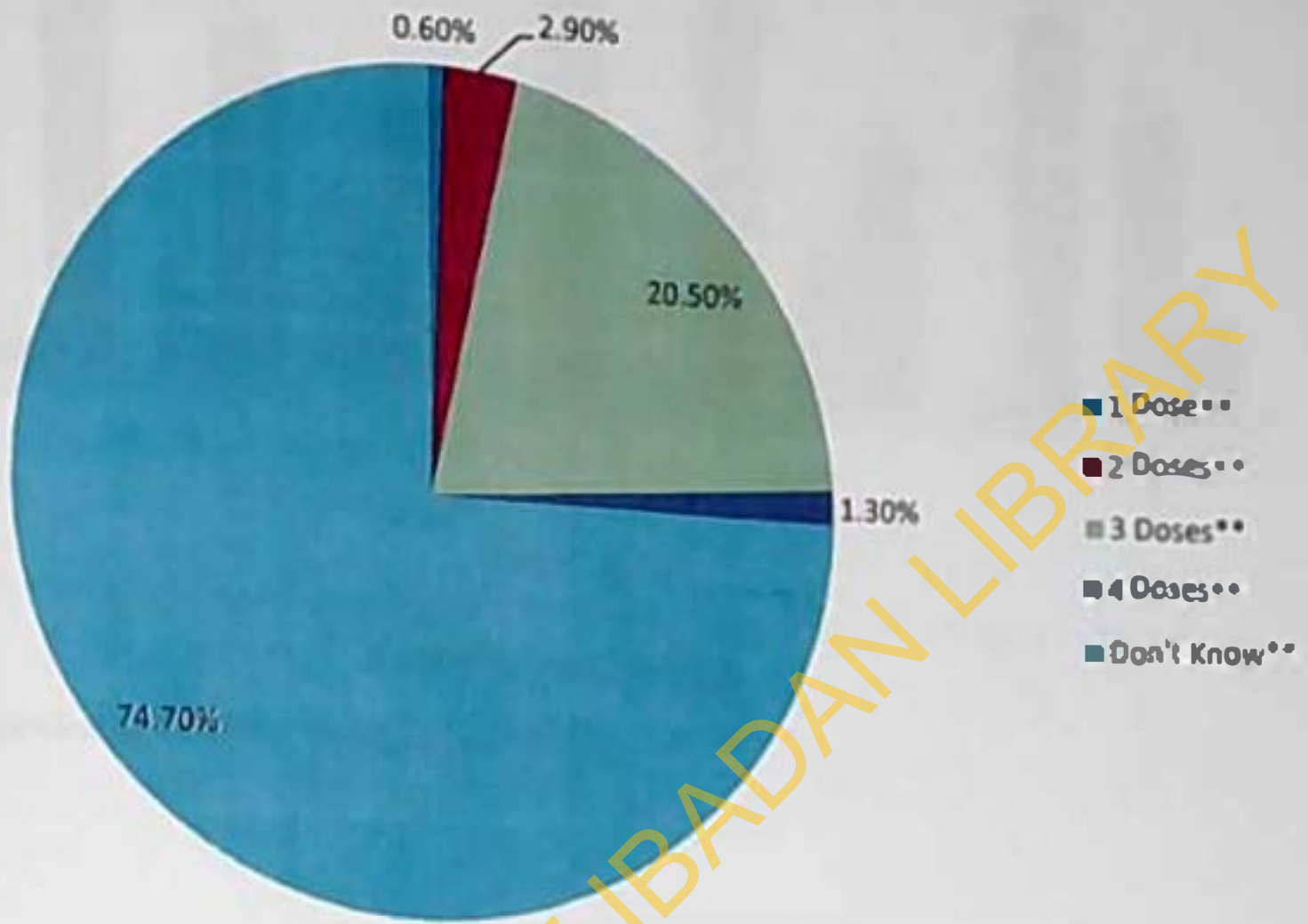
*Correct response

** Incorrect response

Figure 4.2 Types of HPVv

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Doses of HPVv Required



*Correct response

** Incorrect response

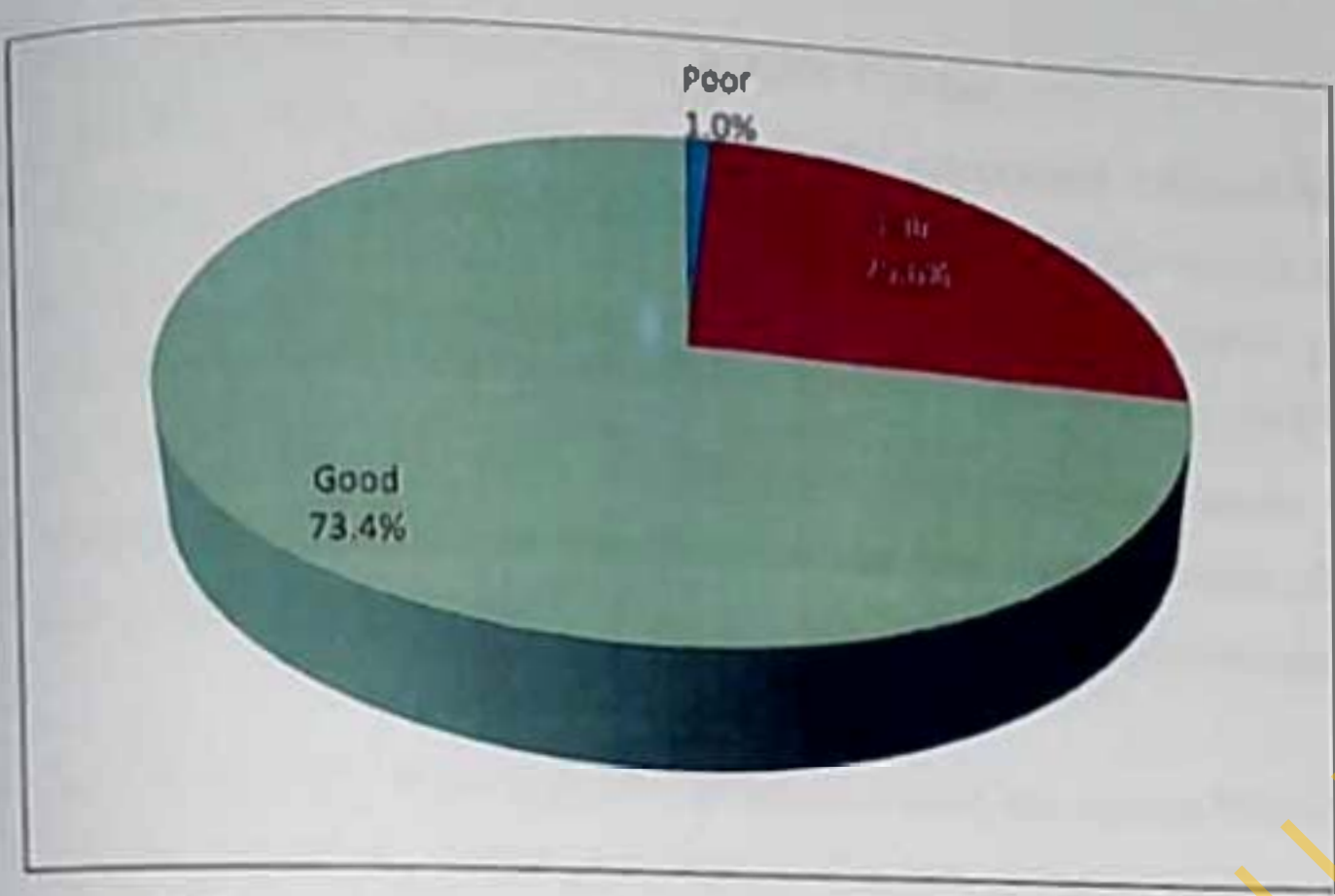
Figure 4.3 Doses of HPVv required



Knowledge Domain

Figure 4.4 Knowledge of HPV Vaccine per Domain

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Mean= 33.7

SD= 4.7

Figure 4.5 Overall Score of Knowledge of IPV Vaccine

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4.3 Attitude of Nurses towards HPV Vaccine

Table 4.3.1 shows that many (86.3%) of the respondents believed that HPVv is effective in preventing CC; however only 14% of them supported that the vaccine is not as effective against CC as it is said to be. Majorily (83.8%) were willing to go for HPVv to prevent CC. More than half (55.2%) of the respondents considered HPVv safe. Majority (79.9%, 72.4%, 78.9%, 73.7% and 78.9%) said they were comfortable recommending the vaccine to their clients, cost of vaccine should be reduced, vaccine should be free, would vaccinate their children against CC and would recommend HPVv if it was included in Nigeria's immunization schedule.

A little over half (52.6%) agreed that males should also receive HPVv while only a few (24%) believed that HPVv would encourage adolescents to engage in risky sexual behaviours. More than half (58.7%) of the respondents said they 'do not have enough knowledge of HPV infection and vaccine'.

4.4 Attitude towards HPV Vaccine Score

Table 4.3.2 represents the attitude score of the respondents. Majority (84.1%) of the respondents had positive attitude towards HPVv.

