

**KNOWLEDGE AND WILLINGNESS OF NURSES TO PROMOTE THE  
USE OF HPV VACCINE AMONG ADOLESCENTS ATTENDING  
STATE HOSPITALS IN IBADAN METROPOLIS**

**BY**

**DAIRO, GRACE OLURONKE**  
**B.Sc MICROBIOLOGY (OOU)**  
**MATRIC NO: 161080**

**A PROJECT SUBMITTED TO THE DEPARTMENT OF EPIDEMIOLOGY AND  
MEDICAL STATISTICS, FACULTY OF PUBLIC HEALTH, COLLEGE OF  
MEDICINE, UNIVERSITY OF IBADAN IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF M.Sc EPIDEMIOLOGY**

**AUGUST, 2012**

## ABSTRACT

Cervical cancer which is caused by Human papillomavirus (HPV) is one of the leading causes of morbidity and mortality amongst the gynecological cancers worldwide, especially in developing countries. However, HPV is one of the preventable cancers in women and its early detection in the pre-cancerous stage has been the main stay of prevention but many women do not avail the opportunity. The development of HPV vaccine and early administration is a new modality in the control of this disease. Nigeria is on the path to adopting the HPV vaccine and there's need to identify willingness of implementers of immunization one of which are nurses to promote HPV vaccine in the country. This study was carried out to determine knowledge and willingness of nurses to promote the use of HPV vaccine among adolescents attending State hospitals in Ibadan metropolis.

A descriptive cross-sectional study involving 370 nurses selected proportionately from four state hospitals in Ibadan metropolis using simple random sampling where the assigned number was selected from a list of nurses in the facilities was carried out. A pretested semi-structured questionnaire which sought information on socio-demographic characteristics, knowledge on cervical cancer, HPV and HPV vaccine, willingness and efficacy of nurses to promote HPV vaccine was used. Data was analyzed using descriptive statistics, Chi-square and logistic regression with level of significance set at 5%

The mean age of the respondents was 41.9 years  $\pm$  10.4. Few of the respondents had good knowledge on HPV (13.5%) and HPV vaccine (10.0%) and more than half (68.4%) of the respondents had good attitude towards use of the vaccine. Out of all the respondents, about half were very confident in promoting the use of the vaccine (45.4%). Fifty-one percent of the respondents were willing to administer the vaccine in order to prevent the occurrence of cervical cancer and those that were not willing to promote the vaccine said it was due to inadequate knowledge about the vaccine. Most of the respondents that supported the integration of the vaccine into community programs (31.4%) wanted it so as to create public awareness. Major predictors of willingness were nurses' efficacy to counsel adolescents, nurses being trained on HPV vaccine and regular supply of vaccine to the health facilities. Nurses who were very confident in counseling adolescents were 9.4 times less likely to be willing to promote vaccine

use (OR=0.106, CI=0.038-0.291). Being trained on HPV vaccine and regular supply of vaccine to health centers were 3.1 and 1.7 times respectively less likely and more likely reasons for respondents to be willing to promote the use of the vaccine (OR=0.324, CI=0.133-0.791; OR=1.791, CI=1.022-3.136)

There was poor knowledge about HPV vaccine among nurses in the state hospitals but most of them were willing to promote its use among adolescent. However, to promote the delivery of the vaccine, government should encourage training of health personnel on the vaccine, adequate provision of the vaccine and proper public awareness.

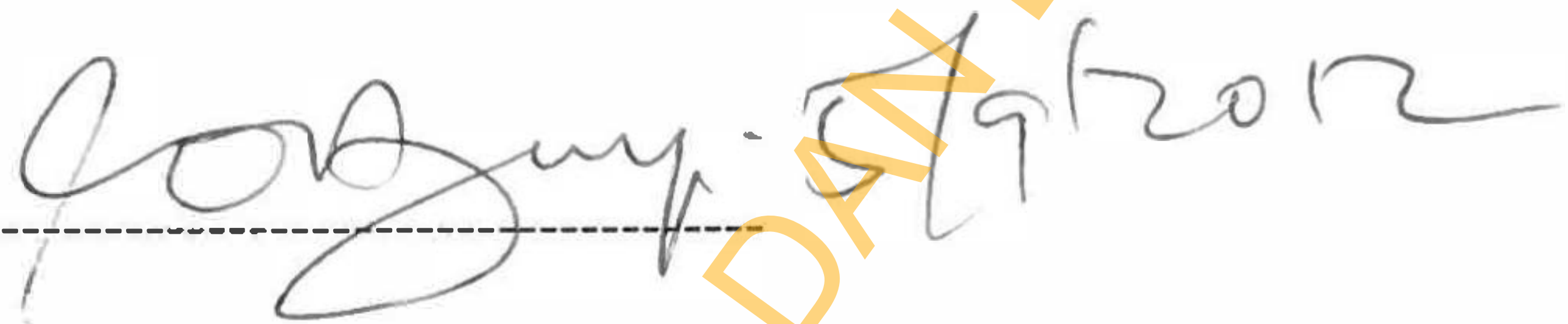
**Key words:** cervical cancer, Human Papillomavirus (HPV), HPV vaccine, nurses' willingness, nurses' self-efficacy

**Word count 476**

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## CERTIFICATION

I certify that this project was carried out by DAIRO, GRACE OLURONKE in the Department of Epidemiology and Medical Statistics, College of Medicine, University of Ibadan.

A handwritten signature in black ink, appearing to read 'Ikeoluwapo O. Ajayi', is written over a horizontal dashed line. The signature is cursive and includes a date '5/9/2012' written to the right of the main name.

Supervisor's signature

DR IKEOLUWAPO O. AJAYI

M.B.B.S (Ib), F.M.C.G.P. (Nig.), F.W.A.C.P.(GP).

M.C.L.S.C. (Canada), M.P.H. (Ib.), PhD. (Ib)

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## DEDICATION

This dissertation is dedicated to my heavenly Father, the Almighty God, the Ancient of Days; I am that I am the Faithful One who has made all things beautiful in His own time and my Helper, the Holy Spirit.

I cannot but also mention my wonderful father Mr S.O Dairo for the financial, moral and educational support you have given to me, I will forever be grateful.

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## ACKNOWLEDGEMENTS

I give all glory to God Almighty, the merciful and gracious pillar of my life for His favor and shield upon me and thank you Holy Spirit for your ever abiding presence from the beginning of this dissertation to its completion.

I am very grateful to my supervisor, Dr. Ikeoluwapo O. Ajayi for her motherly assistance, constructive criticism and professional mentorship during the conduct of this dissertation.

I am grateful to the entire lecturers in the Department of Epidemiology, Medical Statistics and Environmental Health for the time they have taken to impart knowledge and principles to me in various ways. I will not forget the likes of Dr. Fawole, Dr. Adedokun, Dr. Dairo, Dr. Okareh just to mention a few. Members of the non academic staff of the Department of EMSEH like Mrs. Franklin and Mr. Olusanya are also not left out.

This section will not be complete without acknowledging and appreciating my very own mother, Mrs. Olajumoke Dairo, you are the very best and you will always be loved and also my people (siblings), Sister Tayo, Sister Bee, Kunleski, Sister Foluke, Bimpe and Andrew and also to my nephews Modupe, Fiyinfoluwa and Feyikunmi and my nieces Ojuolape, Modesola, Damilola, Bimbola(Excel) and those that are yet to be born are also acknowledged. I also appreciate Daddy and Mummy Akeredolu for making my stay in Ibadan a smooth one, thank you.

I also use this opportunity to appreciate my friends and my colleagues in the course of this programme, Bimbola Akeredolu, Damilola Komolafe, Yemisi Balogun, Sanmi Ewuyemi, Tope Aremu, Temilolu Kumapayi, Folake Olarinoeye (room mate), Joseph Uwazie, Onaops Akosile, Ezinne, Lydia Fakorede, Franklin Chibuike, Deji Kilanko, Folajinmi Ogunsina, Jide Adekunle, Bankole Olowo, Emem Etukiren, Bunmi Iwasanmi, Dr. Tope Ogunniyan, Dr. Yinka Ilesanni, and those I will not be able to mention, you are all part of my success story.

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## LIST OF ABBREVIATIONS

HPV:	Human Papilloma Virus
WHO:	World Health Organization
CNO:	Chief Nursing Officer
PNO:	Principal Nursing Officer
SNO:	Senior Nursing Officer
NO:	Nursing Officer
ACNO:	Assistant Chief Nursing Officer

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 BACKGROUND

Cancer is a term used for malignant uncontrolled growth of cells and tissues. Cancer begins with irreparable damage to one or more genes controlling cellular growth, proliferation and apoptosis in a single cell which results in further genetic damage leading to abnormal cellular proliferation and evasion of the body's immune system and the process by which a normal cell becomes cancerous takes years (Nnodu *et al*, 2009). Cancer of cervix is named after the part of the body where it starts, and it is known as cervical cancer even if it spreads to other body parts later. The cervix is the lower, narrow end of the uterus. The cervix connects the vagina (the birth canal) to the upper part of the uterus. The uterus (or womb) is where a baby grows when a woman is pregnant (CDC, 2010). Certain factors are associated with the etiology of Cervical Cancer such as early age at first marriage and first intercourse, multiple sexual partner, and use of birth contraceptives for a long time. Smoking is also a significant lifestyle heightening cancer of the cervix. Poor menstrual hygiene, frequent deliveries and abortions are also risk factors (Katahoire *et al*, 2009)

Human Papillomavirus (HPV) infection is a major cause of cervical tumors with 99.7% of cancers worldwide containing HPV DNA (Kerr *et al*). HPV infection is the most common viral infection of the lower reproductive tract. Approximately 40 different HPV genotypes infect the genital area of both male and female. These HPV types are classified into 'low' and 'high-risk' genotypes. The etiological agent HPV is a common virus that is passed from one person to another during sex. Two high-risk (HR) genotypes, HPV 16 and 18 are the most common subtypes responsible for 70% cervical carcinoma while types 6 and 11 cause 90% of genital warts cases (Lowndes, 2005 and Peckham, 1995). HPV infection usually resolves spontaneously in 9-12 months, but may persist in a minority of individuals with the subsequent development of pre-cancerous cervical lesions. If untreated these may progress to cervical cancer over a period of 10-30 years.

Potentially dangerous changes in the cervix are usually spotted before cancer emerges due to implementation of national screening programmes, like Pap smear test. The procedure for Pap smear test involves gently scraping cells from the cervix onto a glass slide and sending it to a laboratory where technicians have been trained to analyze cell structure (Kerr *et al*, 2009). Pap

smear test was developed in the 1940s and named after inventor Dr. George Papanicolaou. Pap smear screening— when necessary— followed by timely treatment has achieved impressive results in reducing cervical cancer (Esa *et al*, 1987). HPV vaccines are in development and have strong potential to prevent primary infection and progressive disease. Gardasil and Cervarix are prophylactic vaccines for the primary prevention of HPV types 16 and 18 (implicated in 70 per cent of cervical cancers). Additionally, Gardasil protects against HPV types 6 and 11 known to cause genital warts which are non-lethal but painful and hard to treat (Schiller, 2008, Fisher, 2008 and Garland, 2010). These vaccines generate a relatively robust immune response against targeted HPV types in 15-25 year old females who are pre-coitarchal and/or DNA and serologically negative for the targeted HPV types (Frazer, 2010 and Dillner, 2010). Gardasil is 44% effective in women already exposed to HPV 16 or 18, while it is 98% effective in women with no prior exposure (Cohen, 2007).

These vaccines are to be administered before sexual initiation—meaning young adolescent girls are the appropriate target group for HPV vaccination. Adolescents have issues in terms of utilization of health facilities for any condition and also in terms of vaccines related to STIs which requires parental consent, other issues are reaching girls in schools, motivation of school teachers and principals and obtaining endorsement by faith leaders, community elders which creates a challenge to health workers. Women who suffer cervical cancer in Sub-Saharan Africa present with disease advanced far beyond the capacity of surgery or other treatment modalities to offer cure.

The delivery of HPV vaccination programs face significant challenges, requiring innovative and multidisciplinary approaches to communication, strengthening of local infrastructure and service delivery. HPV vaccines have several features that require special consideration in that their use requires new approaches to program delivery; the target population is different to that usually addressed by national immunization programs; multiple stakeholders need to be involved in social communication and the best combination of vaccination and screening for cervical cancers remains unclear at the present time (Kerr *et al*, 2009) From Bandura's theory of self-efficacy, Self-efficacy is defined as one's ability to succeed in specific situations in which it plays a major role in how one approaches goals, tasks and challenges (Luszczynska *et al*, 2005). This concept of self-efficacy when applied to health workers reveals how they can personally perform well in their duties and

how they are more likely to view difficult tasks. In other words, self-efficacy is how competent health workers are in addressing any issue that may arise as a result of giving this vaccine. Therefore, Nurses being the largest group of health workers have an important role in the promotion of HPV vaccine. Nurses are more involved in Immunization programs, so they are to provide health education for the public (Makwe *et al*, 2011); hence their knowledge about the HPV vaccine is greatly needed for the prevention against cervical cancer.

## 1.2 PROBLEM STATEMENT

Cancer of the cervix uteri is the second most common cancer among women worldwide, with an estimated 529,409 new cases and 274,883 deaths in 2008. About 86% of the cases occur in developing countries, representing 13% of female cancer death (WHO, 2010). Worldwide, mortality rates of cervical cancer are substantially lower than incidence with a ratio of mortality to incidence to 52% (Ferlay *et al*, 2008) Cervical cancer contributes over 2.7 million years of life lost among women between the ages of 25 and 64 worldwide, some 2.4 million of which occur in developing areas and only 0.3 million in developed countries. Around the world a woman dies of cervical cancer every 2 minutes (Kerr *et al*, 2009). Prevalence of HPV in Nigeria is 23.7% (WHO, 2010).

Some women do not know the importance of a smear test, they find them embarrassing or even traumatic, and this may explain why screening fails to reach everyone who is at risk (Kerr *et al*, 2009). Pap smears are either not available in primary care centers that most people visit, or they are offered for a fee to younger, relatively low risk women. Some challenges bringing about high incidence of cervical cancer are inadequate laboratory skilled workers, poor screening/preventive practices, late presentation of cases, expensive treatment.