Table 4.3.1: Attitude of Respondents towards HPVv

Variables	Responses						Total Freq %	
	Yes		No		Undecided			
	Freq	%	Freq	%	Freq	%	Freq	%
HPV vaccine is a good and effective preventive measure against cervical cancer therefore I will recommend it to my clients*	266	86.3	3	1	39	12.7	308	100
HPV vaccine is not as effective against cervical cancer as it is said to be so there is no need for it**	43	14	161	52.3	104	33.7	308	100
I am comfortable recommending HPV vaccine to my client*	246	79.9	12	3.9	50	16.2	308	100
I will be confident to recommend HPV vaccine to my client if the cost is reduced*	223	72.4	44	14.3	41	13.3	308	100
I will readily recommend HPV vaccine to my client if it is free*	243	78.9	27	8.8	38	12.3	308	100
I am willing to go for HPV vaccine to prevent cervical cancer*	258	83.8	10	3.2	40	13	308	100
I will vaccinate my children against cervical cancer*	227	73.7	17	5.5	64	20.8	308	100
I will encourage males to also receive HPV vaccine to reduce the incidence of HPV infection*	162	52.6	34	11	112	36.4	308	100
I agree that HPV vaccine is not safe**	33	10.7	170	55.2	105	34.1	308	100
I will recommend HPV vaccine to my clients if it is included in Nigeria's immunization schedule*	243	78.9	31	10.1	34	11	308	100
I believe HPV vaccine will encourage adolescents to engage in risky sexual behaviours**	74	24	161	53.3	70	22.7	308	100
I do not recommend the vaccine because my knowledge of HPV infection and vaccine is poor*	181	58.7	84	27.3	43	14	308	100
I am in support that HPV vaccine will eliminate the need for cervical cancer screening**	92	29.9	107	34.7	109	35.4	308	100
I will not recommend HPV vaccine to children aged 9-17 years**	129	41.9	95	30.8	84	27.3	308	100

* Correct response

** Incorrect response

Table 43.2: Attitude towards JIPV Vaccine Score

Variable	Attitude score				Total	
	Negative Freq	%	Positive Freq	%	Freq	%
Attitude	49	15.9	259	84.1	308	100

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Practice Nurses Engage in Relation to HPVv

Table 4.4.1 shows that only 2.9% of the respondents had received the HPVv while 2.6% of them had completed their HPVv doses. Majority (91.2%) said their children had not received HPVv. Also majority (89.9%) of them had not administered HPVv to their clients before. Only 10.7% of the respondents said they educated their clients that 'they do not need to have CC screening once they have completed their vaccines'. Only a few (37%, 17.8%, 25% and 29.9%) of the respondents had counseled their clients/patients on HPVv, males to also receive the vaccine, educated their clients/patients that HPVv is a total protection against CC and had given health talks in the community, religious forums schools etc on the importance of HPVv. Less than half (43.5%) of them encouraged their clients/patients to go for HPVv while 45.5% of them had educated their clients on the importance of HPVv.

More than half (59.1% and 51%) of the respondents counseled sexually active clients to go for CC screening before being vaccinated and educated adolescents on the importance of practicing safe sexual behaviours post vaccination. However most (67.5%) of the respondents had never talked to anyone about HPV infection and vaccine.

4.6 Categories of Practice towards the Use of HPV Vaccine Score

Table 4.4.2 shows that most (66.6%) of the respondents had poor practice relating to HPVv while only a few (33.4%) of them had good practice.

Table 4.4.1: Practice Nurses Engage in Relations to HPV*

Variable	Response Yes		No		No Response		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
	I have received the HPV vaccine*	9	2.9	285	92.5	14	4.6	308
I have had my complete dose of HPV vaccine*	8	2.6	286	92.9	14	4.5	308	100
My children have received HPV vaccine*	9	2.9	281	91.2	18	5.9	308	100
I counsel my client/patients on HPV vaccine*	114	37	176	57.1	18	5.9	308	100
I encourage my client/patients to go for HPV vaccine*	134	43.5	155	50.3	19	6.2	308	100
I have administered HPV vaccine to my clients (before**)	12	3.9	277	89.9	19	6.2	308	100
I health-educate my clients on the importance of HPV vaccine*	140	45.4	149	48.4	19	6.2	308	100
I counsel sexually active clients to go for cervical cancer screening before being vaccinated*	182	59.1	106	34.4	20	6.5	308	100
I educate adolescents on the importance of practicing safe sexual behaviours post vaccination*	157	51	130	42.2	21	6.8	308	100
I educate my clients that they do not need to have cervical cancer screening once they have completed their vaccines**	33	10.7	251	81.8	24	7.8	308	100
I counsel male clients to also receive HPV vaccine*	55	17.8	230	74.7	23	7.5	308	100
I educate my clients/patients that HPV vaccine is a total protection against cervical cancer*	77	25	209	67.9	22	7.1	308	100
I pre health talks in the community, religious forum, schools etc on the importance of HPV vaccine*	92	29.9	194	63	22	7.1	308	100
I inform my clients on places where the vaccine is available*	144	46.8	142	46.1	22	7.1	308	100
I have ever talked to anyone about HPV infection and vaccine**	79	25.7	208	67.5	21	6.8	308	100

*Correct response

**Incorrect response

Table 4.1.2 Categories of Practice Nurses Engage in relation to Use of IPV Vaccine Score

Variable	Practice score		Good		Total	
	Poor		Good		Total	
	Freq	%	Freq	%	Freq	%
Practice	205	66.6	103	33.4	308	100

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4.7 Factors that Influence Willingness to Uptake HPVv

Table 4.5.1 represents factors that influenced respondents' willingness to recommend HPVv. It shows that many (70.1%, 79.2%, 70.5%, 71.4%, 62.7%, 60.4% and 64.6%) of the respondents said that cost of the vaccine, availability, location of facility, cultural issues on sex education of adolescent, parental consent, social stigma related to STIs and HPVv is not included in childhood vaccine schedule were factors that influenced their willingness to recommend the vaccine respectively. Less than half (46.1%) of the respondents chose potential side effect of the vaccine. More than half (57.2%, 58.1%, 58.85, 52.3% and 53.6%) agreed that number of doses required, government policy, religious acceptance of the vaccine, fear that the vaccine will encourage risky sexual behaviours and reluctance of some healthcare providers to discuss sexual behavior with adolescent or their parents respectively are factors that influenced them.

4.8 Logistic Regression on Factors that Influence Willingness to Uptake HPVv

Table 4.5.2 represents logistic regression of factors that influenced willingness of respondents to uptake HPVv. It shows that exclusion of HPVv from the childhood vaccine schedule had the highest significance (p value=0.027, OR=1.8, CI= 1.1-3.2); Next was availability of the vaccine (p value=0.039, OR=1.9, CI= 1.0-3.5). All the other factors were however not significant.

Table 4.5.1: Factors that Influenced Willingness to Uptake HPV

Variable	Response Yes		No		I don't know		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
	Potential side effect of the vaccine	142	46.1	132	42.9	34	11	308
The cost of the vaccine	216	70.1	70	22.7	22	7.2	308	100
Availability of the vaccine	244	79.2	40	13	24	7.8	308	100
Location of the facility where the vaccine can be accessed	217	70.5	71	23.1	20	6.4	308	100
The number of doses required to complete the immunization schedule	176	57.2	111	36	21	6.8	308	100
Government policy on HPV vaccine	179	58.1	105	34.1	24	7.8	308	100
Issues of parental consent	193	62.7	88	28.5	27	8.8	308	100
Cultural issues on sex education of the Adolescent	220	71.4	69	22.4	19	6.2	308	100
Religious acceptance of the vaccine	181	58.8	104	33.8	23	7.4	308	100
Social stigma related to STIs or vaccine against STIs	186	60.4	98	31.8	24	7.8	308	100
Fear that the vaccine will encourage adolescents to engage in risky sexual behaviours	161	52.3	126	40.9	21	6.8	308	100
Reluctance of some healthcare providers to discuss sexual behaviours with adolescents or their parents	165	53.6	120	39	23	7.4	308	100
Exclusion of HPV vaccine from the childhood vaccine schedule	199	64.6	85	27.6	24	7.8	308	100

Table 4.5.2 Logistic Regression on Factors that Influence Willingness to Uptake HPVv

Variable	P value	OR	95% CI	
			Upper	Lower
Potential side effects of the vaccine				
The cost of the vaccine	0.312	1.3	0.7	2.2
Availability of the vaccine	0.088	1.6	0.9	2.8
Location of the facility where the vaccine can be accessed	0.039	1.9	1.0	3.5
The number of doses required to complete the immunization schedule	0.234	1.4	0.8	2.5
Government policy on HPV vaccine				
Issues of parental consent	0.634	0.9	0.5	1.5
Cultural issues on sex education of the adolescents	0.210	1.4	0.8	2.4
Religious acceptance of the vaccine	0.700	0.9	0.5	1.6
Social stigma related to STIs or vaccines against STIs	0.726	0.9	0.5	1.6
Fear that the vaccine will encourage adolescents to engage in risky sexual behaviours	0.178	1.4	0.8	2.5
Reluctance of some healthcare providers to discuss sexual behaviour with adolescents or their parents	0.610	0.9	0.5	1.5
HPV vaccine is not included in childhood vaccine schedule	0.274	1.3	0.8	2.3
	0.027	1.8	1.1	3.2

Factors that Will Enhance the Willingness to Recommend HPVv

Table 4.6.1 represents factors that would enhance the willingness of the nurses to recommend HPVv. Majority (89%, 84.4%, 86%, 89%, 83.8% and 83.1%) of the respondents agreed that HPVv services should be provided at the grassroots level, it should be free for all, HPVv should be included in UCH staff immunization schedule, HPVv should be available in the staff clinic, time spent in clinic and religious approval of HPVv were some of the factors that would influence their willingness to recommend the vaccine respectively.

Most (68.2% and 63.6%) of the respondents agreed that HPVv should be included in childhood immunization schedule and it should be made mandatory for UCH staff were factors that would enhance their willingness to recommend the vaccine. A little over half (56.8%) agreed that incentives should be given to encourage people take the vaccine while less than fifty percent (46.1%) of the respondents agreed that a reduction in the cost of HPVv will not cause an increase in the level of uptake of the vaccine.