## 1.3 JUSTIFICATION

Human Papilloma Virus (HPV) vaccine has undergone successful trials and has been approved for use for the primary prevention of cervical cancer. To maximize effectiveness, the vaccine needs to be given to girls before they are sexually active. The target population is females aged 9-26 years. One of the main reasons for the huge difference in the incidence and mortality of cervical cancer between developed and developing countries is the lack of awareness among the population, health care providers, and policy makers (Adewole, 2007) Awareness about the vaccine would reduce

incidence of cervical cancer in women. Hence, there's a need to assess health care provider's knowledge one of which are nurses about the vaccine. Nurses who are involved in preventive strategies need to know how and why the vaccine is important, and understand the vaccine's limitations, including that it does not protect against all HPV types linked to cervical cancer. Thus, the transmission of information and acquisition of knowledge on the etiology and how the disease can be prevented could reduce exposure to known risk factors.

#### **1.4 RESEARCH QUESTIONS**

1. How much do the nurses know about the HPV vaccine?
2. How willing are they in promoting the use of the vaccine among adolescents?
3. What are the factors influencing their knowledge about the HPV vaccine?
4. What are the factors influencing their willingness to promote the vaccine?

#### **1.5 BROAD OBJECTIVE**

This study aims at determining knowledge and willingness of nurses in state hospitals to promote the use of HPV vaccine among adolescents in Ibadan metropolis.

#### **1.6 SPECIFIC OBJECTIVES**

1. To determine the level of knowledge on HPV and HPV vaccine among nurses
2. To assess nurses' willingness to promote HPV vaccine among adolescents
3. To identify factors influencing willingness of nurses to promote HPV vaccine
4. To determine nurses' efficacy to counsel adolescents to obtain HPV vaccine.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Morbid and Mortality from Cervical Cancer

There is a common understanding that cancer is a problem and it brings about financial and emotional burden on families and communities, and often fatal (a “death sentence”). Cancer of cervix is named after the part of the body where it starts, and it is known as cervical cancer even if it spreads to other body parts later (CDC, 2010). Cervical cancer is the second most common cancer among women worldwide (Katahoire *et al*, 2008) and is one of the leading cause of morbidity and mortality mostly in developing countries (Ali *et al*, 2010) Of the nearly 500,000 new cases that occur annually, 83% are in the developing world, as are 85% of the 274,000 deaths associated with cervical cancer (Ferlay *et al*, 2008).

In today's world, cervical cancer is primarily a disease found in low income countries. High income countries have successfully reduced the cervical cancer burden by over 70 percent using organized cytological based pap smears (Ali *et al*, 2010). The South Asian region harbors one fourth of the burden of cervical cancer. In India alone, there are an estimated 132,000 new cases and 74,000 deaths each year. Most women with cervical cancer in these countries present with advanced disease, resulting in low cure rates (Laikangbam *et al*, 2007). In Nigeria, the estimated incidence rate of cervical cancer is 25 per 100,000 women and about 8000 new cases of cervical cancer are diagnosed in the country each year (Adewole *et al*, 2005) There is a high burden of cervical cancer with mean age of patients of 52.4 years within the Federal Capital Territory, (FCT) (Nnodu *et al*, 2010). From a study conducted in University of Lagos between 2005 and 2009, cervical cancer had the second highest percentage of 7.9% (Awodele *et al*, 2011)

#### 2.2 Risk factors and symptoms of cervical cancer

Transmission of the virus is predominantly by sexual contact (penetrative or non-penetrative); other routes have lesser significance (Winer *et al*, 2003 and Bosch *et al*, 2006). Other factors that modify the risk for infection include Human Immunodeficiency Virus (HIV), multiparity, long term use of oral contraceptive pills, other sexually-transmitted infections like Chlamydia spp, and Herpes simplex virus (Bosch *et al*, 2006), cigarette smoking which directly damages the genetic material of cervical cells resulting in the development of cervical cancer (Haverkos *et al*, 2010), early age at

coitus, poor menstrual hygiene and intercourse during menstruation. Most common presenting symptoms of cervical cancer includes lower abdominal pain, vaginal bleeding, fever, menstrual problems, weight loss, itching, swelling of cervix, post-coital bleeding, anemia (Katahoire *et al*, 2008)

### **2.3 Human Papilloma Virus (HPV) infection - Epidemiology**

Since the 1970's it has been known that one of the causes of cervical cancer is through infection with HPV (McIntyre, 2005). An HPV type is defined as a genome when the L1 gene sequence is at least 10% different from any other type, and each type is identified by a number based on the order of their discovery (Bernard *et al.*) There are approximately one hundred different genotypes of HPV (Peckham *et al*). Forty of these infect the genitalia, and fifteen put women at a high risk of cervical cancer (Peckham, 1995 and Cavalli, 1997). HPV serotypes are divided into High Risk (HR) And Low Risk (LR). HR-HPV types dominated by HPV 16 and 18 with their close relatives consisting of HPV 31,33,35,39,45,51,52,56,58,59 and 66 are the main cause of cervical cancer globally (IARC, 2007) whereas the LR types include HPV 6,11,40,42,43,44 and 54 where HPV 6 and 11 cause 100% of genital warts (Clifford, 2005).

The distribution of HPV types varies with different geographical regions, for instance epidemiological studies have shown that compared to Europe where HPV 16 and 18 are common (Tristam *et al*, 2007), HPV positive women in Nigeria were significantly less likely to be infected with HPV 16 but more likely to be infected with other high and low risk HPV types in particular HPV 35, and also HPV 45, 52, 56 and 58 (Clifford, 2005). HPV types 45 and 31 are prevalent, respectively, in sub-Saharan Africa and Central/South America (Graham and Mishra, 2011) In the UK and many other countries, HPV-16 and 18 are the most common subtypes associated with cervical carcinoma and are believed to be implicated in the aetiology of 70% of malignancies (Lowndes, 2005 and Peckham, 1995). In a study that was conducted in Ibadan, Nigeria, HPV types 16 and 35 were the most common HR types followed by HPV 31, 58 and 56 also LR HPV type 42 was also common (Thomas *et al*). HPV distribution in Africa showed that HPV 16 accounted for 50.2% of samples, HPV 18 for 14.1% and HPV 45 for 7.9% (Clifford, 2003)

## 2.4 Who, where, when, why

Human Papilloma virus (HPV) is one of the most common sexually transmitted infections (STIs). HPV infection is particularly common in the first few years following sexual contact with estimated prevalence rates of 25-40% in women up to 20 years of age and 10% in women above 40 years (Tristam *et al*, 2007) In most areas, HPV prevalence peaks before the age of 25, reflecting the fact that women tend to become infected with HPV soon after they become sexually active (Moscicki, 2005), thus it is necessary to protect people against HPV before they are sexually active.

## 2.5 Management/Prevention of cervical cancer

Cervical cancer is one of the most preventable of all cancers through primary and secondary prevention namely prophylactic Human Papillomavirus (HPV) vaccination and cervical screening respectively. Cervical cancer is generally marked by a long latency period, during which lesions progress through identifiable stages to invasive growth. Secondary prevention involves screening of asymptomatic women for detection, triage, management and monitoring of precancerous abnormal cells and atypical squamous cells of undisclosed significance (ASCUS). Screening methods include conventional cytology (Papanicolaou or 'Pap' smears, microscope examination of slide-mounted cervical cell samples) which looks for pre-cancers, cell changes on the cervix that can be treated so as to prevent cervical cancer or find it early, Liquid-Based Cytology (LBC), Visual Inspection with Lugol's Iodine (VILI), and more recently HPV DNA tests for triage of women with ambiguous cytology to colposcopy or for surveillance of women older than 30 years for the presence of high-risk HPV DNA (Sankaranarayanan 2005 and ASCCP, 2009), Visual Inspection with Acetic Acid (VIA) involves swabbing the cervix with an acetic acid (vinegar) solution and visual examination by a trained health provider (Kerr *et al*, 2009)

## 2.6 HPV Prevention

HPV infection is asymptomatic that is without symptoms and has no cure. HPV infection usually clears within a few months and about 90% of infections clear within two years. Persistence of infection beyond 12 months is associated with an increased risk of cancer. It is estimated that without secondary prevention, cervical cancer develops in only about 1% of all women who acquire an HPV infection (Kitchener *et al*) Introduction of HPV vaccination, sexual abstinence, and limited number of sexual partners could effectively reduce the burden of cervical cancer; also male

circumcision and use of condoms have shown a significant protective effect against HPV transmission and may offer an alternative preventive strategy (WHO, 2010)

## 2.7 HPV vaccines

Since 2006, Two vaccines—Merck's Gardasil and GlaxoSmithKline's Cervarix—have been tested and proven to be at least 90 percent effective in safely preventing infection with HPV types 16 and 18, which account for about 70 percent of cervical cancer cases (Cohen, 2007). The HPV vaccines contain VLPs (virus like particles) produced from the major capsid protein L1 of each type using recombinant DNA technology, the vaccines contain no viral DNA and are not live/attenuated viruses (Banura, 2009). One of the vaccine, Gardasil, a quadrivalent HPV 6/11/16/18 is delivered by intramuscular injection as a 0.5ml dose in a three (3) shot immunization protocol at 0, 2 and 6 months. The other vaccine is Cervarix a bivalent HPV 16/18 vaccine which is also delivered by intramuscular injection in a three (3) shot immunization protocol at 0, 1 and 6 months as a 0.5ml dose. (Banura, 2009).

**2.8 Side effects of HPV vaccine:** Reported adverse effects of the vaccine have been relatively minor, mild irritation, redness of injection site accompanied with pain and itching being those most commonly reported. The vaccine does not affect girls' ability to get pregnant nor have healthy babies in the future (Katahoire *et al*, 2008)

## 2.9 Who and when to vaccinate

The currently approved HPV vaccine is given only to girls primarily because they are mostly affected by cervical cancer. The vaccines were launched in Nigeria in September 2008 (Makwe *et al*, 2011) and are best administered prior to exposure to the virus, ideally during preadolescence (9–13 years of age) (WHO, 2009). The vaccine is not recommended for females who are pregnant or less than 9 years of age (Graham and Mishra, 2011). If a woman becomes pregnant during the vaccination series, remaining doses should be delayed until after completion of the pregnancy. Men play an important role in transmitting HPV, as they do in all STIs, which suggest that immunizing males may be important for creating herd immunity and reducing the incidence of cervical cancer, even though cervical cancer affects only women (Cohen, 2007)

## 2.10 HPV vaccines and fear

The availability of HPV vaccines in developing countries is particularly hampered by high vaccine costs, bottlenecks of technology transfer for developing cheaper subsequent entry vaccines, low acceptability of vaccines against STI for pre-adolescents, and the problems of integrating HPV vaccines into the formularies of country EPIs (Graham and Mishra, 2011). However, concerns have been expressed among parents and wards regarding issues of vaccine safety in general, adverse effects following immunization, and the use of untrained vaccinators in the communities. Hence, there's a need for reassurance of parents that the vaccine is safe and that the girls are not being used as guinea pigs.

Religious groups in the developing world are likely to view HPV vaccination with caution and some conservative groups may reject the vaccine outright. A major concern is the potential that it would amount to a license to have sex and undermine the abstinence movement. Suspicions of the West are considerable—in 2003, opinion leaders in Kano, Nigeria shut down an effort to immunize children against polio amidst rumors that the vaccine would result in sterilization or that it contained HIV (Cohen, 2007) Furthermore, the need for information regarding cervical cancer, the HPV vaccine, its safety, side effects, and where HPV vaccination has been carried out previously should also be emphasized (Katahoire *et al*, 2008).

## 2.11 Effective delivery ways of HPV vaccine

The delivery of vaccines in developing countries faces a wide range of socio-technical challenges that include lack of institutional capacity for monitoring of pre-market vaccine quality and safety and post-market surveillance for adverse events following immunization (AEFI), cold chain difficulties in vaccine delivery to populations in remote rural areas, risk of infection during needle administration, and fear of needles (Erickson *et al.*) In a developing country like Nigeria, HPV vaccines are not available through national immunization programs due to the high cost of the vaccine where limited health budgets must address multiple issues. The high vaccine cost can be linked to the monopoly pricing power of vaccine manufacturers seeking to recover high development costs (Graham and Mishra, 2011).

The impact of a new vaccine like HPV vaccine depends on whether it is introduced in campaign mode, integrated into a routine vaccination program or other health services such as cancer prevention and control or specifically delivered to targeted groups. This can result in improved coverage of both routine and new vaccines and also improved general immunization safety (Cabezas 1995; Opstelten 2001; Cooley 2004; Cui 2009). Integration provides new opportunities for ensuring access to the new vaccine, it is likely to be less costly, is convenient, and continuity with other programmes is beneficial. There is evidence that the training associated with the introduction of new vaccines – especially on-the-job training - tends to be associated with improved vaccine coverage and better overall quality of service (Robinson 2001; Ayaya 2007; Milstien 2007; Wang 2007; Balinska 2009; Kumar 2009).

WHO recommends that routine HPV vaccination should be included in national immunization programmes, provided that prevention of cervical cancer or other HPV-related diseases, or both, constitutes a public health priority; vaccine introduction is programmatically feasible; sustainable financing can be secured; and the cost effectiveness of vaccination strategies in the country or region is considered (HPV vaccine, 2009) With respect to developing countries, where there may be no facilities for well-child health care, WHO recommends evaluation of the immune response to vaccine at school entry (when contact with girls would be much easier than in later years) and in infancy (as part of the routine immunization schedule), and evaluation of simultaneous administration of HPV vaccine with these routine vaccines (WHO, 2005)

In Nigeria, all three levels of government (Federal, State and Local) are important partners, committed to the formulation of strategies and support for the implementation of an effective immunization program. In pursuit of national interests and priorities, the government provides vaccines and immunization services free and some at reduced prices to all eligible populations, through functional PHC centers government and private health facilities. Education and effective communication is crucial in achieving successful immunization programs (Bello *et al.* 2011). It has been recognized that mass immunization involving rural areas (populated by approximately 70% of people) may be cost-effective in the long term. Monitoring and supervision should be a major component of immunization service delivery and appropriate training of health personnel. It is

essential to educate the community about immunization and the HPV vaccine about the importance of preventing cervical cancer and the best way to reach target groups for the vaccine.

### **2.12 Awareness and Knowledge on HPV vaccine among health workers**

Underutilization of cervical cancer prevention services by women in the high-risk age group of 30–60 years can be attributed to health service factors (such as lack of awareness of health professionals about the screening test and its guidelines, poor availability, poor accessibility, and poor quality of care provided), women's lack of information, and cultural and behavioral barriers. Awareness on HPV is relatively high among healthcare providers in the industrialized world – and growing in the developing world. For women in developing countries, a major source of information for this new vaccine will be their physician or gynaecologist. Successful education of the general populace will require continued education about the preventable nature of carcinoma of the cervix, the need for continued screening despite the vaccine, cost of the vaccine and details of vaccine efficacy and side effects (Bello *et al*, 2011)

Studies, mostly from developed countries, have shown that the knowledge of HPV infection and vaccines and the acceptability of these vaccines among health care providers and the general public vary from low to high (Jain, 2007., Dursun, 2009., Christian, 2009., Klug, 2008., Riedesel, 2005., Daley, 2006., Songthap, 2009., Kwan, 2009., Jones, 2008., Tozzi, 2009) However, these studies suggest that the health care workers have insufficient information to guide and counsel parents and adolescents. So to enable proper dissemination of facts about the HPV vaccine, workshops, conferences and continued advocacy by public health physicians with the assistance of donor agencies and the WHO will be crucial (Sherris *et al*, 2006)

### **2.13 The Role of Nurses in the delivery of HPV vaccine**

Nurses function as advisors in health care institutions, and, in most cultures, they are considered the primary and most trusted source of health and vaccine information by members of the general public and they relate directly with patients (Waisbord, 2005., Streefland, 2003., CDC, 2002., Davis, 2004). Nurses should be involved in delivering or discussing HPV vaccine through immunization services, adolescent health centers, women's health centers, cancer care centers, school health programs. They need to know how and why the vaccine is important, and understand

the vaccine's limitations, including that it does not protect against all HPV types linked to cervical cancer. Nurses are a key audience for HPV vaccine related communication and training for several reasons. Nurses' endorsement will be a key determinant of HPV vaccine acceptance by parents and potential vaccine recipients (Zimet, 2005) Therefore, nurses will need training, education, and communication tools to facilitate effective discussions with their patients, such as simple talking points and visual aids. Parents need reassurance regarding the perceived risks versus benefits of the vaccine from health care providers (Sherris *et al*, 2006).

General self-efficacy assesses a broad and stable sense of personal competence to deal effectively with a variety of stressful situations. Beliefs in personal efficacy affect life choices, level of motivation, quality of functioning, resilience to adversity and vulnerability to stress and depression. These individuals set themselves challenging goals and maintain strong commitment to them. They heighten and sustain their efforts in the face of failure. They quickly recover their sense of efficacy after failures or setbacks. They attribute failure to insufficient effort or deficient knowledge and skills which are acquirable. They approach threatening situations with assurance that they can exercise control over them (Bandura, 1994). According to Bandura, self-efficacy makes a difference in how people feel, think, and act (Bandura, 1997). A strong sense of efficacy will enhance nurses' accomplishment in the promotion of HPV vaccine and personal well-being in many ways. Hence, there is a need for the nurses to play a more active role in publicizing, educating and informing patients on HPV and potential value of HPV vaccination (Walsh *et al*, 2008).



## CHAPTER THREE

### METHODOLOGY

#### 3.1 Study Area

There are 11 local governments in Ibadan metropolitan area of Oyo State consisting of 5 urban local governments in the city and six semi-urban local governments in the fewer cities. From the 2006 census that was conducted Ibadan urban has a population of 1,338,659 with a growth rate of 0.57 while Ibadan rural has a population of 1,211,934 with a growth rate of 4.7% (Federal Office of Statistics). The total land area of the eleven local government of the Ibadan metropolitan area is 3,123km<sup>2</sup> out of which about 15% falls in Urban Ibadan while the remaining 85% is in rural Ibadan. These LGAs are grouped into 2:

Ibadan urban/municipal: this comprises of Ibadan North, Ibadan North East, Ibadan North West, Ibadan South East, and Ibadan South West

Ibadan rural: this comprises of Akinyele, Egbeda, Ido, Lagelu, Ona Ara and Oluyole.

The study will be carried out in four (4) major State Hospitals in Ibadan urban area and they are

1. Adeoyo Maternity Teaching Hospital (AMTH), Yemetu located under Ibadan North LGA
2. Ring Road State Hospital, Ring road, located under Ibadan South West
3. Jericho Specialist Hospital, Jericho, located under Ibadan North West
4. Jericho Nursing Home, Jericho, located under Ibadan North West

Name of Hospital	Number of nurses
Adeoyo maternity Teachinh Hospital	250
Ring road State Hospital	160
Jericho Nursing Home	56
Jericho Specialist Hospital	56

These clinics provide a wide range of health services to both male and female of all ages. They are secondary health care centers that provides voluntary HIV counseling and testing, family planning counseling and services, treatment for sexually transmitted infections, condom promotion, antenatal

and post-natal care, post-abortion care, prevention of HIV from mother to child services, maternity and theatre facilities, general out-patient treatment for other common minor ailments.

The reasons why the study was conducted in State Hospitals were because these hospitals cater for a wide range of people. In urban setting people would rather seek secondary level of care before thinking of tertiary health care centers and also because these hospitals are owned by the state government, the health care services are at a subsidized rate thereby attracting a lot of people.

### 3.2 Study Design

The study was a descriptive cross-sectional survey

### 3.3 Study Population

The study populations were nurses. Nurses are the largest group of health workers and have a day to day dealing with patients compared to other health professionals and since they are involved in Immunization programs, their knowledge and services are greatly needed in HPV vaccine immunization against cervical cancer.

#### Inclusion criteria:

1. Nurses who gave informed consent
2. Nurses that were present at the time the study was carried out

#### Exclusion criteria:

1. Nurses who did not give informed consent
2. Nurses that were absent during the period of the study.

### 3.4 SAMPLE SIZE DETERMINATION

The minimum sample size was obtained from the formula for estimating single proportion given below:

$$N = \frac{Z^2 pq}{d^2} \text{ (Leslie Kish formula)}$$

Where n = minimum sample size

Z = Standard normal deviate usually set at 1.96 which corresponds to the 95% confidence level.

p = Proportion of nurses estimated to support vaccination of pre-adolescent girls was 67.4% (Makwe et al, 2011)

$$q = 1 - P (1 - 0.674)$$

d = precision for the study which was set at 0.05

$$N = (1.96)^2 \times 0.674 \times 0.326 \div 0.05^2 = 337, \text{ with a non response rate of } 10\%.$$

Sample Size/1-non response rate.  $337 \div (1 - 0.1) = 370$ . Therefore a minimum of 370 participants was required for the study.

### 3.5 SAMPLING

The record of number of nurses was obtained from the administrative section of each hospital

1. Adeoyo Maternity Teaching Hospital (A) - 250
2. Ring Road State Hospital (B) - 160
3. Jericho Nursing Home (C) - 56
4. Jericho Specialist Hospital (D) - 56

Proportionate Sampling was used to know the number of nurses to be selected from each hospital

i.e no of nurses in A × sample size

Total no of nurses in A, B, C, D (522)

$$1.A: \frac{250 \times 370}{522} = 177$$

$$2. B: \frac{160 \times 370}{522} = 113$$

$$3. C: \frac{56 \times 370}{522} = 40$$

$$4. D: \frac{56 \times 370}{522} = 40$$

Systematic random technique was used to select respondents. From the sampling fraction which was calculated for each hospital, the sampling interval was two (2) using the formula  $n/N$ . The first member in the register was selected randomly by tossing a coin. Thereafter, every 2<sup>nd</sup> member was selected as sample members. If the first selected member was 1, then sample members were 3, 5, 7 and so on.

### 3.6 DATA COLLECTION

The study employed a quantitative method of data collection. Information was elicited from the respondents using interviewer administered structured questionnaire with sections on Socio-demographic characteristics, Knowledge on cervical cancer and HPV, Knowledge on HPV vaccine, Attitudes towards promotion of HPV vaccine and Efficacy to promote HPV vaccine. A Pre-test study was carried out at University College Hospital (UCH) at the Obstetrics and Gynaecology Department to check for Reliability and Validity of the study instruments. Interviewers were trained on what the study is all about and how to collect data.

### 3.7 DATA ANALYSIS

Data was entered and managed using SPSS version 16.0 statistical software. Descriptive statistics, frequencies, proportions, and means was used to summarize the data. There was use of tables and figures to explain results. Chi-square was used to test for association between dependent and independent variable. Logistic regression was used to explore the effect of variables demonstrated to be significantly associated with the outcome of interest (willingness). A p value of 5% was considered statistically significant.

**To determine knowledge:** for sections with Knowledge on cervical cancer (B), knowledge on HPV (C) and knowledge on HPV vaccine (D), in which the questions will be in likert scale of strongly agree-strongly disagree where it was later be dichotomized into “agree” and “disagree” and for each question answered correctly, a score of 1 was given and for every wrong answer a score of 0 was given, such that for each table the total score was calculated over 100. Whereby a score of 70 and above was considered good, 40-69 was considered fair, below 39 was regarded as poor knowledge.

**To assess attitude:** For section E, a likert scale ranging from extremely likely (score: 5) to extremely unlikely (score: 1) was used for scoring in accessing attitude. Grades used in determining knowledge above were also applied here such that the scores were calculated as above, whereby 70 and above was considered good attitude towards use of HPV vaccine, 40-69 was considered fair attitude, 39 and below was considered as poor attitude towards use of the vaccine

**To determine efficacy to counsel:** For section F, a likert scale ranging from very confident (score: 3) to not confident (score: 1). The scores were summed up, calculated over 100, where a score of 70

and above was regarded as Very confident, 40-69 was Somehow confident, 39 and below was Not confident in promoting the vaccine.

### **3.8 ETHICAL CONSIDERATION**

The proposal was submitted to the Oyo State Ethical Review Committee for ethical approval. After the study had been explained to the participants, informed consent was obtained from each participant with their signature or thumb prints appended on the form, about. Permission was also obtained from the Chief Medical Director/Head of the hospitals, to carry out the study.

#### **Confidentiality of Data**

Participants trust was gained by assuring them that whatever their response was it would not be used against them and that there would be no use of names but serial numbers in the filling of the questionnaire.

#### **Beneficence**

The findings from this study would be useful at the policy level to complement knowledge and awareness about this public health issue. Participants had the right to withdraw from the study if along the line they were not comfortable with the study with no adverse consequences

### **3.9 LIMITATIONS**

The limitations that were encountered during this study are:

1. Nurses not being reached because of schedule of duty and/or leave. Effort was made to track nurses
2. Non response rate, which was mitigated by good advocacy and training of research assistants on importance of good interpersonal relationship

## CHAPTER FOUR

### RESULTS

Results of this study are presented in sections. Detailed information on the socio-demographic characteristics of the participant, awareness and source of information on cervical cancer, knowledge on cervical cancer, knowledge on HPV and HPV vaccine, attitude towards HPV vaccination, factors influencing willingness to promote HPV vaccine, efficacy to promote HPV vaccine and the respondent's reproductive history.

#### 4.1 Socio-demographic characteristics of study participants

A total of 382 questionnaires were distributed and 370 were returned completed giving a response rate of 96% out of which one hundred and seventy three(46.8%) were from Ring Road State Hospital, 114(30.8%) from Adeoyo Maternity Teaching Hospital, 42(11.4%) from Jericho General Hospital and 41(11.1%) from Jericho Nursing Home. The mean age of the study participants was 41.9years  $\pm$  10.4 with the minimum and maximum age being 18 years and 60 years respectively. Most of the respondents were in age group >45 years (45.4%). Of the 370 respondents, 338(91.4%) were females, 32(8.6%) were males. Also 69(18.6%) of the respondents were single, 270(73.0%) were married, 6(1.6%) divorced, 14(3.8%) separated and 11(3.0%) widowed. Majority of the respondents practice Christianity 274(74.1%), followed by Islam 93(25.1%) and those with other kind of religion like traditional and moralist were 3 (0.6%). Three hundred and twenty one (86.8%) respondents were Yoruba, 43(11.6%) were Ibo and 6(1.6%) were from other ethnic groups which include Edo, Efik, Igala, Egun, Hausa and Senegalese.