4.10 Logistic Regression of Factors that Will Enhance the Willingness to Recommend HPVv

Table 4.6.2 shows that availability of HPVv services at the grass root level had the highest level of significance (p value=0.001, OR=3.5, CI=1.6-7.3). Next was HPVv should be made available in the staff clinic (p value=0.003, OR=3.1, CI=1.5-6.4), followed by HPVv should be made mandatory for UCH staff (p value=0.011, OR=2.0, CI=1.2-3.5), HPVv should be included in childhood immunization schedule (p value=0.016, OR=2.0, CI=1.1-3.4), HPVv should be included in UCH staff immunization schedule (p value=0.020, OR=2.3, CI=1.1-4.5), vaccines should be free for all (p value=0.029, OR=2.1, CI=1.1-4.1) and time spent in the clinic should be reduced (p value=0.047, OR=1.9, CI=1.0-3.8). All the other factors were not significant.

Table 4.6.1: Factors that Will Enhance the Willingness to Recommend HPV

Variable	Response Yes		No		I don't know		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
A reduction in the cost of HPV vaccine will not cause an increase in the level of uptake of the vaccine	142	46.1	131	42.5	35	11.4	308	100
Cervical cancer vaccine services should be provided at the grassroots level	274	89	6	1.9	28	9.1	308	100
HPV vaccine should be free for all	260	84.4	10	3.3	38	12.3	308	100
HPV vaccine should be included in childhood immunization schedule	210	68.2	65	21.1	33	10.7	308	100
HPV vaccine should be included in UCH	265	86	16	5.2	27	8.8	308	100
HPV vaccine should be made mandatory for UCH staff	196	63.6	84	27.3	28	9.1	308	100
Cervical cancer vaccine should be made available in the staff clinic	274	89.0	6	1.9	28	9.1	308	100
Time spent in the clinic to receive the vaccine should be reduced	258	83.8	21	6.8	29	9.4	308	100
Incentives should be given to encourage people take the vaccine	175	56.8	103	33.5	30	9.7	308	100
People are likely to take the vaccine if it is approved in religious settings	256	83.1	25	8.1	27	8.8	308	100

Table 4.6.2: Logistic Regression of Factors that Will Enhance the Willingness to Recommend HPVv

Variable	P value	OR	95% CI	
			Upper	Lower
A reduction in the cost of HPVv will not cause an increase in the level of uptake of the vaccine	0.154	0.7	0.4	1.2
HPVv services should be provided at the grassroots level	0.001	3.5	1.6	7.3
HPVv should be free for all	0.029	2.1	1.1	4.1
HPVv should be included in childhood immunization schedule	0.016	2	1.1	3.4
HPVv should be included in UCH staff immunization schedule	0.020	2.3	1.1	4.5
HPVv should be made mandatory for UCH staff	0.011	2	1.2	3.5
HPVv should be made available in the staff clinic	0.003	3.1	1.5	6.4
Time spent in the clinic to receive the vaccine should be reduced	0.017	1.9	1	3.8
Incentives should be given to encourage people take the vaccine	0.362	1.3	0.8	2.2
People are likely to take the vaccine if it is approved in religious settings	0.278	1.4	0.7	2.8

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4.11 Hypotheses Testing

4.11.1 Hypothesis One

Number of years of working experience of nurses was compared with the practice they engage in relation to Human Papilloma Virus vaccine to determine if the number of years of working experience of nurses had an influence on the practice engage in relation to Human Papilloma Virus vaccine. Table 4.7 shows that there was a significant relationship between the number of years of working experience of the respondents and the practice engage in relation to Human Papilloma Virus vaccine ($p < 0.05$).

The null hypothesis, which stated that there is no significant difference between the number of years of working experience of nurses and the practice engaged in relation to Human Papilloma Virus vaccine, was therefore rejected.

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Table 4.7: Relationship between Number of Years of Working Experience of Nurses and the Practice Engage In Relation to IPV vaccine

Years of Working Experience (Years)	Practice score in relation to IPV vaccine						χ^2 (df)	p-value
	Poor Practices (Scores of 0-7)		Good Practices (Scores of 8 and above)		Total			
	Freq	%	Freq	%	Freq	%		
1-10	61	55.5	49	44.5	110	100	11.306 (3)	0.009
11-20	99	70.2	42	29.8	141	100		
21-30	38	80.9	9	19.1	47	100		
>31	7	70.0	3	30.0	10	100		
Total	205	66.6	103	33.4	308	100		

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4.11.2 Hypothesis Two

Knowledge of Human Papilloma Virus vaccine was compared with respondents' willingness to go for HPV vaccine to prevent cervical cancer, to determine if the respondents' knowledge of HPVv had an influence on their willingness to go for HPVv for the prevention of cervical cancer. Table 4.8 shows that there was a significant relationship between respondents' knowledge of HPVv and respondents' willingness to go for HPVv for the prevention of cervical cancer ($p < 0.05$).

The null hypothesis, which stated that there is no significant difference between knowledge of human papilloma virus vaccine and respondents' willingness to go for HPV vaccine to prevent cervical cancer, was therefore rejected.

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Table 4.8: Relationship between Knowledge of HPV and Respondents' Willingness to go for HPV to Prevent CC

Knowledge of HPV vaccine	Willingness to go for HPV vaccine to prevent cervical cancer						$\chi^2(df)$	p-value
	Yes		No		Total			
	Freq	%	Freq	%	Freq	%	(1)	
Poor Knowledge (Scores of 0-3)	184	80	46	20	230	100	9.473 (1)	0.002
Good Knowledge (scores >3)	74	94.9	4	5.1	78	100		
Total	258	83.8	50	16.2	308	100		

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4.11.3 Hypothesis Three

The knowledge of the nurses on Human Papilloma Virus vaccine was compared with their age to determine if the age of the nurses had an influence on their knowledge on Human Papilloma Virus. Table 4.9 shows that there was no significant association between the age of nurses and the knowledge of nurses on Human Papilloma Virus vaccine ($p > 0.05$).

The null hypothesis, which stated that there is no significant association between the knowledge of the nurses of Human Papilloma Virus vaccine and their age, was therefore accepted.

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Table 4.9: Relationship between Knowledge of the Nurses on HPV and their Age

Age Group of the respondent	Knowledge of nurses on Human papilloma Virus vaccine						χ^2 (df)	p-value
	Fair		Good		Total			
	Freq	%	Freq	%	Freq	%		
20-29 years	5	12.8	34	87.2	39	100	4.558 (3)	0.207
30-39 years	43	27.6	113	72.4	156	100		
40-49 years	18	20.5	70	79.5	88	100		
50 years and above	5	20	20	80	25	100		

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4.11.4 Hypothesis Four

The educational status of the nurses was compared with their attitude towards Human Papilloma vaccine to determine if the educational status of the nurses had an influence on their attitude towards Human Papilloma Virus. Table 4.10 shows that there was no significant relationship between the educational status of nurses and their attitude towards Human Papilloma Virus vaccine ($p > 0.05$).

The null hypothesis, which stated that there is no significant difference between the educational status of the nurses and their attitude towards Human papilloma virus vaccine, was therefore accepted.

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Table 4.10: Relationship between Educational Status of the Nurses and their Attitude towards HPV vaccine

Highest level of education	Category of respondents' attitude score towards the use of Human papilloma Virus vaccine				Total Freq	%	$\chi^2(df)$	p-value
	Negative attitude		Positive attitude					
	Freq	%	Freq	%				
RN	2	25	6	75	8	100	2.866(4)	0.581
RN/RM	24	18.2	108	81.8	132	100		
First Degree	19	15.4	104	84.6	123	100		
Master's	3	10.7	25	89.3	28	100		
Others	1	5.9	16	94.1	17	100		

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CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

5.1.1 Socio-Demographic Characteristics

In this current study, the ages of the respondents ranged from 20-58. This was supported by WHO (2013), which states reproductive age as 15-44 years and 20-59 years in adult women. Harper and Vierthaler (2011) also support this by stating that it was detected that there is high-risk HPV infections in females of all ages. Incidence of HPV in females under 11 years was 10%. Peak prevalence of high-risk HPV infection occurs in late teens to early 20s age group, 35%, decreasing to 10% in adult women and increasing again in women aged 35-55 years and a second peak in prevalence a decade later.

Also the Surveillance Epidemiology End Report (SEER) from 2000-2004 in Holguin (2009) shows that the median age at diagnosis for cancer of the cervix was 48 years of age. Approximately 0.1% of women were diagnosed under age 20; 15.5% between 20 and 34; 26.2% between 35 and 44; 23.3% between 45 and 54; 15.1% between 55 and 64; 10.3% between 65 and 74; 7% between 75 and 84; and 2.5% 85+ years of age support the result. Yanikkerem and Koker (2014) also support the result of this study by reporting in a study carried out among nurses in Turkey that 51% of the nurses included in the survey were less than 40 years with a mean age of 39.8 ± 5.4 years.

5.1.2 Knowledge of Human Papilloma Virus Vaccine

This current study shows that generally, the overall knowledge of the nurses on CC, causes/predisposing factors, signs and symptoms of CC, management of CC, prevention, CC screening and HPV infection was good. However the respondents' knowledge on HPV was poor. This is supported by Agida *et al.* (2015) stating that studies have shown that the knowledge of HPV infection and vaccine was low, and even if available, the cost was beyond the reach of average Nigerians.

Makwe and Anorlu (2011) also report that of the 178 female nurses interviewed in a study carried out in the Lagos University Teaching hospital, in Nigeria, only 25.3% had heard of HPV

vaccine and of those, only 26.7% knew that the vaccine was for the prevention of CC. This shows that there is low level of awareness and knowledge of HPVv. The result differs from that of this study.