A higher proportion 117(31.6%) of respondents were Chief Nursing Officers (CNO), followed by Principal Nursing Officers (PNO) 68(18.4%), Nursing Officers(NO) 58(15.7%), Student nurse 52(14.1%), Senior Nursing Officers 38(10.3%), Assistant Chief Nursing Officer (ACNO) 31(8.4%) and staff midwife 6(1.6%). Most of the respondents had a degree of Basic Nursing 276(74.6%), also 76(20.5) respondents with a degree in B.Sc Nursing and 18(4.9%) respondents had other degrees like B.Ed Health Education, B.Sc Public health nursing. Respondents that had spent less than 10 years working in the present hospital were 255(68.9%), those with 11-20 years were 83(22.4%), 21-30years were 26(7.0%) and those that have spent more than 31 years of working in the present hospital were 6(1.6%) (Table 4.1)

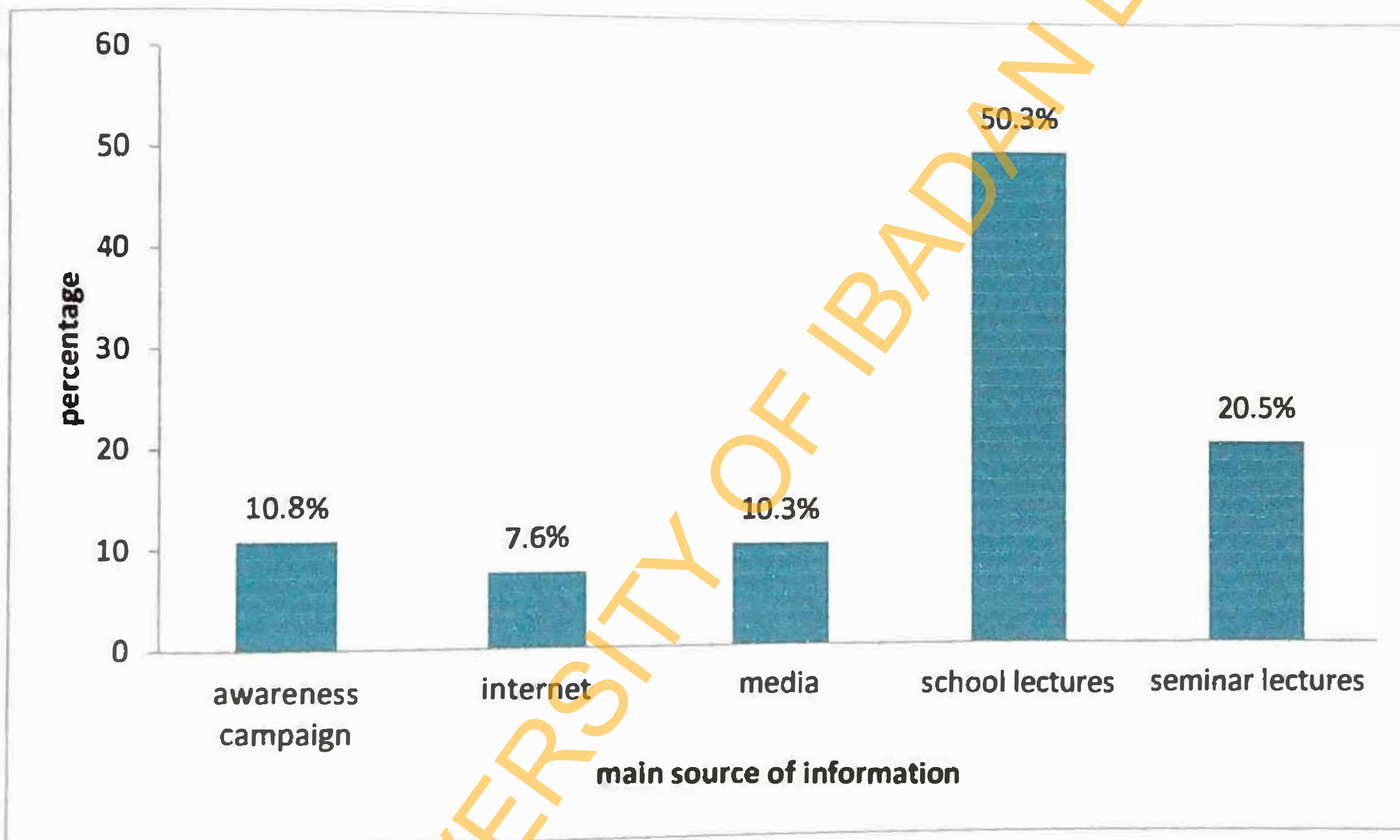
**Table 4.1 Socio-demographic characteristics of respondents**

<b>Socio-demographic characteristics</b>	<b>Frequency (%)</b>
<b>Age (years)</b>	
<24	20 (5.4)
25-34	82 (22.2)
35-44	100 (27.0)
>45	168 (45.4)
<b>Gender</b>	
Male	32 (8.6)
Female	338 (91.4)
<b>Religion</b>	
Christianity	274 (74.1)
Islam	93 (25.1)
Others	3 (0.8)
<b>Ethnicity</b>	
Yoruba	321 (86.8)
Ibo	43 (11.6)
Others	6 (1.6)
<b>Marital status</b>	
Married	270 (73.0)
Single	69 (18.6)
Separated	14 (3.8)
Widowed	11 (3.0)
Divorced	6 (1.6)
<b>Occupational status</b>	
CNO (Chief Nursing Officer)	117 (31.6)
PNO (Principal Nursing Officer)	68 (18.4)
NO (Nursing Officer)	58 (15.7)
Student nurse	52 (14.1)
SNO (Senior Nursing Officer)	38 (10.3)
ACNO (Assistant Chief Nursing Officer)	31 (8.4)
Staff midwife	6 (1.6)
<b>Educational degree</b>	
Basic Nursing(RN,RM)	276 (74.6)
B.Sc Nursing	76 (20.5)
Others	18 (4.9)
<b>Years of working in the hospital</b>	
<10	255 (68.9)
11-20	83 (22.4)
21-30	26 (7.0)
>31	6 (1.6)

### Source of information on cervical cancer

All the nurses had heard of cervical cancer and multiple sources of information like school lectures, seminar lectures, awareness campaign, media and internet were mentioned. The main source of information on cervical cancer was school lectures 188 (50.8%), which was followed by seminar lectures 76(20.5%), awareness campaign 40(10.8%), media 38(10.3%) and internet 28(7.6%). (Fig 4.1)

Fig 4.1 Respondents' main source of information on cervical cancer





## Knowledge on cervical cancer

The knowledge on cervical cancer was based on the causative agent, risk factors, symptoms, mode of transmission, preventive measures.

A high proportion of respondents 327(88.4%) agreed that cervical cancer is the second most common cancer in women and two hundred and forty-nine(67.3%) knew it is found in developing countries. Three hundred and twenty (86.5%) respondents agreed that human papilloma virus causes cervical cancer, 239(78.1%) said HIV does not cause cervical cancer, 289(78.1%) of the respondents said the mode of transmission of the causative agent is not spread through sharing of toilet while 211(57.0%) said it is transmitted sexually.

More than half of the respondents were aware of the risk factors, 286(77.3%) of the respondents said early age at coitus, 264(71.4%) older women being more at risk of having cervical cancer, 255(68.9%) said use of contraceptives, 245(66.2%) said smoking could cause it and less than half 170(45.9%) of the respondents said poor menstrual hygiene is a risk factor.

There was a large percentage of respondents 318(85.9%) who knew that post coital bleeding is a symptom of cervical cancer, 248(67.0%) said swelling of cervix, 177(47.8%) did not agree to swelling of the vulva being a symptom, and a low proportion 134(36.2%) of the respondents said anaemia is a symptom of cervical cancer

On the preventive measures on cervical cancer, 289(78.1%) of respondents said cervical cancer is highly preventable, 286(77.3%) said Pap smear is a secondary method of prevention, 249(67.3%) said use of condom is not the best method of prevention, 244(65.9%) knew the technique for detecting cervical cancer was not blood test, 237(64.1%) of the respondents said vaccination is a primary method of preventing cervical cancer. (Table 4.2)

Generally, respondents with good knowledge on cervical cancer were 179(48.4%), those with fair knowledge were 186(50.3%) and a little proportion of 5(1.4%) of those with poor knowledge of cervical cancer.

**Table 4.2 Frequency distribution of respondents' correct (agreed) responses to questions on cervical cancer (N=370)**

Variables	Agree n (%)	Disagree n (%)
<b>Knowledge on where cervical cancer is found</b>		
Cervical is the second most common cancer in women	327 (88.4)	43 (11.6)
It is mostly found in developing countries	249 (67.3)	121 (32.7)
<b>Knowledge on the risk factors</b>		
Early age at coitus is a risk factor	286 (77.3)	84 (22.7)
Older women are more at risk of having cervical cancer	264 (71.4)	106 (28.6)
Use of contraceptives is a risk factor	255 (68.9)	115 (31.1)
Smoking is a risk factor	245 (66.2)	125 (33.8)
Poor menstrual hygiene is a risk factor	170 (45.9)	200 (54.1)
<b>Knowledge on the symptoms</b>		
Post coital bleeding is a symptom	318 (85.9)	52 (14.1)
Swelling of cervix	248 (67.0)	122 (33.0)
Swelling of the vulva is not a symptom	177 (47.8)	193 (52.2)
Anaemia is a symptom	134 (36.2)	236 (63.8)
<b>Knowledge on the preventive measures</b>		
Cervical cancer is highly preventable	289 (78.1)	81 (21.9)
Pap smear is a secondary method of prevention	286 (77.3)	84 (22.7)
Use of condom is not the best method of prevention	249 (67.3)	121 (32.7)
Technique for detection is not blood test	244 (65.9)	126 (34.1)
Vaccination is a primary method of prevention	237 (64.1)	133 (35.9)
<b>Knowledge on causative agent and transmission</b>		
Human Papilloma Virus causes cervical cancer	320 (86.5)	50 (13.5)
Cervical cancer is not transmitted through sharing of toilet	289 (78.1)	81 (21.9)
HIV does not cause cervical cancer	239 (64.6)	131 (35.4)
Causative agent is transmitted sexually	211 (57.0)	159 (43.0)

### 4.3 Knowledge on HPV

An eleven (11) item knowledge scale on HPV with questions on the mode of transmission, causative agent, preventive measures, diseases caused by HPV was used.

There was a high percentage 265(71.6%) of respondents said HPV can spread through sexual intercourse, 242(65.4%) did not agree to sharing of toilet as a mode of transmission while a low proportion forty-one (11.1%) respondents knew that low risk HPV types 6 and 11 does not cause cervical cancer but is caused by high risk HPV types 16 and 18

Two hundred and ninety-nine (80.8%) of the respondents said cervical cancer is caused by HPV, 230(62.2%) said it is one of the most common STI infection, 160(43.2%) said genital wart is also caused by HPV, 88(23.8%) said not all HPV infection results into cervical cancer with a low proportion 62(16.8%) of respondents agreeing that HPV infection can die out on its own.

In addition to knowledge about HPV diseases on preventive measures, 251(67.8%) of respondents said abstinence from sex is a measure that could prevent HPV infection, 248(67.0%) said a woman having sexual intercourse with an infected partner will contract the disease and a few of the respondents 80(21.6%) knew HPV infection cannot be prevented through use of anti-viral drugs

(Table 4.3)

**Table 4.3 Frequency distribution of knowledge on HPV (N=370)**

<b>Variables</b>	<b>Agreed n (%)</b>	<b>Disagreed n (%)</b>
<b>Knowledge on mode of transmission and causative agent</b>		
Human papilloma virus can spread through sexual intercourse	265 (71.6)	105 (28.4)
HPV is not spread through sharing of toilet	242 (65.4)	128 (34.6)
Low risk HPV types 6 and 11 does not cause cervical cancer	41 (11.1)	329 (88.9)
<b>Knowledge on HPV diseases</b>		
Cervical cancer is caused by HPV	299 (80.8)	71 (19.2)
HPV is one of the most common STI disease	230 (62.2)	140 (37.8)
Genital wart is caused by HPV	160 (43.2)	210 (56.8)
Of the people infected with HPV, all develops cervical cancer	88 (23.8)	282 (76.2)
HPV infection can die out on its own	62 (16.8)	308 (83.2)
<b>Knowledge on preventive measures</b>		
Abstinence from sex is a measure that can prevent HPV	251 (67.8)	119 (32.2)
A woman having sexual intercourse with an infected partner will contact the disease	248 (67.0)	122 (33.0)
HPV infection cannot be prevented through use of anti-viral drugs	80 (21.6)	290 (78.4)

## Knowledge grade on HPV

Fifty (13.5%) of the respondents had good knowledge, 182(49.2%) had fair knowledge on HPV and 138(37.3%) had poor knowledge of the causative agents, mode of transmission, preventive measures and diseases caused by HPV (Fig 4.2)

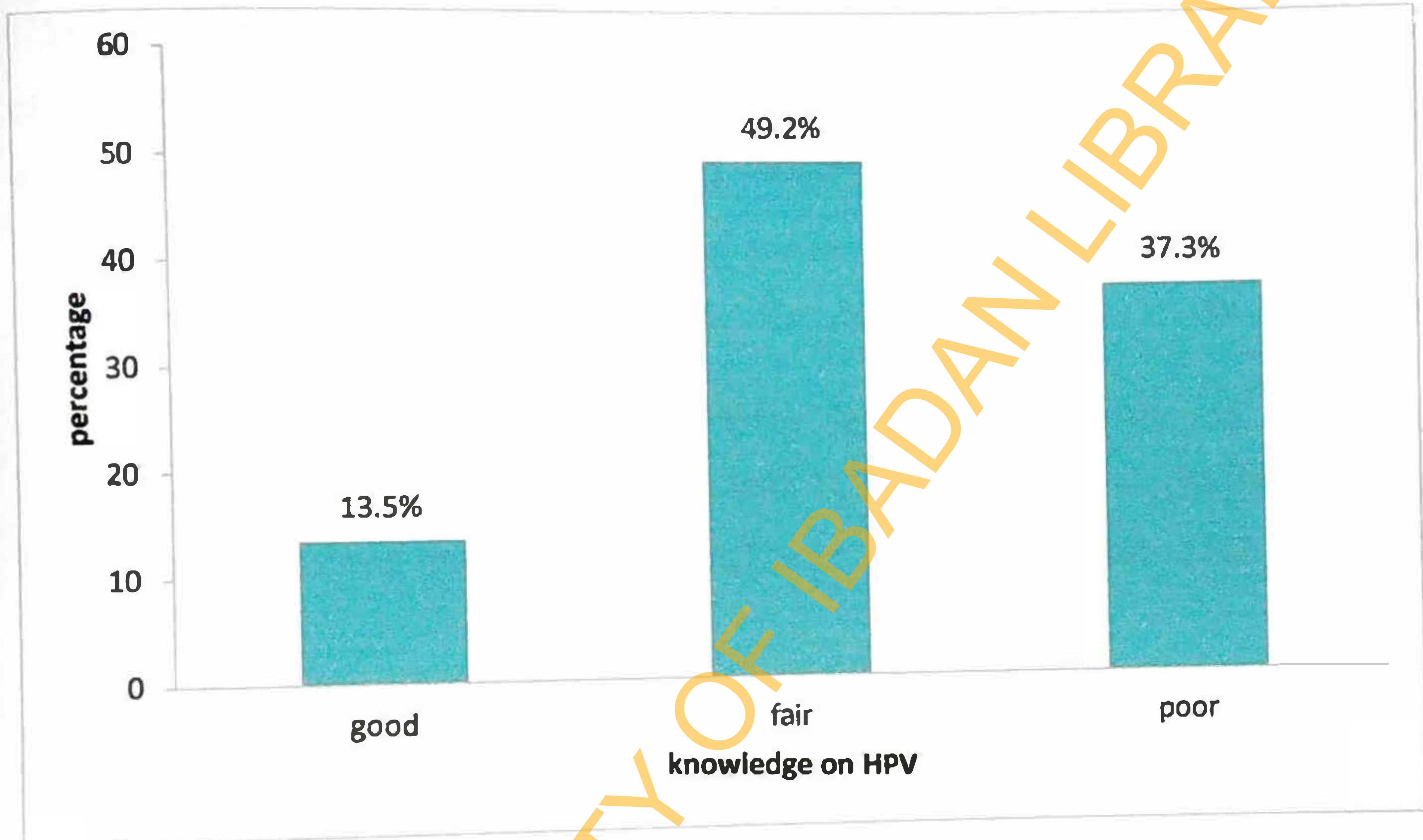


Fig 4.2 Bar chart showing knowledge grade on HPV

## Association between Socio-demographic variables and knowledge on HPV

The knowledge of HPV significantly differed with age groups. There was a higher proportion among those aged 24 years and lower 7(35.0%) who had good knowledge on HPV compared to those aged 25-34years 15(18.3%), 35-44years 12(12.0%) and those above 45 years were 16(9.5%) that had good knowledge on HPV. ( $X^2=13.854$ ,  $df=6$ ,  $P=0.031$ )