In the current study, majority of the respondents had good knowledge of CC. This result is similar to Adejuyigbe *et al*'s (2015) which reports that majority (95.4%) of the Medical and Dental students at the College of Medicine, University of Lagos said that they had heard of CC and a little over half (51.8%) had good knowledge of CC. Majority of the respondents in this study agreed that CC is a malignant disease that occurs in the cervix; it is the second most common cancer among women and it is also one of the preventable cancers. They also agreed that it is fatal if it remains undetected and not treated early.

However, less than fifty percent of them agreed that death from CC occurs more often in black women than in white women as supported by Adejuyigbe *et al* (2015) who claim that less than half (44.3%) of their study respondents knew that CC has the highest mortality among gynaecological cancers. It was also reported that most of the respondents knew that CC was the most common gynaecological cancer among women. Mulyaba, Muniro and Weidnerpass (2006) also support by stating that most participants knew that CC is curable if detected at an early stage and that pap smear screening could detect early cervical lesions. Goyal, Vaishnav, Shrivastava, Verma and Modi ((2013) are also in support of this study results when stating that approximately 70% of their respondents believed that CC is preventable, detectable and curable if detected early.

This particular study shows that majority of the respondents had good knowledge of causes/predisposing factors of CC. It shows that majority of the respondents said that 'HPV infection is a necessary factor in the development of CC' as supported by Yanikkerem and Koker (2014) who report that 71.4% of nurses included in a survey in Turkey were aware of the relationship between CC and HPV infection. This study reports that slightly over half of the respondents said smoking and alcohol intake predispose a woman to CC. Most of them agreed that HIV and STIs make a woman susceptible to CC while more than half of the respondents believed that exposure to hormonal drugs and hormonal contraceptives were also risk factors to

CC. Majority of the respondents also said that early sexual debut and multiple sexual partners can put a woman at risk of having CC.

This is in line with Adejuyigbe *et al* (2015) who state that the most common risk factors for CC known were infection of the cervix (75.4%), early age at first sexual intercourse (71.8%) and positive family history (59.6%). Shah, Vyas, Singh and Shrivastava (2012) however, differ by stating that only 11.5% of the respondents were aware of multiple sexual partners as one of the risk factors of cervical carcinoma. They also report that 73.9% of the respondents mentioned early age at pregnancy as one of the risk factors for cervical cancer, this is in line with this study results. Rahman and Kar (2015) report that the most common risk factors identified by participants were multiple sex partners (52%), early age of coitus (35%) and multiple births (24%). This is in contrast to this study results. Syed *et al* (2010) also contradict this study results by stating that 68% of their respondents were aware that infection is one of the causes of CC. Almost forty percent (39%) said genetics, 13% opted for environment and only 6% said they 'don't know' the cause of CC. More than 35 risk factors also identified by the study included sexual practices (45%), like unprotected sex, multiple partners and other promiscuous behaviours. Sixteen percent (16%) of the respondents were of the opinion that poor hygiene can be a risk factor for CC. Others stated risk factors were infection, nulliparity, multiparity, early stage at first coitus, family history, smoking, age, contraception, etc. Some of these risk factors were in line with this study results.

McCarey *et al*'s (2011) study is in support of this study findings by reporting that multiple sexual partners was correctly identified by 71% of their (McCarey *et al*'s) respondents as being a risk factor. Although fewer (44%) were aware of the logical follow-up to this, that having multiple sexual partners is also a risk factor. Awodele *et al*'s (2015) study conclusion is in line with this study findings by stating that 54% of the respondents associated CC with having multiple sexual partners and 47.5% linked CC with having sex at early age, while 52% of the respondents understood HPV to be a causative agent in CC. However, 18.5% and 19.5% of the respondents felt that excess alcohol and smoking respectively could cause CC. Goyal *et al*. (2013) also agree with this study results. Their results show that nurses linked with multiple sexual partners (61%), sex at an early age (44%), HPV infection (38.6%) and heredity (31%) are predisposed to CC.

Yoshino et al (2012) report that only one-third of their participants understood that smoking, increased number of pregnancies, early sexual debut, multiple partners and failure to use a condom during sexual intercourse were all associated with an increased risk for CC. This is in contrast to this study findings.

This current study shows that majorities of the respondents agreed that early stage of CC is asymptomatic, and abnormal vaginal bleeding and painful sexual intercourse were some of the signs and symptoms of CC. Other signs and symptoms of CC mentioned by the respondents were chronic pain, pain during coitus, offensive vaginal discharge, cervical erosion/lesion, post coital/menopausal bleeding, anaemia, unplanned weight loss/cachexia, hyperemia cervix, vomiting/anorexia, positive pap smear, change in menstrual cycle that is unexplained/persistent vaginal bleeding, sore/ulceration of perineum, vulva itching/vaginal irritation, pedal oedema, bulging cervix and burning sensation. Only a few of the respondents said they 'don't know'.

This is supported by Shah, Vyas, Singh and Shrivastava (2012) reported regarding knowledge of the symptoms of cervical cancer, that their respondents stated vaginal discharge (94.2%), menstrual abnormality (86.9%) and pain (66.6%) as some of the symptoms of CC. Syed et al's (2010) study also supports this by stating that the most common presenting complaints reported in the researchers' study were lower abdominal pain (42%) and per vaginal bleeding (40%). A few thought discharge (20%), fever (15%) and menstrual irregularity could also be initial symptoms patients with CC can present with. Rahuman and Kar's (2015) findings support this study findings by stating that most (63%) of the participants reported offensive foul-smelling vaginal discharge as a common symptom of CC.

In this new study, almost all the respondents agreed that surgical intervention, chemotherapy, radiation are approaches to management of CC. Over half of the respondents were of the opinion that surgery, chemotherapy and radiotherapy can be combined in the management of severe CC while only a little of them believed that there was no treatment modality for the management of CC because death is confirmed. Syed et al (2010) state that seventy-two percent (72%) of their study respondents answered the correct treatment option which was "to treat according to the stage of the disease". Twelve percent (12%) were of the opinion that only surgery is required to

cure cervical cancer, whereas 6% were in favour of chemotherapy and 5% for radiotherapy only. This differs from this study results. Rahman and Kar (2015) also differ from this study findings by stating that only half of their study participants knew that the treatment for CC could be through radiotherapy or surgery.

Less than half of the respondents in this study opined that use of condom and adequate nutrition can be effective in the prevention of CC. Many of the respondents agreed that immunization and health education were also effective in the prevention of CC. Majority of the respondents agreed that Pap smear is a screening test done to identify precancerous and potentially precancerous changes in the cervical cells and tissues and it also helps in the reduction of incidence and mortality rate of CC. This was contradicted by Syed *et al's* (2010) reports which show that fifty-four percent (54%) of both interns and nurses were aware that there is a screening test for cervical cancer. Out of these, 75% knew the correct screening test, which is Pap smear. Biopsy (8%), ultrasound (3%), HVD (2%) and radiological scans (10%) were few of the incorrect responses given.

Less than half (37%) of the respondents were aware of the correct time to start screening which is after first coitus; few were aware that Pakistani guidelines recommends screening after 3 years (10%) and not yearly (52%). In this study, only a few of the respondents agreed that pap smear is not helpful in women younger than 25 years and women older than 60 years while a little over half of them agreed that pap smear is not useful in women who have had total hysterectomy done. This study also shows that many of the respondents agreed that colposcopy, liquid based cytology and visual inspection with acetic acid are types of screening for CC; however less than fifty percent of them chose conization as a screening method. Some of the respondents said that Pap smear should be done once a year; a few said once every 3,4,5 years. Very few of them said twice a year, once in 2 years, every 3 months, three times a year, and four times a year while a few of them said they 'don't know'.

Rahman and Kar's (2015) finding contradicts this study findings by reporting that one-third of nursing staff knew that Pap smear screening should start at 21 years or 3 years after sexual debut, while 60% of the respondents recommended Pap smear interval of 3 years. Awodele *et al's*

(2015) study shows that 54% of the respondents knew that Pap smear should be done once a year, while 11.5%, 2.5% and 13.5% felt that it should be done once in 2 years, 3 years and lifetime, respectively. Of the respondents, 18.5% did not know the use of Pap smear. Thirty-four percent (34%) of the respondents felt that women above 65 years of age should have Pap smear done. Majority of the respondents did not know colposcopy as one of the screening techniques for CC. This contradicts this study findings. Shekhar, Sharma, Thaku and Raina's (2013) finding contradicts this study results by stating that almost all their study respondents knew cervical biopsy as an alternate modality. Only 34% were aware of the visual inspection after acetic acid as a tool for CC screening.

This new study shows that all of the respondents had good knowledge of HPV infection and most of the respondents agreed that nearly all women with invasive CC have evidence of HPV infection. Only a few of the respondents in this study agreed that HPV is carried in the men's semen. Many of the respondents said that HPV infection is an STD. This contradicts Tiro, Meissner, Kobrin and Chollette's (2007) finding which reports that knowledge about HPV among U.S women was relatively low. Two-thirds (40%) of women reported that they had never heard of HPV. Among those that had heard of it, less than half knew that HPV causes cervical cancer. Awareness of HPV has however increased over the past decade, but knowledge of its link to cervical cancer remains low.

On the other hand, a report by Yanikkerem and Koker (2014) supports this study results while stating results of a study carried out among nurses in Turkey that 90.5% and 14.5% of the respondents had heard about HPV and its vaccines respectively. Adejuyigbe *et al's.* (2015) also support the result while stating that majority (85.4%) of the respondents had heard of HPV and most (67.1%) of them had good knowledge of HPV infection. The study also shows that majority (71.8%) of the respondents knew that HPV is sexually transmitted and it is the primary cause of CC (73.9%). Only 31.4% knew that HPV can cause penile cancer. Henninger (2009) also supports this study results by stating that over half of the 155 respondents knew that HPV is the most common STI and majority knew that persistent HPV infection is a necessary cause of CC. In this study most of respondents believed that all available strains of HPV can cause CC. Less than fifty percent of the respondents were of the opinion that HPV infection does not certainly

develop into CC. This study findings also differ from reports by Yanikkerem and Koker (2014) which state that 36.2% and 45.75% of the nurses knew HPV infection occurs in both men and women, and that it is generally asymptomatic respectively. Only 12.45% of the respondents knew that HPV infection can resolve on its own within 1-2 years and only 13.3% of the nurses knew that HPV can be transmitted through sexual intercourse.

Contrary to this current study reports, McCarey *et al* (2011) report in their study that only 36% of the respondents believed that HPV infection is most often cleared by a competent immune system and does not usually cause cancer. Syed *et al*'s (2010) supports this study findings by stating that majority (89%) of the respondents who said HPV as a cause of cervical cancer were aware that it is transmitted sexually, while few of them thought that blood (10%), oro-faecal (3%) and environment (4%) are also possible modes of transmission. However this differs from this study results.

This new study shows that the respondents had poor knowledge on HPVv (74.7%). This is supported by Yanikkerem and Koker's (2014) finding which states that in South Africa 73.3% of the nurses were aware of HPV; however they had poor knowledge of HPV infection and vaccine. On the other hand, they also reported that in Cameroon, nurses had moderately low levels of knowledge about HPV infection but moderately high levels of knowledge about HPV vaccine. In this study, most of the respondents were of the opinion that HPVv is effective against the two strains of HPV that cause approximately 70% of cases of CC. Only a few agreed that HPVv is recommended for females between 9-26 years. Most of them agreed that CC screening is still required after being immunized with HPVv and a little over half of them believe that HPVv is less effective after the woman has been exposed to HPV infection. Types of HPVv mentioned by a few of the respondents were Cervarix, Gardasil, Cervical cytology, HPV 1 and HPV 2 while majority did not know of any vaccine. Henninger's (2009) also supports this study results by stating that most of the respondents were aware that HPV vaccination will not eliminate the need for continued cervical screening.

5.1.3 Attitude of Nurses towards the Use of Human Papilloma Virus Vaccine

This current study shows that majority of the respondents had positive attitude towards HPV vaccination programme. Many of the respondents believed that HPVv is effective in preventing CC; however only a few of them believed that the vaccine is not as effective against CC as it is said to be. Majority of the respondents were willing to go for HPVv to prevent CC. More than half of the respondents considered HPVv safe. Majority agreed that: they were comfortable recommending the vaccine to their clients, cost of vaccine should be reduced, vaccine should be free, they would vaccinate their children against CC and will recommend HPVv if included in Nigeria's immunization schedule.

This is supported by Agida *et al's* (2015), which reports that although awareness of HPVv was low, majority of the women wanted their girls vaccinated against HPV infection. It also reports that even if available, the cost of HPVv is beyond the reach of average Nigerians. McCarey *et al's* (2011), contradicts this study result by stating that only 44% of their respondents believed vaccination helps prevent CC. Most healthcare workers (75%) did not believe the vaccine had been proven to be effective yet, but 89% of those who did, would recommend it for young women aged 10-25 years.

In this particular study, a little over half agreed that males should also receive HPVv while only a few believed that HPVv would encourage adolescents to engage in risky sexual behaviours. This is at variance with Yanikkerem and Koker's (2014) in which it is reported that few (37.1%) of nurses in Turkey agreed that it was necessary to vaccinate boys while 71.4% of them stated that giving HPVv would not increase risky behaviour and early onset of sexual activity. Majority of the participants (91.4%) stated that adolescent sex education should be provided before the vaccination. They stated that the nurses' attitude towards the efficacy and safety of HPVv influenced their willingness to vaccinate their daughters. This may be considered as one of the reasons why the vaccination rate was very low among nurses' daughters. This study has revealed that more than fifty percent of the respondents said their knowledge on HPV infection and vaccine was low.

This is similar with Makwe and Anorlu's (2011) discovery which reported poor knowledge of HPVv among female nurses and the main reason given by the nurses for not recommending the

vaccines was lack of information. Syed *et al's* (2010) finding also agrees with this study results by stating that nearly all the respondents wanted to learn more about the vaccine (91%). Majority of the respondents opted for mass media (63) and health professionals (63%) as a source through which knowledge concerning CC can be disseminated. Henniger's (2009) differs from this study results by stating that most participants said that they were comfortable addressing sexual behaviour with adolescents.

However, significantly more GPs indicated that they were comfortable discussing sexual behaviour compared with PNs. When asked if vaccination against STI might encourage risky sexual behaviours in adolescents, significantly more PNs (37%) than GPs (10%) agreed with the statement. PNs were more likely to recommend HPVv to young women aged 16-26; girls aged 13-15 and pre-adolescent girls aged 9-12 years. About half of all participants were likely to recommend the vaccine to boys aged 9-15 years. Kahn *et al's* (2009) differs from this study reports by stating that mothers reported a higher likelihood of vaccinating an older, compared with a younger daughter. It shows that 48% of the women were likely to vaccinate a daughter if she were 9-12 years of age; 68%, if she were 13-15 years of age and 86%, if she were 16-18 years of age. Forty-eight percent of mothers were likely to receive the vaccine themselves if recommended for women their age.

Ugwu *et al's* (2013) study shows that of the 177 female healthcare workers in their study, 101 were willing to recommend the vaccine to their adolescent daughters, other adolescents or sexually unexposed young women. The study reports that there was a significant higher level of acceptability of the HPVv as a method of preventing CC despite the significantly lower level of awareness of the vaccine.

The study results are in support of this study findings. Ezenwa, Balogun and Okafor (2013) reveal in a study carried out among 290 mothers in Shomolu Local Government Area, Lagos State, Nigeria that there was a high willingness and intention among the mothers to vaccinate their girls (88.9%) and to recommend the vaccine to others (91%). Most of the respondents (96.5%) indicated that they wanted more information on HPV and HPV vaccines. Ninety five percent of them also wanted their daughters to learn more about HPV and its prevention. For the

few who would not want their daughters vaccinated, inadequate information about HPV vaccines was the main reason. This is in line with this study results.

Hopenhoyn, Christian, Christian and Schoenbery's (2007) study result support this study results while stating that although acceptance of HPVv varied across age groups, the majority of women in the study indicated interest in receiving an HPV vaccine (85.2%). Overall, the acceptance of the vaccine to prevent HPV decreased with age. Also of interest, women who had never been married or women who were widowed were less likely to accept the HPVv. Nonetheless, women in the middle-income groups showed higher acceptability toward HPVv, as did women without healthcare coverage and women who smoked.

It was also reported that smoking behaviour was the strongest predictor of HPVv acceptability for both the respondents themselves and for girls aged 10-15 years. Various reasons for this strong association is included in the study, possibly due to the fact that cervical cancer incidence is higher among women who smoke. This study findings are also supported by another study published by researchers Ferris, Waller, Owen, and Smith (2008) on HPVv acceptance among southern U.S. mid-adult women. Although the vaccine is currently recommended for 9-26 year old women, mid-adult women (>27 years old) have expressed a keen interest in receiving the vaccine to stay healthy and lower their risk of CC and genital warts. An inclusion limit of women older than 25 years was considered, and this range was selected before FDA approval for current vaccination recommendations. Mid-adult women with a history of an abnormal Pap test also expressed various motives for wanting the vaccine. The results of the study reinforce the necessity of education aimed at mid adult women on HPV and HPV vaccines.

5.1.4 Practice Nurses Engage in Relation to Human Papilloma Virus Vaccine

Most of the respondents engaged in poor practice in relation to HPVv while a few of them had good practice. This study also shows that only a little of the respondents had received the HPVv while only a little of them had completed their HPVv doses. Majority of the respondents said their children had not received HPVv; majority of them had not administered HPVv to their clients before. This is supported by Adejuyigbe *et al's* (2015). Of the 169 female students in the study, 162 (95.9%) had never received HPV vaccine while 7 (4.1%) had received at least one

dose and 2 (1.2%) had completed the three doses. Most 128 (75.7%) of them were willing to be vaccinated if the vaccine was free, 6 (3.6%) were not willing and 35 (20.7%) were not sure.

Also supporting this study findings, Yanikkerem and Koker (2014) report that vaccination status of nurses' daughters and reasons for not receiving vaccination showed that only two of the nurses' daughters were vaccinated after 3 months of education and the main reason listed among nurses who were not willing to be vaccinated was cost (38.8%), doubts about safety (15.5%) and efficacy (11.4%) related the vaccine. Overall, 35.2% of nurses stated that they would receive the vaccine for their daughter later. In Ezenwa, Balogun and Okafor (2013), it is reported that among 290 mothers in Shomolu Local Government Area, Lagos State, Nigeria, only 6.9% had immunized their daughters against HPV. This corresponds with this study results. In this study, only a few of the respondents said they educated their clients that they did not need to have CC screening once they had completed their vaccines. A few of the respondents had counseled their clients/patients on HPVv, males to also received the vaccine, clients/patients were educated that HPVv is a total protection against CC. They had also given health talks in the community, religious forums schools etc on the importance of HPVv. Less than fifty percent of them encouraged their clients/patients to go for H HPV and had educated their clients on the importance of HPVv.

5.1.5 Factors that Influence Willingness to Uptake Human Papilloma Virus Vaccine

This particular study has shown that many of the respondents agreed that cost of the vaccine, availability, location of facility, cultural issues on sex education of adolescent, parental consent, social stigma related to STIs and HPVv is not included in childhood vaccine schedule were factors that influenced their willingness to uptake the vaccine. Less than half of the respondents chose potential side effect of the vaccine. More than half of them agreed that number of doses required; government policy; religious acceptance of the vaccine; fear that the vaccine will encourage risky sexual behaviours; and reluctance of some healthcare providers to discuss sexual behavior with adolescent or their parents were important factors.