A higher proportion 29(58.0%) of married respondents had good knowledge on HPV compared with those that were single 17(34.0%), separated respondents 2(4.0%), widowed 1(2.0%), divorced 1(2.0%) also had good knowledge on HPV, therefore marital status was significant( $X^2=16.446$ ,  $df=8$ ,  $P=0.036$ ) Sixteen student nurses (32.0%) had good knowledge on HPV compared to Nursing officers 12(24.0%), Chief Nursing Officers 10(20.0%), Principal nursing officers 7(14.0%), Senior nursing officers 3(6.0%), and assistant chief nursing officers 2(4.0%) that also had good knowledge of HPV which made their occupational status statistically significant ( $X^2=28.200$ ,  $df=12$ ,  $P=0.005$ )

Respondents with Basic Nursing(RN,RM) as their educational degree 32(66.0%) had good knowledge about HPV compared to those with B.Sc Nursing degree (34.0%) who also had good knowledge on HPV and this was significant( $X^2=11.132$ ,  $df=4$ ,  $P=0.025$ ) (Table 4.4)

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**Table 4.4 Association between Socio-demographic variables and knowledge on HPV (N=370)**

<b>Variables</b>	<b>Good (n=50)</b>	<b>Fair (n=182)</b>	<b>Poor (n=138)</b>	<b>Total</b>	<b>X<sup>2</sup></b>	<b>Df</b>	<b>P value</b>			
<b>Age</b>										
<24	7 (14.0)	10 (5.5)	3 (2.2)	20 (5.4)	13.854	6	0.031*			
25-34	15 (30.0)	39 (21.4)	28 (20.3)	82 (22.2)						
35-44	12 (24.0)	49 (26.9)	39 (28.3)	100 (27.0)						
>45	16 (32.0)	84 (46.2)	68 (49.3)	168 (45.4)						
<b>Marital status</b>										
Married	29 (58.0)	129 (70.9)	112 (81.2)	270 (73.0)	16.446	8	0.036*			
Single	17 (34.0)	34 (18.7)	18 (13.0)	69 (18.6)						
Separated	2 (4.0)	10 (5.5)	2 (1.4)	14 (3.8)						
Widowed	1 (2.0)	5 (2.7)	5 (3.6)	11 (3.0)						
Divorced	1 (2.0)	4 (2.2)	1 (0.7)	6 (1.6)						
<b>Occupational status</b>										
Student nurse	16 (32.0)	25(13.7)	11(8.0)	52 (14.1)	28.200	12	0.005*			
NO	12 (24.0)	25(13.7)	21(15.2)	58 (15.7)						
CNO	10 (20.0)	56(30.8)	51(37.0)	117(31.6)						
PNO	7 (14.0)	38(20.9)	23(16.7)	68 (18.4)						
SNO	3 (6.0)	18(9.9)	17(12.3)	38 (10.3)						
ACNO	2 (4.0)	18(9.9)	11(8.0)	31 (8.4)						
Staff midwife	0 (0.0)	2 (1.1)	4 (2.9)	6 (1.6)						
<b>Educational degree</b>										
Basic Nursing	32 (66.0)	132(72.5)	111(80.4)	276(74.6)				11.132	4	0.025*
BSc Nursing	17 (34.0)	39 (21.4)	20 (14.5)	76 (20.5)						
Others	0 (0.0)	11 (6.0)	7 (5.1)	18 (4.9)						

\*indicates significant at P< 0.05

#### 4.4 Knowledge on HPV vaccine

This is a section with analysis of the response to questions on what HPV vaccine is used for, the types of HPV vaccine available in Nigeria, eligible age group for the vaccine, mode of administration, dose and side effects.

Out of all the respondents, 280(75.7%) agreed HPV vaccine is used for preventing cervical cancer and 263(71.1%) said the vaccine is only relevant for the prevention of cervical cancer. Two hundred and thirty-nine(64.6%) knew the vaccine is only effective in people that have not yet been infected with HPV, 231(62.4%) agreed that the vaccine does prevent against having healthy babies in future, 224(60.5%) said vaccination will not bring about an increase in a woman's promiscuous behaviour.

In addition, 214(57.8%) knew the vaccine does not affect a girl's ability to get pregnant, a hundred and eleven(30.0%) of them said the age group eligible for vaccination is 9-26 years while sixty-two(16.8%) knew that the dose of the vaccine is 3 doses at 6 months, 56(15.1%) of respondents agreed that the side effects of the vaccine are itching and irritation.

Sixty (16.2%) respondents correctly mentioned that Gardasil and Cervarix vaccine are available for immunisation in Nigeria, 50(13.5%) knew the dose of HPV vaccine is 0.5ml and its mode of administration is intramuscular, with a low proportion 39(10.5%) of respondents agreeing to the fact that HPV vaccine will replace the need for regular pap smear screening (Table 4.5)



**Table 4.5 Frequency distribution of knowledge on HPV vaccine (N=370)**

Variables	Agreed *	Disagreed
	n (%)	n (%)
HPV vaccine is used for preventing cervical cancer	280 (75.7)	90 (24.3)
The vaccine is only relevant for the prevention of cervical cancer	263 (71.1)	107 (28.9)
Vaccination is only effective in people that have not yet been infected with HPV	239 (64.6)	131 (35.4)
The vaccine does not prevent having healthy babies in future	231 (62.4)	139 (37.6)
Vaccination will not bring about an increase in a woman's promiscuous behavior	224 (60.5)	146 (39.5)
The vaccine does not affect a girls' ability to get pregnant	214 (57.8)	156 (42.2)
Age group of women eligible for vaccine is 9-26years	111 (30.0)	259 (70.0)
Total dose of vaccine and interval at which given is 3 doses at 6 months	62 (16.8)	308 (83.2)
Gardasil and Cervarix vaccine are available for immunization in Nigeria	60 (16.2)	310 (83.8)
The side effects of the vaccine are irritation and itching	56 (15.1)	314 (84.9)
Dose of HPV vaccine and mode of administration is 0.5ml dose, intramuscularly	50 (13.5)	320 (86.5)
HPV vaccine will not replace the need for regular pap smear screening	331 (89.5)	39 (10.5)

\*indicates the correct response

### Knowledge grade on HPV vaccine

Respondents with good knowledge of HPV vaccine were 37(10%), while those with fair knowledge were 191(51.6%) and those with poor knowledge were 142(38.4%) (Fig 4.3)

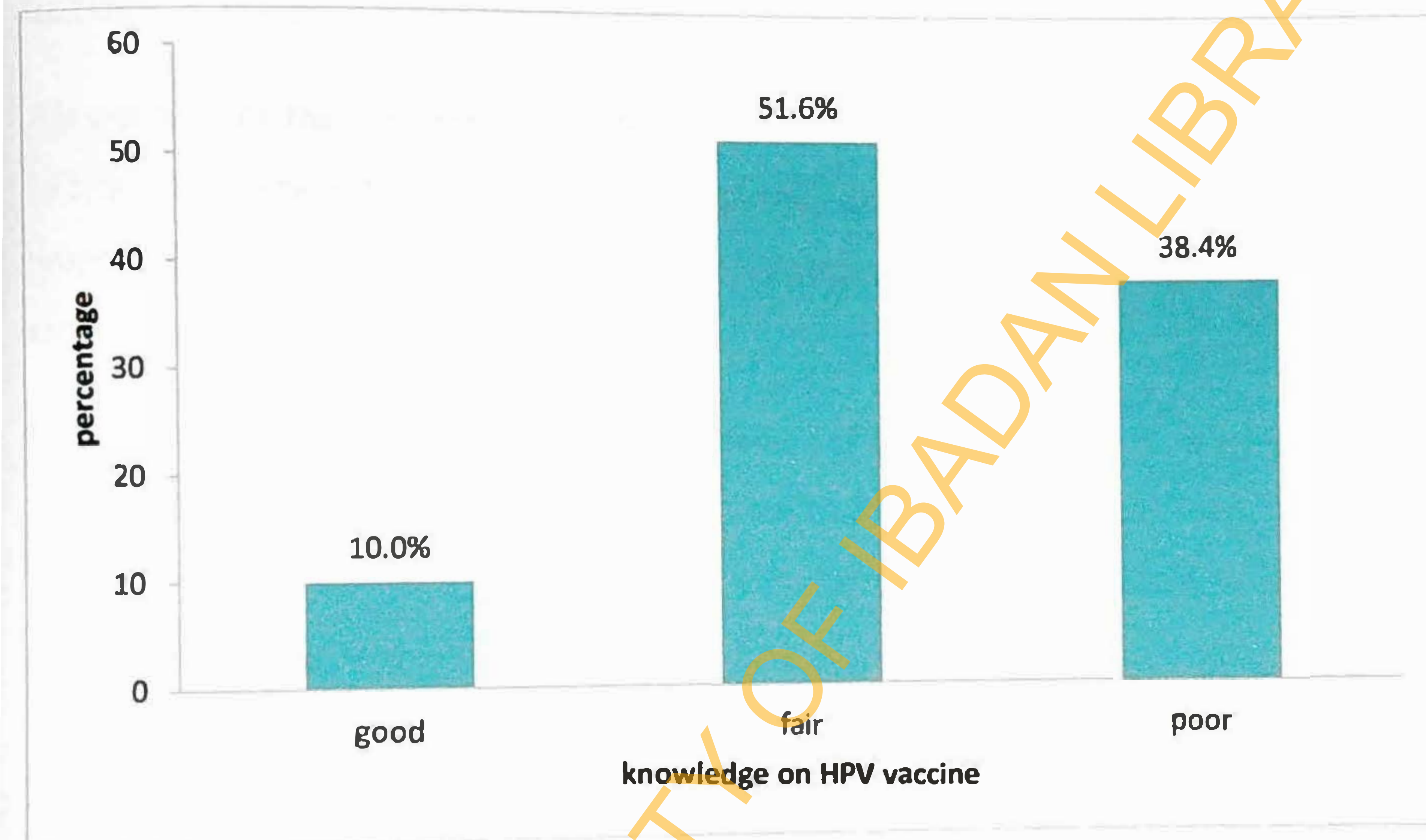


Fig 4.3 Knowledge grade of respondents on HPV vaccine

#### 4.5 Attitude towards use of HPV vaccine

One hundred and fifty-two (41.1%) respondents were likely to support giving this vaccine to adolescent girls, 113(30.5%) were extremely likely, 54(14.6%) were not sure, 37(10.0%) were unlikely and 14(3.8%) were extremely unlikely to support vaccination of adolescent girls.

A small proportion of respondents 17(4.6%) were extremely unlikely to recommend the vaccine to their daughters, 44(11.9%) were unlikely, 54(14.6%) were not sure while there was a high proportion 150(40.5%) of respondents who were likely and 105(28.4%) who were extremely unlikely to recommend the vaccine to their daughters.

Almost half of the respondents 155(41.9%) were likely to recommend the vaccine to their sister, 113(30.5%) were extremely unlikely, 51(13.8%) were not sure, 39(10.5%) were unlikely and a low proportion 12(3.2%) of respondents were extremely unlikely to recommend the vaccine to their sister

Respondents who were likely to get the vaccine if it were given to women in their age group were 154(41.6%), those extremely likely were 119(32.2%), those not sure were 50(13.5%) and a small proportion of those who were unlikely 34(9.2%) and extremely unlikely to get the vaccine if it was for their age group was 13(3.5%)

Twenty (5.4%) of the respondents extremely did not believe the vaccine could prevent cervical cancer, 10(2.7%) of them did not believe, 69(18.6%) were not sure, 125(33.8%) extremely believed, 146(39.5%) believed the vaccine could prevent cervical cancer. (Table 4.6)

Overall, a high proportion of respondents 68.4% had good attitude towards the use of HPV vaccine, 28.6% of respondents had fair attitude and 3% had poor attitude towards promoting the use of HPV vaccine.

**Table 4.6 Frequency distribution of respondents' attitude towards use of HPV vaccine**

<b>Variables</b>	<b>Likely</b>	<b>Extremely likely</b>	<b>Unsure</b>	<b>Unlikely</b>	<b>Extremely unlikely</b>	<b>Total</b>
Recommending the vaccine to adolescent girls	152(41.1)	113(30.5)	54(14.6)	37(10.0)	14(3.8)	370
Recommending the vaccine to daughter	150(40.5)	105(28.4)	54(14.6)	44(11.9)	17(4.6)	370
Recommending the vaccine to sister	155(41.9)	113(30.5)	51(13.8)	39(10.5)	12(3.2)	370
Acceptability of the vaccine to women in their age group	154(41.6)	119(32.2)	50(13.5)	34(9.2)	13(3.5)	370
Belief that the vaccine can prevent cervical cancer	146(39.5)	125(33.8)	69(18.6)	10(2.7)	20(5.4)	370

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#### 4.6 Perceived efficacy to promote use of HPV vaccine

A hundred and sixty-five (44.6%) respondents felt very confident in counseling adolescents on the need for the vaccine, 105(28.4%) and 100(27.0%) were somehow confident and not confident respectively.

Almost half 164(44.3%) of the respondents were very confident in allowing their daughter receive the vaccine if it was free, 110(29.7%) were not confident and 96(25.9%) were somehow confident.

A hundred and sixty two (43.8%) respondents were very confident, 104(28.1%) were somehow confident, 104(28.1%) were not confident in recommending the vaccine to adolescents.

Respondents who were very confident about telling patients about the effectiveness of HPV vaccine were 161(43.5%), those who were somehow confident were 117(31.6%) and those not confident at all were 92(24.9%)

A high proportion 163(44.1%) of study participants were not confident in managing the side effects of the vaccine, 109(29.5%) were very confident and 98(26.5%) were somehow confident about management of the side effects that could arise from the vaccine.

One hundred and thirty-nine (37.6%) respondents were not confident, 128(34.6%) were somehow confident, and 103(27.8%) were very confident in administering HPV vaccine compared to administering other vaccine.

There was a high percentage of respondents 158(42.7%) who were not confident, 113(30.5%) were somehow confident and 99(26.8%) of them that were very confident in dealing with the challenges that may arise as a result of administering the vaccine. (Table 4.7)

**Table 4.7 Frequency distribution of respondents' perceived efficacy to promote HPV vaccine (N=370)**

Variables	Responses n (%)			Total
	Very confident	Somehow confident	Not confident	
Confidence in counseling adolescents on the need for the vaccine	165 (44.6)	105 (28.4)	100 (27.0)	370(100)
Confidence in allowing daughter get the vaccine if it were free	164 (44.3)	96 (25.9)	110 (29.7)	370(100)
Confidence in recommending the vaccine to adolescents	162 (43.8)	104 (28.1)	104 (28.1)	370(100)
Confidence in telling patients about the effectiveness of HPV vaccine	161 (43.5)	117 (31.6)	92 (24.9)	370(100)
Confidence in managing the side effects of the vaccine	109 (29.5)	98 (26.5)	163 (44.1)	370(100)
Confidence in administering HPV vaccine compared to other vaccines	103 (27.8)	128 (34.6)	139 (37.6)	370(100)
Confidence in dealing with the challenges that may arise as a result of giving this vaccine	99 (26.8)	113 (30.5)	158 (42.7)	370(100)

### Efficacy to promote use of HPV vaccine

In summary from composite score, 168(45.4%) of the respondents were very confident in promoting the use of HPV vaccine, while 124(33.5%) were somehow confident and 78(21.1%) were not confident in promoting the use of HPV vaccine (Fig 4.4)

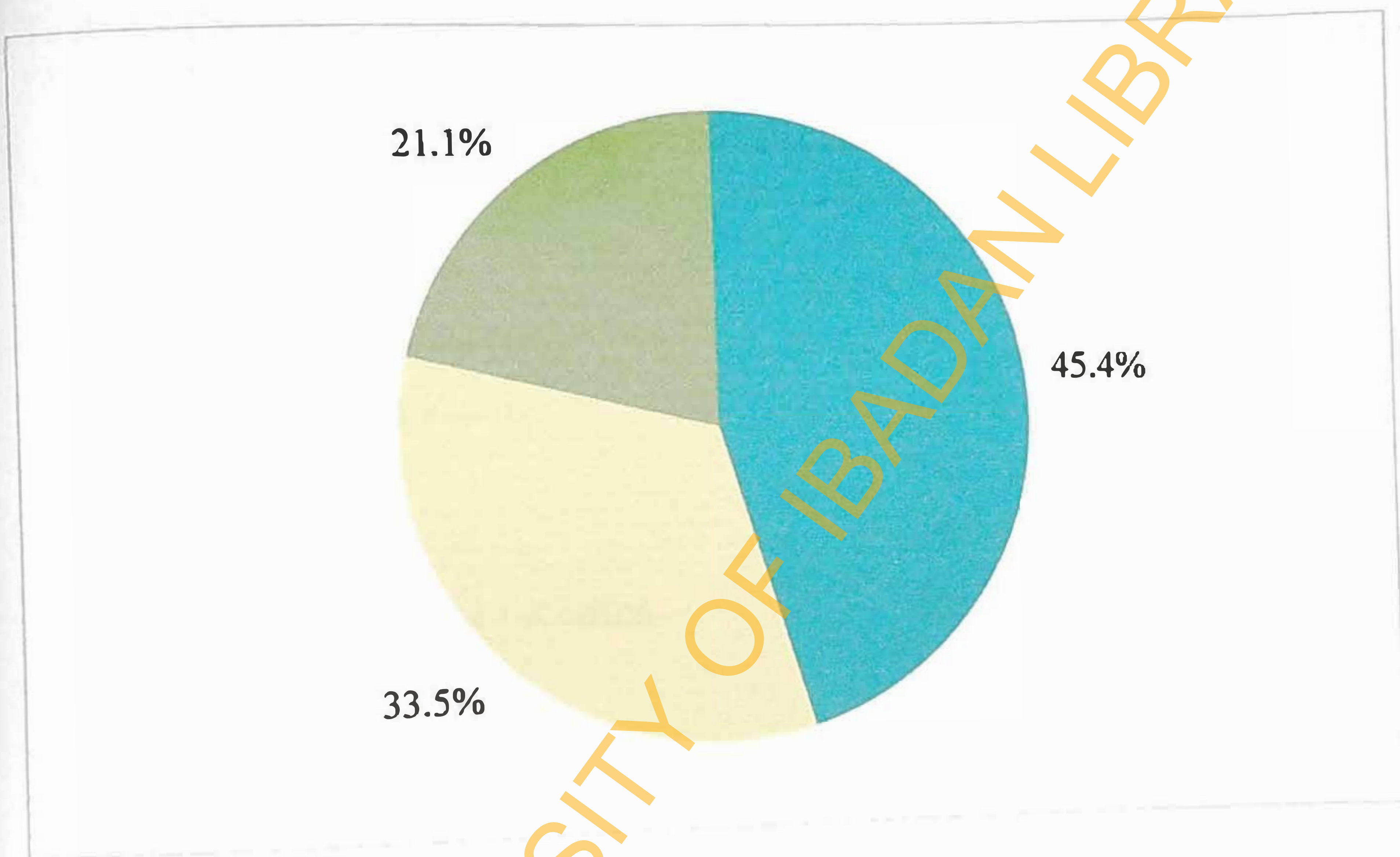


Fig 4.4 A Pie Chart with respondent's grade on perceived efficacy to promote vaccine

#### 4.7 Integration of HPV vaccine into existing community programs

A higher proportion of respondents 275(73.8%) agreed that HPV vaccine should be integrated and 53(14.9%) of respondents did not support integration of HPV vaccine into existing community programs such as child immunization days. From the seventy-three percent of respondents that supported integration of HPV vaccine, Eighty seven (31.4%) of them said it was to create public awareness, 78(28.5%) said for early prevention of cervical cancer, while 41(15.0%) said for the vaccine to have a wider coverage (Table 4.8)

**Table 4.8 Frequency distribution of respondents' reason for supporting integration of HPV vaccine into community programs**

Variables	Frequency(n=275)	%
To create public awareness	87	31.4
Early prevention of cervical cancer	78	28.5
For a wider coverage of vaccine	41	15.0
For mass benefit	19	6.9
For easy accessibility	17	6.2
To reduce the risk of disease occurring	13	4.7
For public acceptability	7	2.6
To prevent HPV spread	4	1.5
To promote healthy living	4	1.5
There'll be reduced cost of vaccine	3	1.1
To prevent untimely death	2	0.7
Total	275	100.1



## Non integration of HPV vaccine into existing community programs

Twenty four (44.4%) of the respondents who did not support the integration of HPV vaccine into community programs said it was because of the negative side effects that could be associated with vaccine while 11(22.2%) said children are not at risk of having cervical cancer so the vaccine should be for adults while other reasons were also given as shown below (Table 4.9)

### 4.9 Frequency distribution of respondents' reasons for not suggesting integration of HPV vaccine into community programs (N=53)

Variables	Frequency	%
Negative side effects associated with vaccine	24	44.4
Children are not at risk of having cervical cancer	11	22.2
Inadequate knowledge about vaccine	7	13.0
Increase in human resource requirement	4	7.4
Lack of public awareness	3	5.6
Inconsistent supply and high cost of vaccine	3	5.6
Vaccine could increase promiscuity	1	1.9
Total	53	100.1

#### 4.8 Willingness to administer HPV vaccine

Out of all the 370 respondents, 276(74.6%) were willing to administer HPV vaccine to adolescents attending their hospital while 94(25.4%) of the respondents were not willing.

One hundred and forty (50.7%) of the respondents said their willingness to administer the vaccine was to prevent cervical cancer, while 53(19.2%) said to reduce the risk of disease occurring and other reasons were also given (Table 4.10)

**Table 4.10 Frequency distribution of reasons for respondents' willingness to administer HPV vaccine to adolescents (N=276)**

Variables	Frequency	%
To prevent cancer cervix	140	50.7
To reduce the risk of disease occurring	53	19.2
To promote healthy living	23	8.3
To reduce untimely death	15	5.4
Increased sexual activities in adolescents	15	5.4
To prevent HPV infection spread	15	5.4
To create awareness about the vaccine	7	2.5
Free and available vaccine	6	2.2
Effective and minimized side effects of vaccine	2	0.7
Total	276	100.0

## Unwillingness to administer HPV vaccine

More than half of the respondents, 59(62.8%) who were not willing to administer the vaccine attributed this to inadequate knowledge about the vaccine while others gave reasons such as vaccine affects reproductive system, vaccine could encourage promiscuity, adolescents were not at risk of having cervical cancer, inconsistent supply of vaccine and poor accessibility of service by adolescents

(Table 4.11)

**Table 4.11 Frequency distribution of reasons for unwillingness to administer the vaccine to adolescents (N=94)**

Variables	Frequency	%
Inadequate knowledge about the vaccine	59	62.8
Vaccine could affect reproductive system	9	9.6
Giving the vaccine could encourage promiscuity	9	9.6
Adolescents are not at risk of cervical cancer	9	9.6
Poor accessibility of service by adolescents	5	5.3
Inconsistent supply of vaccine	3	3.2
Total	94	100.1

### Factors that could influence promotion of HPV vaccine

All the respondents said HPV vaccine was not available in their hospital. Almost half of the respondents 155(41.9%) said proper awareness about HPV vaccine to the public is a factor that will promote the delivery of the vaccine if it were to be provided in the hospital, 71(19.2%) of respondents said training of health personnel while 60(16.2%) said regular supply of vaccine is also a factor. In addition, 21(5.7%) said proper storage facility for vaccine will promote the delivery of the service while in a respective order 19(5.1%), 19(5.1%), 13(3.5%) and 12(3.2%) said reduced cost of vaccine, good management and planning of service, free vaccine and financial support from government are factors that will promote the delivery of the service (Fig 4.5)

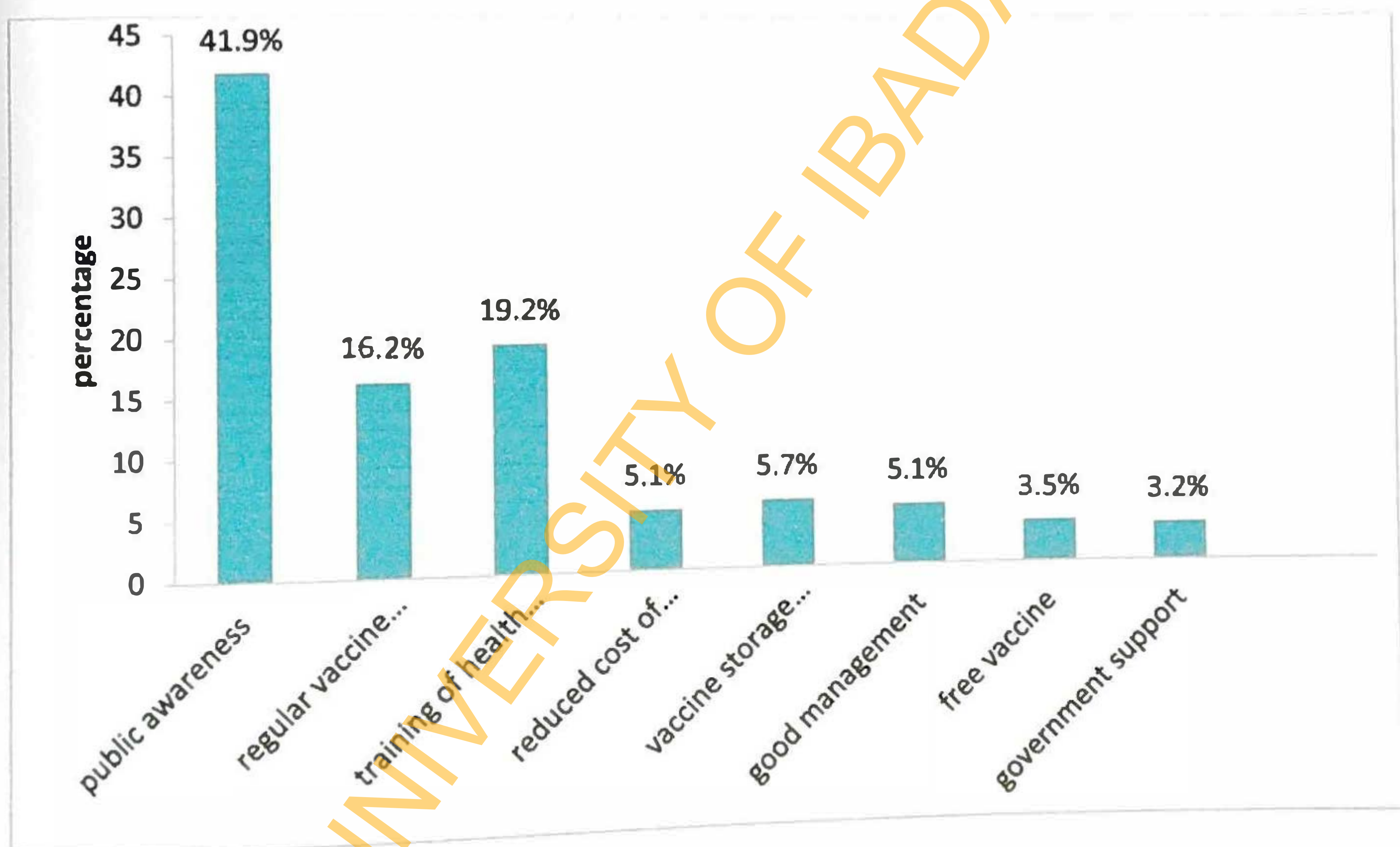


Fig 4.5 Factors that could influence promotion of HPV vaccine in health centers (N=370)

#### 4.10 Association between socio-demographic status and willingness to promote use of HPV vaccine

A low proportion 14(5.1%) of respondents aged 24 years and lower were willing to promote vaccine use compared to those in the age group 25-34years 75(27.2%), 35-44 years 68(24.6%) and those above 45 years of age 119(43.1%), therefore the difference in age group was statistically significant ( $X^2=16.084$ ,  $df=3$ ,  $P$  value=0.001).