This is supported by Yanikkerem and Koker (2014) in a study carried out among nurses in Turkey, which reports that the most common reasons against HPV vaccination given by the respondents was the cost of the vaccine (79%), vaccine safety (41.9%) and vaccine efficiency

(44.8%). They also reported that clients were likely to agree to HPV vaccination when recommended by their healthcare provider. In this study, logistic regression of factors that influence willingness of respondents to recommend HPVv shows that non-inclusion of HPVv in childhood vaccine schedule has the highest significance followed by availability of the vaccine while all the other factors were however not significant. Sussman *et al's* (2007) is in line with this study results by reporting that clinicians' recommendations influence parental acceptance of preventive care, thus it is clear that primary care clinicians would continue to play an important role in the success of HPV and cervical cancer prevention programmes. Clinicians reported that they seldom initiated counseling about HPV infection, either separately or as part of the broader menu of STD counseling, because of the complexity of HPV infection counseling and the low level of baseline knowledge held by most adolescents about HPV infection. Their discomfort resulted from a limited knowledge base of HPV, and time constraints in the typical adolescent visit. It is also reported that compliance with the 3-dose HPV vaccine series is a potential barrier, given that many adolescents may receive the first dose during an acute or previously scheduled visit but then face challenges in returning for subsequent doses.

Inadequate reimbursement from insurance carriers also appears to be placing a strain on limited clinic resources. Financial and logistical challenges for busy primary care practices to feasibly provide the vaccine and ensure that patients return for two additional visits within a six month period will need to be addressed. Adejuyigbe *et al* (2015) also agree with this study findings. They report that obstacles to receiving HPV vaccination among the female respondents included inadequate information (60.9%), high cost of vaccine (56.2%), poor access to vaccine (55.6%), worry about efficacy (38.5%), worry about safety (36.1%) and religious barriers (17.7%). The obstacles to recommending HPV vaccination to others included inadequate information (50.8%), high cost (41.4%), poor access (40.8%), worry about safety (32.5%), worry about efficacy (27.8%) and religious barriers (23.6%).

Also, Barlett and Peterson (2011) support this study in a comprehensive review of literature conducted to identify the barriers and facilitators, from the parents/guardians and primary care providers' perspective, associated with the uptake of Human Papillomavirus (HPV) vaccine among adolescent females. Barriers identified included parents/guardians' knowledge; and perceptions and attitudes toward the HPV disease and the vaccine, along with the convenience in

receiving the vaccine. Chen and Lung (2008) however differ in a study carried out among 247 female university students from a University in Hong Kong. Seven factors associated with HPV vaccination identified included age, knowledge, perceived susceptibility to cervical cancer, acceptability of HPV vaccine, and perceived effectiveness of HPV vaccine before sexual experience. The two barriers of HPV vaccination stated were "not likely to have cervical cancer" and "cost of the vaccine".

5.1.6 Factors that Will Enhance Willingness to Recommend Human Papilloma Virus Vaccine

On factors that will enhance the willingness of the nurses to recommend HPVv, this study reveals that majority of the respondents agreed that it should be free for all. This is supported by Henninger (2009) in a study carried out among GPs and PNs who stated that they intended to recommend an HPV vaccine to their patients if it was publicly funded. They also indicated they would recommend the vaccine even if their patients had to pay for it. HPVv services should be provided at the grassroots level, HPVv should be included in UCH staff immunization schedule. Availability of HPVv in the staff clinic, time spent in clinic and religious approval of HPVv were some of the factors that influenced their willingness to recommend the vaccine.

This differs from Barlett and Peterson's (2011) in which they reported that six studies noted that HPV vaccine initiation was highly likely if the parents/guardians had received a doctor's recommendation. In this study, most of the respondents agreed that inclusion of HPVv in childhood immunization schedule and making it mandatory for UCH staffs were factors that will enhance their willingness to recommend the vaccine. A little over half agreed that incentives should be given to encourage people take the vaccine while less than fifty percent of the respondents agreed that a reduction in the cost of HPVv will not cause an increase in the level of uptake of the vaccine. Availability of HPVv services at the grassroots level has the highest level of significance. Next was HPVv should be made available in the staff clinic, followed by HPVv should be made mandatory for UCH staff, HPVv should be included in childhood immunization schedule, HPVv should be included in UCH staff immunization schedule, vaccines should be free for all and time spent in the clinic should be reduced in that order. All the other factors were not significant. Ezenwa, Balogun and Okafor (2013) supported this study findings by stating that

inclusion of a new vaccine in an immunization programme will require consideration of some technical and social factors, such as the disease burden, vaccine efficacy, safety, immunogenicity, cost and immunization strategy. Public knowledge and acceptance of the vaccine are equally of importance.

This differs from this study results. Perkins et al's (2014) also contrast this study results while stating that providers who reported that >80% of their patients received HPV vaccination were found to have always recommended coadministration of HPV, tetanus, and meningococcal vaccines and emphasizing cancer prevention led to higher uptake. In addition, parents trusted provider recommendations, often citing that recommendation as the primary or only reason they vaccinated. Effective and simple ways to achieve vaccination, as described by providers whose vaccination rates exceeded 80%, were normalizing the HPV vaccine, encouraging coadministration of HPV vaccine as recommended with the tetanus and meningococcal vaccines, focusing on cancer protection benefits, and emphasizing vaccine safety. Providers also spoke on the importance of a strong recommendation. Both parents and providers expressed that information in advance of the actual vaccine visit would be helpful. Such anticipatory guidance could be given as handouts at physicals before age 11 years, verbal reminders, or practice-wide informational mailings. These methods would expand the opportunity to reinforce the benefits and proven safety of coadministering all recommended adolescent vaccines at the 11-year-old visit. Mechanisms to improve vaccination rates include national initiatives, such as the Center for Disease Control and Prevention's "You are the Key to HPV Cancer Prevention" education campaign aimed at providers, and the President's Cancer Panel's call for HPV vaccination research as a national priority.

5.1.7 Implications of Findings for Health Promotion Education and Health Policy

Findings from this new study have health promotion and education implications: they suggest the need for intervention directed at addressing poor knowledge and practice engaged in by nurses in relation to HPVv. Health education is any planned combination of learning experiences designed to predispose, enable and reinforce voluntary behaviour conducive to health in individuals, groups or communities (Green and Kreuter, 1999).

In-service training programmes designed for nurses on HPVv should address identified gaps in knowledge and challenges towards the uptake and recommendation of the vaccine. It should be designed to cover predisposing factors to CC, signs/symptoms, management, prevention and benefits of HPVv. Such an initiative will strengthen the knowledge of nurses on HPVv.

An in-service training programme is an educational intervention that can help improve knowledge and willingness of nurses towards HPVv, especially those who have not had training on the vaccine during their basic training. The ultimate goal of an in-service training should be the development of a sustainable system for nurses to acquire knowledge and skills needed for acceptance of HPVv. The in-service training programme could be in the form of seminars, conferences and similar continuing education opportunities. The results of this study are useful for the design of an in-service training curriculum for nurses. For effectiveness, in-service training programmes should address the specific training needs of each cadre based on their job description and educational level.

Counseling is a health education strategy which facilitates the making of choices including acceptance of HPVv. It could be used to address the psychosocial challenges associated with the acceptance of HPVv (WHO, 2010). Health workers and professional counselors should be trained to provide counseling services to the community on CC and HPVv. It is important to offer psychotherapy or counseling services before administering HPVv to assist people make informed decisions regarding whether to take the vaccine or not. Counseling should be conducted in an environment that ensures safety and confidentiality.

5.2 Conclusion

This current study has revealed that knowledge of the respondents of CC, CC screening and HPV infection was high; however their knowledge of HPV vaccination programme was very low despite the fact that the respondents were nurses and were working in a health care setting where the vaccine is readily available. In-service training, counseling and public enlightenment are important educational strategies for addressing the situation. This shows that there is a gap in the nurses' in-service training education curriculum in including current health issues and thus making nurses abreast of current health issues around them. There is a need for the curriculum to be reviewed each year in order to include new health issues as they arise. Although majority of

the respondents had positive attitude towards HPVv, many of them however had poor practice towards the uptake and recommendation of the vaccine.

The nurses identified various factors that influenced their willingness to uptake the vaccine but non-inclusion of HPVv in childhood vaccine schedule and availability of the vaccine had the highest significance. On factors that would enhance their recommendation of the vaccine in the future, availability of HPVv services at the grassroots level, availability of the vaccine in the staff clinic, mandatory vaccination of UCH staff, inclusion in childhood immunization schedule and UCH staff immunization schedule, free vaccines for all and reduction in time spent in the clinic was important factors identified.

There is a gap in knowledge on HPV vaccine and this has been the main reason for the low uptake and recommendation of the vaccine. The government needs to develop strategic public health interventions to improve the acceptability and accessibility of HPV vaccine in Nigeria. Governments – at all levels - also need to formulate policies on the target age group for the vaccine and the inclusion of the vaccine in children's immunization schedule in Nigeria. Public funding of the vaccine by the government and NGOs will also go a long way in improving the uptake and recommendation of the vaccine in Nigeria.