Respondents who were chief nursing officers with the highest cadre in nursing were 82(29.7%) more willing to promote vaccine use compared to nursing officers 50(18.1%), student nurse 42(15.2%), principal nursing officers 40(14.5%), compared to senior nursing officers 33(12.0%), assistant chief nursing officers 23(8.3%) and those that were staff midwives ( $X^2=20.407$ ,  $df=6$ ,  $P$  value=0.002). Therefore, there was a significant relationship between the different cadres of nursing (Table 4.12)

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**Table 4.12 Association between socio-demographic status and willingness to promote use HPV vaccine**

<b>Variables</b>	<b>Willing F (%)</b>	<b>Not willing F (%)</b>	<b>Total (%)</b>	<b>X<sup>2</sup></b>	<b>Df</b>	<b>P value</b>
<b>Age group</b>						
<24	14 (5.1)	6 (6.4)	20 (5.4)	16.084	3	0.001*
25-34	75 (27.2)	7 (7.4)	82 (22.2)			
35-44	68 (24.6)	32 (34.0)	100(27.0)			
>45	119(43.1)	49 (52.1)	168(45.4)			
<b>Ethnic group</b>						
Yoruba	234(84.8)	87 (92.6)	321(86.8)	3.706	2	0.157
Ibo	37 (13.4)	6 (6.4)	43 (11.6)			
Others	5 (1.8)	1 (1.1)	6 (1.6)			
<b>Occupational status</b>						
CNO	82 (29.7)	35 (37.2)	117(31.6)	20.407	6	0.002*
NO	50 (18.1)	8 (8.5)	58 (15.7)			
Student nurse	42 (15.2)	10 (10.6)	52 (14.1)			
PNO	40 (14.5)	28 (29.8)	68 (18.4)			
SNO	33 (12.0)	5 (5.3)	38 (10.3)			
ACNO	23 (8.3)	8 (8.5)	31 (8.4)			
Staff midwife	6 (2.2)	0 (0.0)	6 (1.5)			

\*indicates significant at P<0.05

## Association between factors that could influence promotion of HPV vaccine and Willingness to promote HPV vaccine

There was a slight difference between respondents with good 138(50.0%) and fair 133(48.2%) knowledge of cervical cancer in their willingness to promote the vaccine, this was not statistically significant ( $X^2=3.230$ ,  $df=2$ ,  $P=0.199$ )

There's was a higher proportion of respondents who had fair knowledge of HPV 144(52.2%) and were willing to promote HPV vaccine, compared to those with poor knowledge 93(33.7%) and those with good knowledge 39(14.1%) in their willingness to promote use of HPV vaccine. There was a slight difference between these respondents so it was statistically significant ( $X^2=6.052$ ,  $df=2$ ,  $P=0.049$ )

Out of all the respondents, a hundred and fifty-four (55.8%) of them who had fair knowledge of HPV vaccine were willing to promote its use, compared to those with poor knowledge 86(31.2%) and good knowledge 36(13.0%) who were also willing to promote the use of HPV vaccine, this difference was statistically significant ( $X^2=28.484$ ,  $df=2$ ,  $P=0.000$ )

A high proportion of respondents who were very confident 156(56.5%) in counseling adolescents to receiving the vaccine were willing compared to respondents who were somehow willing 91(33.0%) and a lower proportion of respondents who were not confident 29(10.5%) but willing to promote the use of the vaccine ( $X^2=87.279$ ,  $df=2$ ,  $P=0.000$ )

Participants of the study who had good attitude 223(80.8%) towards HPV vaccine were willing compared to those with fair attitude 47(17.0%) and poor attitude 6(2.2%) towards promotion of HPV vaccine, this is statistically significant ( $X^2=78.036$ ,  $df=2$ ,  $P=0.000$ ) (Table 4.13)

Table 4.13 Association between factors that could influence promotion of HPV vaccine and respondent's willingness to promote HPV vaccine

Variables	Willing N (%)	Not willing N (%)	Total (%)	X <sup>2</sup>	df	P value
<b>Knowledge on cervical cancer</b>						
Good	138 (50.0)	41 (43.6)	179 (48.4)	3.230	2	0.199
Fair	133 (48.2)	53 (56.4)	186 (50.3)			
Poor	5 (1.8)	0 (0.0)	5 (1.4)			
<b>Knowledge on HPV</b>						
Good	39 (14.1)	11 (11.7)	50 (13.5)	6.052	2	0.049*
Fair	144 (52.2)	38 (40.4)	182 (49.2)			
Poor	93 (33.7)	45 (47.9)	138 (37.3)			
<b>Knowledge on HPV vaccine</b>						
Good	36 (13.0)	1 (1.1)	37 (10.0)	28.484	2	0.000* P<0.0001
Fair	154 (55.8)	37 (39.4)	191 (51.6)			
Poor	86 (31.2)	56 (59.6)	142 (38.4)			
<b>Efficacy to counsel</b>						
Very confident	156 (56.5)	12 (12.8)	168 (45.4)	87.279	2	0.000* P<0.0001
Somehow confident	91 (33.0)	33 (35.1)	124 (33.5)			
Not confident	29 (10.5)	49 (52.1)	78 (21.1)			
<b>Attitude towards HPV vaccine</b>						
Good attitude	223 (80.8)	30 (31.9)	253 (68.4)	78.036	2	0.000* P<0.0001
Fair attitude	47 (17.0)	59 (62.8)	106 (28.6)			
Poor attitude	6 (2.2)	5 (5.3)	11 (3.0)			

\*indicates significant at P < 0.05



## Logistic regression results of factors that influenced willingness to promote use of HPV vaccine.

Respondents aged 24 and lower were 1.8 times (95% CI=0.198 - 16.715) more likely to be willing to promote the use of HPV vaccine than those aged 25-34 (OR=0.323, 95% CI= 0.063-1.658), those aged 35-44 (OR=0.713, 95% CI=0.274-1.855) and those aged 45 and above, this association was not statistically significant for all the age groups.

Respondents with good knowledge of HPV were 1.4 times (95% CI=0.491-3.821) more likely to be willing than respondents with fair knowledge (OR=0.871, 95% CI=0.418-1.595) than those with poor knowledge of the vaccine to promote the use of the vaccine, this was not significant

There was no significant association between respondents who had good knowledge of HPV vaccine and were 3.2 times less likely to be willing (OR=0.309, 95% CI=0.034-2.824) compared to those with fair knowledge that were 1.1 times more likely to be willing (95% CI=0.510-2.198) than those with poor knowledge to promote the use of HPV vaccine.

Respondents that were very confident in counseling adolescent on the need for the vaccine were 9.4 times less likely to be willing (OR= 0.106, 95% CI=0.038-0.291) than those that were somehow confident who were 2.8 times less likely (OR=0.356, 95% CI=0.151-0.837) than those not confident to promote the use of the vaccine. This association was significant.

Respondents with fair attitude towards HPV vaccine were 2.3 times more likely to be willing (95% CI 0.530 – 9.860) than those with good attitude who were 1.78 times less likely (OR= 0.561, 95% CI=0.124-2.542) than those with poor attitude to promote vaccine use, this was not significant

(Table 4.14)

Table 4.14 Logistic regression results of factors that influenced willingness to promote use of HPV vaccine.

Variables	Odds Ratio	95% CI (OR)	P value
<b>Age</b>			
<24	1.821	0.198 – 16.715	0.596
25-34	0.323	0.063 - 1.658	0.176
35-44	0.713	0.274 - 1.855	0.489
>45 (ref)			
<b>Gender</b>			
Male	0.344	0.081 – 1.471	0.150
Female (ref)			
<b>Occupational status</b>			
PNO	2.497	0.446 – 13.965	0.298
ACNO	1.185	0.159 – 8.862	0.868
CNO	0.837	0.128 – 5.457	0.852
SNO	0.766	0.113 – 5.178	0.784
NO	0.708	0.158 – 3.169	0.652
Staff midwife	0.000	0.000	0.999
Student nurse (ref)			
<b>Knowledge on HPV</b>			
Good	1.370	0.491 – 3.821	0.547
Fair	0.871	0.418 – 1.595	0.553
Poor (ref)			
<b>Knowledge on HPV vaccine</b>			
Good	0.309	0.034 – 2.824	0.298
Fair	1.059	0.510 – 2.198	0.878
Poor (ref)			
<b>Efficacy to promote vaccine</b>			
Very confident	0.106	0.038 – 0.291	0.000
Somehow confident	0.356	0.151 – 0.837	0.018
Not confident (ref)			
<b>Attitude towards HPV vaccine</b>			
Good attitude	0.561	0.124 – 2.542	0.454
Fair attitude	2.286	0.530 – 9.860	0.268
Poor attitude (ref)			

## Association between factors that could influence HPV vaccine delivery and Willingness to promote HPV vaccine

A hundred and eighteen (42.8%) of the respondents that were willing to promote HPV vaccine said proper awareness about the vaccine to the public would help the delivery of the vaccine in the hospitals compared to those that did not agree 158(57.2) to this factor in which this association was not significant ( $X^2=0.331$ ,  $df=1$ ,  $P$  value= $0.565$ )

A low percentage of respondents 44(15.9%) who were willing to promote vaccine use were of the opinion that training of health personnel could influence HPV vaccine delivery and there was a higher proportion 232(84.1%) who did not agree to this factor. This association was statistically significant( $X^2=7.387$ ,  $df=1$ ,  $P=0.007$ )

Respondents who were willing 54(19.6%) to promote the vaccine use and said regular supply of vaccine could promote vaccine delivery in hospitals as compared with those that did not agree to this factor( $X^2=8.968$ ,  $df=1$ ,  $P$  value= $0.003$ ) (Table 4.15)

**Table 4.15 Association between factors that could influence HPV vaccine delivery in health facilities and willingness to promote the vaccine N=370**

Variables	Willing n(%)	Not willing n(%)	Total (%)	X <sup>2</sup>	Df	P value
<b>Training of health personnel</b>						
Yes	44 (15.9)	27 (28.7)	71 (19.2)	7.387	1	0.007*
No	232 (84.1)	67 (71.3)	299 (80.8)			
<b>Reduced cost of vaccine</b>						
Yes	15 (5.4)	4 (4.3)	19 (5.1)	0.200	1	0.791(fisher's)
No	261 (94.6)	90 (95.7)	351 (94.9)			
<b>Proper public awareness</b>						
Yes	118 (42.8)	37 (39.4)	155 (41.9)	0.331	1	0.565
No	158 (57.2)	57 (60.6)	215 (58.1)			
<b>Regular supply of vaccine</b>						
Yes	54 (19.6)	6 (6.4)	60 (16.2)	8.968	1	0.003*
No	222 (80.4)	88 (93.6)	310 (83.8)			
<b>Government support</b>						
Yes	7 (2.5)	5 (5.3)	12 (3.2)	1.731	1	0.188
No	269 (97.5)	89 (94.7)	358 (96.8)			
<b>Free vaccine</b>						
Yes	9 (3.3)	4 (4.3)	13 (3.5)	0.205	1	0.746(fisher's)
No	267 (96.7)	90 (95.7)	357 (96.5)			
<b>Proper storage facility for vaccine</b>						
Yes	15 (5.4)	6 (6.4)	21 (5.7)	0.118	1	0.731
No	261 (94.6)	88 (93.6)	349 (94.3)			
<b>Good planning and management</b>						
Yes	14 (5.1)	5 (5.3)	19 (5.1)	0.009	1	1.000(fisher's)
No	262 (94.9)	89 (94.7)	351 (94.9)			

\*indicates significant at P<0.05

## Logistic regression result on factors that could influence promotion of HPV vaccine in health centers

Regular supply of vaccine as a factor in promoting HPV vaccine is 1.8 times (95% CI=1.022-3.136) more likely than other factors to promote HPV vaccine delivery in health care centers and also a factor which is nurses being trained about the vaccine is 3.1 times less likely than all other factors to influence promotion of HPV vaccine (OR=0.324, 95% CI=0.133-0.791) Therefore, the association between these factors were significant (Table 4.16)

**Table 4.16 Logistic regression result on factors that could influence promotion of HPV vaccine**

Variables	Odds ratio	95% CI	P value
Regular supply of vaccine			
Yes	1.791	1.022 - 3.136	0.042
No(ref)			
Training of health personnel			
Yes	0.324	0.133 – 0.791	0.013
No(ref)			

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## CHAPTER FIVE

### DISCUSSION

In developing countries, cervical cancer is the leading cause of cancer in women; cervical cancer is caused by Human Papillomavirus (HPV) and it is estimated that 85% of all HPV-related cancer deaths in the world are due to cervical cancer (Ali, 2010). Hence, there's a need for a mode of prevention which is HPV vaccine that was introduced in 2006. The choice of study participants in this study were nurses because, nurses function as advisors in health care institutions, and, in most cultures, they are considered the primary and most trusted source of health and vaccine information by members of the general public and they relate directly with patients and are involved in immunization programs, thereby the reason for this study was to determine knowledge and willingness of nurses to promote the use of HPV vaccine among adolescents in four (4) State hospitals in the area of Ibadan metropolis.