5.3 Recommendations

The recommendations based on the study were as follows:

- Appropriate educational intervention is needed to improve respondents' knowledge, attitude and practice towards HPVv;
- There is need for in-service training programmes to increase nurses in-depth knowledge on CC, causes/predisposing factors, signs and symptoms, management, prevention, CC screening, HPV infection and HPVv;
- A policy which makes HPVv mandatory and available in the staff clinic should be made by UCH management to ensure adequate vaccination of female staffs in the facility; and

- Public enlightenment interventions relating to CC, CC screening and HPV should be made to increase access to these services and on the long run decrease the incidence of CC.

4.1 Suggestions for Further Study

An educational intervention of the quasi-experimental design is needed to determine the effect of educational strategies on the knowledge and practice of nurses towards the uptake and recommendation of HPV in tertiary, secondary and primary health facilities.

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APPENDIX I

QUESTIONNAIRE

INFORMED CONSENT FORM FOR RESPONDENTS

IRB Research approval number:

This approval will elapse on:

Title of the research: Knowledge and willingness towards the uptake of Human Papilloma Virus vaccine among nurses in the University College Hospital Ibadan, Oyo State.

Names and affiliation of researcher: This study is being conducted by OJO OLUWAKEMI OMOLARA of the Department of Health Promotion and Education, College of Medicine, University of Ibadan, Oyo State, Nigeria.

Purpose of research: The purpose of this study is to explore the knowledge and willingness towards the uptake of Human Papilloma Virus vaccine among nurses in the University College Hospital Ibadan, Oyo State. This study is aimed at identifying the knowledge, attitude, practice and factors that influence respondents to use or recommend the Human Papilloma Virus vaccine.

Research procedure: A total of 308 female respondents will be enrolled into the study. A self administered semi structured questionnaire will be given to respondents and will be collected back after they have been filled.

Expected duration of research and of participant's involvement: Each respondent will spend about 1 hour to complete the questionnaire.

Risks: There are no physical risks associated with participation in this study. However, one might feel uncomfortable with some of the questions being asked; one may decide not to answer any such questions.

Costs to the participants: Your participation in this research will not cost you anything.

Benefits: The results of this study will give insight on the current level of knowledge of nurses on Human Papilloma Virus vaccine and their willingness to uptake and recommend the vaccine.

The outcome of the research will be of benefit not only to the participants, but to the general populace. The outcome of the research may be useful for the design of intervention programmes

to increase the use of Human Papilloma Virus vaccine and probably aid its inclusion in the National Immunization Schedule of Nigeria. Respondents will be enlightened on the importance of Human Papilloma Virus vaccine and from where they can get the vaccine.

Confidentiality: Information collected cannot be linked to you in any way as your name will not be collected or written anywhere. As part of my responsibility, only the researcher, members of the researcher's staff and representatives from the University of Ibadan and/or UCH Ethical Committees may have access to complete copies of the instruments which are stripped of all identifiers. Results of this study may be used for research publications, or presentations at scientific meetings, but your personal results will never be discussed as an individual. No identifying information will be kept on the actual survey form so that nobody will be able to link your name to the survey.

Voluntariness: Your participation in this research is entirely voluntary.

Statement of person obtaining informed consent:

I have fully explained this research to _____ and have given sufficient information, including risks and benefits, to make an informed decision.

DATE: _____ SIGNATURE: _____

NAME: _____

Statement of person giving consent:

Now that the study has been well explained to me and I fully understand the content of the study process, I hereby agree to be part of the study.

DATE: _____ SIGNATURE: _____

NAME: _____

Detailed contact information:

This research has been approved by the Ethics Committee of the University of Ibadan and the Chairman of this Committee can be contacted at Biode Building, Room T10, 2nd Floor, Institute for Advanced Medical Research and Training, College of Medicine, University of Ibadan, Telephone: 08032397993, E-mail: uiuchire@yahoo.com. In addition, if you have any questions about your participation in this research, you can contact the principal investigator, Mrs. OJO in the Department of Health Promotion and Education, Faculty of Public Health, University College Hospital, Ibadan, Telephone: 08056683600, E-mail: oluwakemifajimi@yahoo.com. You

can also contact the supervisor of this research Dr. Oyewole at Department of Health Promotion and Education, Faculty of Public Health, University College Hospital, Ibadan. Telephone: 08023259403.

DEPARTMENT OF HEALTH PROMOTION AND EDUCATION, FACULTY OF
PUBLIC HEALTH COLLEGE OF MEDICINE, UNIVERSITY COLLEGE HOSPITAL,
IBADAN

KNOWLEDGE AND WILLINGNESS TOWARDS THE UPTAKE OF HUMAN
PAPILLOMA VIRUS VACCINE AMONG NURSES IN THE UNIVERSITY
COLLEGE HOSPITAL, IBADAN

Dear Respondent,

This questionnaire is designed strictly for research purpose. It is to assist the researcher assesses the knowledge and willingness towards the uptake of Human Papilloma Virus vaccine among nurses working in UCH.

All information provided by you will be used for the purpose of the research and will be treated with utmost confidence. Your sincere response is needed to make the research work a success.

Thank you.

Date _____

Serial No _____

SECTION A: Socio-demographic Variables

Kindly tick the most appropriate response and fill in the gaps where necessary.

1. Ethnic group 1. Yoruba [] 2. Ibo [] 3. Hausa [] 4. Others []
2. Marital status 1. Single [] 2. Cohabiting [] 3. Married [] 4. Separated []
5. Divorced [] 6. Widow []
3. Age at last birthday (years) _____
4. Religion 1. Christianity [] 2. Islam [] 3. Traditionalist []
5. Highest Educational Qualification 1. RN [] 2. RN [] & RM 3. First Degree []
4. Masters [] 5. PhD [] 6. Others (specify) _____
6. Years of working outside UCH (specify) _____
7. Years of nursing experience (specify) _____
8. Years of working experience in UCH (specify) _____
9. Department (e.g. Surgery, Medicine etc) _____
10. Ward (specify) _____
11. Cadre 1. Nursing Officer II 2. Nursing Officer I 3. Senior Nursing Officer
4. Principal Nursing Officer 5. Chief Nursing Officer 6. Asst Director of Nursing
7. Deputy Director of Nursing
12. Marriage Type 1. Monogamy 2. Polygamy 3. Not married 4. Others (specify) _____

13. Number of children _____
14. Number of pregnancies (including those not carried up to term) _____
15. Annual income (in naira) _____
16. Age at first sexual debut (in years) _____
17. History of sexually transmitted infection 1. Yes [] 2. No []

SECTION B: KNOWLEDGE OF HUMAN PAPILLOMA VIRUS VACCINE

Tick the most appropriate answers. Scoring: T = true, F = false, DK = don't know

SN	Knowledge of Cervical Cancer	T	F	DK	Code	Score
18.	Cervical cancer is a disease in which malignant cells form in the cervix					
19.	Cervical cancer is the 2 nd most common cancer among women worldwide					
20.	Cervical cancer is not one of the preventable cancers					
21.	Cervical cancer is not fatal if it remains undetected and not treated early					
22.	Death from cervical cancer occur more often in black women than in white women					
Knowledge of Causes/Predisposing Factors of Cervical cancer						
23.	Human papillomavirus infection is a necessary factor in the development of cervical cancer					
24.	Smoking and alcohol intake can predispose a woman to cervical cancer					
25.	HIV and STIs do not make a woman susceptible to cervical cancer					
26.	Early sexual debut can put a woman at risk of having cervical cancer					
27.	Multiple sexual partners can put a woman at risk of having cervical cancer					
28.	Exposure to hormonal drugs and hormonal contraceptives does not make a woman susceptible to cervical cancer					
Signs and Symptoms of Cervical Cancer						
29.	Early stage of cervical cancer is asymptomatic					
30.	Abnormal vaginal bleeding is a sign of cervical cancer					
31.	Painful sexual intercourse can also suggest the presence of cervical cancer in a woman					

32.	Mention 2 other signs and symptoms of cervical cancer 1. _____ 2. _____					
Knowledge of Management of Cervical Cancer						
33.	Surgical intervention can be done in the management of cervical cancer					
34.	Chemotherapy is a treatment modality in cervical cancer management					
35.	Radiation is used in the management of advanced cases of cervical cancer					
36.	Surgery, chemotherapy and radiotherapy cannot be combined in the management of severe cervical cancer					
37.	There is no treatment modality for the management of cervical cancer because death is certain					
Knowledge of the Prevention of Cervical Cancer						
38.	Use of condom can be effective in the prevention of cervical cancer					
39.	Adequate nutrition cannot protect a woman from developing cervical cancer					
40.	Immunization can be given to a woman to protect her from cervical cancer					
41.	Health education is very effective in the prevention of cervical cancer					
Knowledge of Cervical Cancer Screening						
42.	Pap smear is a screening test done to identify precancerous and potentially precancerous changes in the cervical cells and tissue					
43.	Cervical cancer screening can help in the reduction of incidence and mortality rate of cervical cancer					
44.	Pap smear should be done how often _____					
45.	Pap smear is not helpful in women less than 25 years					
46.	Pap smear is not helpful in women greater than 60 years					
47.	Pap smear is not useful in women who have had total hysterectomy done					
48.	Colposcopy is a type of screening method available					
49.	Conization is a type of screening method available					
50.	Liquid based cytology is another type of screening method					

51.	Visual inspection with acetic acid is also a type of screening method				
Knowledge of Human Papilloma Virus (HPV) Infection					
52.	Human papillomavirus infection is a sexually transmitted disease				
53.	All the available strains of the HPV can cause cervical cancer				
54.	Any woman who has had the HPV infection will certainly develop cervical cancer				
55.	Nearly all women with invasive cervical cancer have evidence of HPV infection				
56.	HPV is carried in the men's' semen				
Knowledge of Human Papilloma Virus Vaccine					
57.	HPV vaccines are effective against the two strains of HPV virus that cause ~70% of cases of cervical cancer				
58.	HPV vaccine is not recommended for female between age 9-26				
59.	There are two types of approved HPV vaccine, namely 1. 2.				
60.	How many doses of HPV vaccine is required to complete the immunization schedule?				
61.	Cervical cancer screening test is no longer required after being immunized with the HPV vaccine				
62.	HPV vaccines are most effective after the woman have been exposed to HPV infection				

63. Total Score | |

64. Code | |

45 points scale: Poor (1 - 19.9), Fair (20 - 30.9), Good (31 - 45)

SECTION C: ATTITUDE OF NURSES TOWARDS THE USE OF HUMAN PAPILLOMA VIRUS VACCINE

Tick the most appropriate answers

UD = undecided

SN	Attitude of nurses towards HPV vaccine	Yes	No	UD	CODE	SCORE
65.	HPV vaccine is a good and effective preventive measure against cervical cancer therefore i will recommend it to my clients					
66.	HPV vaccine is not as effective against cervical cancer as it is said to be so there is no need for it					
67.	I am comfortable recommending HPV vaccine to my clients					
68.	I will recommend HPV vaccine to my clients if the cost is reduced					
69.	I will recommend HPV vaccine to my client if it is free					
70.	I am willing to go for HPV to prevent cervical cancer					
71.	I will vaccinate my children against cervical cancer					
72.	I will encourage males to also receive HPV vaccine to reduce the incidence of HPV infection					
73.	I do not consider HPV vaccine safe					
74.	I will recommend HPV vaccine to my clients if it is included in Nigerian's immunization schedule					
75.	I believe HPV vaccine will encourage adolescents to engage in risky sexual behaviours					
76.	I do not recommend HPV vaccine because my knowledge on HPV infection and vaccine is poor					
77.	I support that HPV vaccine will eliminate the need for cervical cancer screening					
78.	I will not recommend HPV vaccine to children ages 9—17 years.					

79. Total Score | |

80. Code | |

14 point scale: Negative 1-6.9 Positive 7-14

SECTION D: PRACTICE OF NURSES RELATING TO HUMAN PAPILLOMA VIRUS VACCINE

Tick the most appropriate answers

S/N	Willingness to uptake and recommend HPV Vaccine	YES	NO	CODE	SCORE
81.	I have received the HPV vaccine				
82.	I have had my complete dose of HPV vaccine				
83.	My children have received HPV vaccine				
84.	I counsel my clients/patients on HPV vaccine				
85.	I encourage my clients/patients to go for HPV vaccine				
86.	I have administered HPV vaccine to my clients before				
87.	I health educate my clients on the importance of HPV vaccine				
88.	I counsel sexually active clients to go for cervical cancer screening before being vaccinated				
89.	I educate adolescents on the importance of practicing safe sexual behaviours post vaccination.				
90.	I educate my clients that they do not need to have cervical cancer screening once they have completed their vaccines				
91.	I counsel male to also receive HPV vaccine				
92.	I educate my clients/patients that HPV vaccine is a total protection against cervical cancer				
93.	I give health talks in the community, religious forum, schools etc on the importance of HPV vaccine				
94.	I inform my client on places where the vaccine is available				
95.	I have never talk to anyone on HPV infection and vaccine				

96. Total Score | |

97. Code | |

15 points scale: Poor (1—7.9), Fair (8—9.9), Good (10—15)

SECTION E: FACTORS THAT INFLUENCE WILLINGNESS TO UPTAKE HPV VACCINE

Tick the most appropriate answers

S/N	Factors influencing willingness to uptake HPV vaccine	Yes	No
98.	Potential side effects of the vaccine		
99.	The cost of the vaccine		
100.	Availability of the vaccine		
101.	Location of the facility where the vaccine can be accessed		
102.	The number of doses required to complete the immunization schedule		
103.	Government policy on HPV vaccine		
104.	Issues of parental consent		
105.	Cultural issues on sex education of the adolescent		
106.	Religious acceptance of the vaccine		
107.	Social stigma related to STIs or vaccines against STIs		
108.	Fear that the vaccine will encourage adolescents to engage in risky sexual behaviours		
109.	Reluctance of some healthcare provider to discuss sexual behaviour with adolescents or their parents		
110.	HPV vaccine is not included in childhood vaccine schedule		

SECTION F: FACTORS THAT WILL ENHANCE THE WILLINGNESS TO RECOMMEND HUMAN PAPILLOMA VIRUS VACCINE

Tick the most appropriate answers

SN	Factors that will enhance the recommendation of Human Papilloma Virus vaccine	YES	NO
111.	A reduction in the cost of HPV vaccine will not cause an increase in the level of uptake of the vaccine		
112.	Cervical cancer vaccine services should be provided at the grass root level		
113.	HPV vaccine should be free for all		
114.	HPV vaccine should be included in childhood immunization schedule		
115.	HPV vaccine should be included in UCH staff immunization schedule		
116.	HPV vaccine should be made mandatory for UCH staff		
117.	Cervical cancer vaccine should be made available in the staff clinic		
118.	Time spent in the clinic to receive the vaccine should be reduced		
119.	Incentives should be given to encourage people take the vaccine		
120.	People are likely to take the vaccine if it is approved in religious settings		

Thank you.

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APPENDICES II



INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)

COLLEGE OF MEDICINE, UNIVERSITY OF IBADAN, IBADAN, NIGERIA

Director: Prof. A. Ogunyemi, M.D., M.Sc., FRCGS, FRCR, FRCR (S), FRCR (G), FRCR (M), FRCR (P), FRCR (S), FRCR (T), FRCR (U), FRCR (V), FRCR (W), FRCR (X), FRCR (Y), FRCR (Z), FRCR (AA), FRCR (AB), FRCR (AC), FRCR (AD), FRCR (AE), FRCR (AF), FRCR (AG), FRCR (AH), FRCR (AI), FRCR (AJ), FRCR (AK), FRCR (AL), FRCR (AM), FRCR (AN), FRCR (AO), FRCR (AP), FRCR (AQ), FRCR (AR), FRCR (AS), FRCR (AT), FRCR (AU), FRCR (AV), FRCR (AW), FRCR (AX), FRCR (AY), FRCR (AZ), FRCR (BA), FRCR (BB), FRCR (BC), FRCR (BD), FRCR (BE), FRCR (BF), FRCR (BG), FRCR (BH), FRCR (BI), FRCR (BJ), FRCR (BK), FRCR (BL), FRCR (BM), FRCR (BN), FRCR (BO), FRCR (BP), FRCR (BQ), FRCR (BR), FRCR (BS), FRCR (BT), FRCR (BU), FRCR (BV), FRCR (BW), FRCR (BX), FRCR (BY), FRCR (BZ), FRCR (CA), FRCR (CB), FRCR (CC), FRCR (CD), FRCR (CE), FRCR (CF), FRCR (CG), FRCR (CH), FRCR (CI), FRCR (CJ), FRCR (CK), FRCR (CL), FRCR (CM), FRCR (CN), FRCR (CO), FRCR (CP), FRCR (CQ), FRCR (CR), FRCR (CS), FRCR (CT), FRCR (CU), FRCR (CV), FRCR (CW), FRCR (CX), FRCR 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(YB), FRCR (YC), FRCR (YD), FRCR (YE), FRCR (YF), FRCR (YG), FRCR (YH), FRCR (YI), FRCR (YJ), FRCR (YK), FRCR (YL), FRCR (YM), FRCR (YN), FRCR (YO), FRCR (YP), FRCR (YQ), FRCR (YR), FRCR (YS), FRCR (YT), FRCR (YU), FRCR (YV), FRCR (YW), FRCR (YX), FRCR (YZ), FRCR (ZA), FRCR (ZB), FRCR (ZC), FRCR (ZD), FRCR (ZE), FRCR (ZF), FRCR (ZG), FRCR (ZH), FRCR (ZI), FRCR (ZJ), FRCR (ZK), FRCR (ZL), FRCR (ZM), FRCR (ZN), FRCR (ZO), FRCR (ZP), FRCR (ZQ), FRCR (ZR), FRCR (ZS), FRCR (ZT), FRCR (ZU), FRCR (ZV), FRCR (ZW), FRCR (ZX), FRCR (ZY), FRCR (ZZ)



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LETTER OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

This University and WHO agrees to sponsor Carvedilol Clinical Trial on the basis of the following information:

UACH Ethics Committee approval number: UACH/ETH/0079

Name of Principal Investigator: (Dr. A. Ogunyemi)

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

Date of review of initial application: (20/02/14)

Date of review when final determination on ethical approval was made: N/A

I (The undersigned) confirm that the research described in the submitted proposal, the consent forms, and other participant information materials have been reviewed and given full approval by the UACH Ethics Committee.

This approval date from 18/02/2014 to 17/02/2015. It is to be used in starting the research. Please inform the UACH Ethics Committee of any change of approval date accordingly. Note that no participant access to activity related to this research may be initiated outside of these dates. All data generated from the study must carry the UACH EC approval number and duration of UACH EC approval of the study. It is expected that you will report as well as the annual report for the project to the UACH EC only in order to obtain renewal of your approval to avoid duplication of your research.

The Medical Code for Human Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the code of ethics including ensuring that all information generated from the study is reported to the UACH EC. No changes are permitted to be made without the approval of the UACH EC except in exceptional circumstances. The UACH EC reserves the right to suspend or withdraw your approval if you do not comply with the conditions of your approval.



Professor A. Ogunyemi
Director, IAMRAT
Chairman, UACH Ethics Committee

- Drug and Cancer Research Unit
- Environmental Sciences & Technology
- Genetics & Cancer Research
- Health Services Research
- Malaria Research
- Pharmaceutical Research
- Reproductive Health
- Research & Development of Research Services
- Neurodegenerative Diseases
- Palliative Care
- UACH