#### 5.1 Socio-demographic characteristics

The mean age of the study participants was found to be 41.9 years S.D $\pm$  10.4 in which there was no much difference from the study that was conducted in Tanzania where the mean age of the participating nurses was 44.2 years (S.D  $\pm$  9.3)(Urasa, 2011). Ninety-one percent of the study participants were females and the rest males, this is because in nursing profession, female nurses are more than males. There was a high proportion of respondents 31.6% who were Chief nursing officers as compared with a low proportion 14% from Makwe et al, this was actually because of the number of years they had spent working in the present hospital and their level of experience.

#### 5.2 Knowledge on HPV

A high proportion of the respondents knew HPV is one of the most common STI diseases and it is not spread through sharing of toilet. Of all the respondents, three-quarter identified sexual intercourse as a means of HPV spread, this was similar to two thirds and three quarter of nurses who also identified sexual intercourse as a mode of transmission of HPV from studies in Tanzania and Nigeria (Urasa, 2011 and Makwe, 2011) respectively, the knowledge about the mode of transmission was high because HPV infection is transmitted mainly through sexual intercourse and because the respondents are health care providers, they are very much aware of the risk factors causing this infection.

Only a few knew HPV infection could die out on its own and 80% identified cervical cancer as a disease caused by HPV while in similar studies in Nigeria and Thailand, the percentage of nurses that knew about this association were 70.1%, 81.2% respectively (Makwe, 2011 and Nganwai, 2008). One of the measures that can prevent HPV infection is abstinence from sex in which more than half of the respondents agreed to this which was in contrast with Urasa *et al* where less than half of the nurses knew that condom use and being faithful to one partner can prevent HPV infection, this difference could be as a result of different educational level about HPV where they only have good knowledge about cervical cancer and insufficient information about HPV.

Observation of findings from the relationship between age, marital status, occupational status and educational degree were significant factors that could influence knowledge on HPV. There was an association between age and knowledge similarly Nganwai *et al* found a significant relationship between age and knowledge in Thailand. There was also a significant association between nursing cadre and knowledge on HPV. On the other hand older nurses would have been expected to have more knowledge on HPV given the fact that they had more experienced but student nurses were more knowledgeable about HPV because HPV is relatively new. There was also a relationship between educational degree and knowledge where respondents with degree in BSc Nursing had a higher awareness and knowledge about HPV, this could have been as a result of HPV been more emphasized compared to those with Basic Nursing where only cervical cancer and its causative agent would have been mentioned and not going deeply into what the infection is all about. Generally, 13.5% of the study participant had a good knowledge about HPV.

### 5.3 Knowledge on and attitude towards HPV vaccine

In this study, only three quarter (75.7%) of the nurses knew HPV vaccine was for the prevention of cervical cancer this was high as compared and found in past studies with 26.7% and 39.1% in Nigeria and Thailand respectively (Makwe, 2011, Nganwai, 2008). This observed difference could be as a result of recent publicity or awareness being given to HPV vaccine in recent times. Generally, there was poor knowledge on HPV vaccine (10.0%) among the respondents similar to a Nigerian study (Makwe *et al*), this poor knowledge on HPV vaccine among the nurses in this study may be due to the lack of adequate HPV and cervical cancer education programs in Nigeria

Respondents' educational degree was a composite factor as regards to knowledge on HPV vaccine but despite the fact that those who had a degree in Basic Nursing were more than those respondents who had degree in B.Sc Nursing. Twenty-three percent of those with the higher educational degree had better knowledge about the vaccine, this was significant and it might be due to the differences in the context of curricula in schools. Nursing school was a major source of information for many nurses in this study; this result shows the need for more updates and recent developments on the issue of health. The importance of level of education was also supported by findings by Nganwai *et al* in a group of more qualified nurses. Nurses need to update their knowledge after nursing school so as to be more current with new developments

A relatively higher proportion of respondents 75% supported vaccination of adolescent girls which was similar to 67% in Makwe *et al*. Forty-two percent of the respondents expressed a desire to be vaccinated so as to prevent the disease. Proven efficacy of vaccine was a source of confidence for the nurses and it was a factor that was mentioned that would influence public acceptability of a vaccine such as HPV and this made the nurses to have a positive attitude towards use of the vaccine.

#### **5.4 Willingness to promote HPV vaccine**

Factors which were significant that could influence respondents' willingness to promote HPV vaccine were age, occupational status of nurses, knowledge of nurses on HPV and HPV vaccine, perceived efficacy to counsel adolescents and their attitude towards the vaccine were key determinants to respondents' willingness to promote the vaccine. Integration of HPV vaccine into community programs was mentioned as a factor that would influence willingness of nurses to promote the vaccine. This could be explained by the fact that the HPV vaccine is still a new concept in most developing countries like Nigeria and is not yet included in the National Program on Immunization (NPI) and with its integration into existing programs like child immunization days; there would be mass benefit, better awareness and public acceptability.

The most predictive of willingness was nurses' efficacy to counsel adolescents on the need for the vaccine. Nurses with strong self-efficacy expectations were more likely to try new experiences like the introduction of the new HPV vaccine, pursue and accomplish them. However, to back up



efficacy, specific knowledge on HPV on the prevalence, transmission, risk factors and prevention needs to be emphasized among others. There was also a significant association between training of health personnel, regular supply of vaccine and a respondent's willingness, these factors could influence vaccine use, this is due to the fact that health workers need to be skilled or trained on the mode of administration, side effects and challenges of the service delivery which could be through organization of seminars, continuing medical education, conferences and workshops. Regular supply of vaccine to the health centers which was also mentioned as a significant factor will also encourage the health workers and members of the public to accept the vaccine. .

### **5.5 Conclusion**

From this study, almost half of the respondents had good knowledge on cervical cancer but only a few of the nurses had good knowledge on HPV and HPV vaccine. Despite the poor knowledge about the vaccine, seventy-five percent of the nurses desired to recommend the vaccine to adolescents so as to prevent cervical cancer, while twenty-five percent attributed their reason for not recommending the vaccine to adolescents to inadequate information about the vaccine.

### **5.6 Recommendations**

1. To bridge the gap between nurses and inadequate information about HPV vaccine, emphasis should be made in their nursing schools' curricula and for those already past schooling, seminars, workshops on cervical cancer, HPV and HPV vaccine should be organized for the nurses, where they would be trained on the vaccine's safety measures, mode of administration and management of side effects that could arise as a result of the vaccine.
2. HPV vaccine should be integrated into child immunization schedule such as existing community outreaches, but should be for youths aged 9 years and above and this could create public awareness, accessibility and proper acceptability.
3. Government should be involved in the vaccine delivery by making sure there's a regular supply of the vaccine and the cost of the vaccine should be subsidized so as to make it affordable for the public.

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## INFORMED CONSENT FORM

My name is DAIRO, GRACE OLURONKE, I am a student of the Department of Epidemiology, Medical Statistics and Environmental Health, University of Ibadan, Ibadan. I am interviewing Nurses in State Hospitals Ibadan in order to find out about your knowledge and awareness on HPV vaccine and your willingness to promote its use among young women. I will need to ask you some questions.

Please note that your answers will be kept confidential. You will be given a number and your name will not be written on the form so that your name will not be used in connection with any information you give. The information you give will be used only for the purpose of this study. Findings will be used to make interventions or policy. During this exercise, medical examination will not be carried out on you, but your knowledge about HPV vaccine will be required in answering the questions. This process will not cause you any harm or injury. Your honest answers to the questions will help to better understand what nurses think, say or do with respect to their knowledge on HPV vaccine.

You are free to take part in this programme. You have a right to withdraw at any given time if you choose to. We will greatly appreciate your help in responding to the survey and taking part in this study

**Consent:** Now that the study has been well explained to me and I fully understand the content of the process, I will be willing to take part in the programme.

---

Signature/thumbprint of participant

---

Interview date

# Questionnaire on knowledge and willingness of nurses to promote the use of HPV vaccine among adolescents attending State hospitals in Ibadan matropolis

Dear respondent,

I am DAIRO, GRACE O a student of the University of Ibadan, Faculty of Public Health (Department of Epidemiology, Medical Statistics and Environmental Health), carrying out a survey on Nurses' awareness on HPV vaccine, their knowledge and willingness to promote its use using this questionnaire. I would want to assure you that all the responses stated in this questionnaire shall be confidential and inaccessible to other person and would be used for research purpose ONLY. Please as much as possible; give honest and sincere answers to the questions on this questionnaire. Thank you for your participation.

## SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

Serial Number \_\_\_\_\_

Hospital (1) \_\_\_\_\_

1. Age at last birthday (in years) \_\_\_\_\_

(2) \_\_\_\_\_

2. Gender (1) Male (2) Female

3. Marital Status (1) Single (2) Married (3) Divorced (4) Separated (5) Widowed

4. Religion (1) Christianity (2) Islam (3) Traditional (4) Others(specify) \_\_\_\_\_

5. Ethnic group (1) Yoruba (2) Ibo (3) Hausa/Fulani (4) Others(specify) \_\_\_\_\_

6. Occupational Status (1) CNO (2) ACNO (3) PNO (4) SNO (5) NO (6) Staff midwife (7) Student nurse (8) Others (specify) \_\_\_\_\_

7. Highest educational Degree Obtained (1)Basic Nursing (2)B.Sc Nursing (3)Others (specify) \_\_\_\_\_

8. No of years spent working in this hospital \_\_\_\_\_

## SECTION B: KNOWLEDGE ON CERVICAL CANCER

9. Have you ever heard of Cervical Cancer (1) Yes (2) No (3) Don't know

10. If Yes to q 10, which of these options was/is your source of information

1. Awareness campaign (1) Yes (2) No

2. Seminar lectures (1) Yes (2) No

3. Internet (1) Yes (2) No

4. Media (Television/Radio/Newspaper) (1) Yes (2) No

5. School lectures (1) Yes (2) No

11. Of the options above in question 10, which is your main source of information \_\_\_\_\_?

12. For the following statements on cervical cancer, respond by ticking the option that fits your opinion

S/n	Statements	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
1	Cervical cancer is the second most common cancer among women.					
2	Cervical cancer is mostly found in developing countries					
3	Older women are more at risk of having Cervical cancer					
4	Poor menstrual hygiene is a risk factor for cervical cancer					
5	Early age at coitus is a risk factor for cervical cancer					
6	Smoking is not a risk factor for cervical cancer					
7	Use of contraceptives is a risk factor for cervical cancer					
8	Post coital bleeding is a symptom of cervical cancer					
9	Swelling of cervix is a presenting feature of Cancer of the cervix					
10	Swelling of the vulva is a symptom of cervical cancer					
11	Anaemia is not a presenting sign in cervical cancer					
12	Use of condom is the best method of preventing this disease					
13	Technique available for detecting cervical cancer is Blood test					
14	Human Immuno-deficiency virus (HIV) also causes cancer of the cervix					
15	The virus causing cervical cancer is Human Papilloma Virus(HPV)					
16	Pap smear screening is a secondary method of preventing cervical cancer					
17	Vaccination is a primary method of preventing cervical cancer					
18	Cervical cancer is highly preventable					
19	The causative agent in cervical cancer is transmitted sexually					
20	Cervical cancer can be transmitted through sharing of toilets					

## SECTION C: KNOWLEDGE ON HPV

13. For the following statements, respond by ticking the option that fits your opinion most

S/N	Questions	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
1	HPV is one of the most common STI disease					
2	Human Papilloma virus is spread through Sharing of toilet					
3	Human Papilloma virus can be spread through Sexual intercourse					
4	HPV infection can die out on its own					
5	Genital wart is a disease caused by HPV					
6	Cervical cancer is a disease caused by HPV					
7	Low risk HPV types 6 and 11 cause cervical cancer					
8	HPV infection can be prevented through use of anti-viral drugs					
9	Abstinence from sex is a measure that can prevent HPV					
10	A woman having sexual intercourse with an HPV infected partner is not likely to contact this disease					
11	Of the people that get infected with HPV, all will develop cervical cancer at a point in time					

## SECTION D: KNOWLEDGE ON HPV VACCINE:

Please tick the option that fits your opinion

14. What is HPV vaccine used for?

1. curing cervical cancer
2. Preventing cervical cancer
3. Preventing Hepatitis
4. I don't know

15. The HPV vaccine available for immunization of young women in Nigeria is/are.

1. Gardasil and Cervarix
2. Engerix B and Recombivax HB
3. (1) and (2) only
4. Don't know

16. The age group of women eligible for the vaccine is

1. Under 9 years
2. 9-26 years
3. 26-30 years
4. Don't know

17. What is the dose of HPV vaccine given and how is it given?

1. 1.0ml dose, intramuscularly
2. 0.5ml dose, subcutaneously
3. 0.5ml dose, intramuscularly
4. Don't know

18. How many doses of this vaccine are given all together and at what interval

1. 2 doses at 4 months
2. 3 doses at 6 months

3. 4 doses at 12 months
  4. Don't know
19. The side effect of the HPV vaccine is/are:
1. Irritation and Itching
  2. Swelling of the cervix
  3. (1) and (2) only
  4. Has no side effects

20. For the following statements on, tick the option that fits your opinion

S/n	Statements	Options				
		Strongly agree	Agree	Don't know	Disagree	Strongly disagree
1	The vaccine affects girls' ability to get pregnant					
2	The vaccine prevents against having healthy babies in future					
3	The vaccine is only relevant for the prevention of cervical cancer					
4	HPV vaccine will not replace the need for regular pap smear screening					
5	Vaccination will bring about an increase in a woman's promiscuous behavior					
6	Vaccination is only effective in people that have not yet been infected with HPV					

### SECTION E: ATTITUDE, TOWARDS PROMOTION OF HPV VACCINE

21. Please, tick as appropriate

	Statements	Extremely likely	Likely	Unsure	Unlikely	Extremely unlikely
1	How likely would you support giving this vaccine to adolescent girls?					
2	Would you recommend the vaccine to your daughter?					
3	Would you recommend this vaccine to your sister?					
4	If the vaccine was offered to women in your age group, would you yourself want the vaccine?					
5	Do you believe that the vaccine can prevent cervical cancer					

22. Do you administer HPV vaccine in your hospital (1) Yes (2) No

23. If yes to question 22, what are the challenges you think could arise providing this service

1. \_\_\_\_\_
2. \_\_\_\_\_

24. If No, to question (22), if HPV vaccine is to be provided in your hospital, what are the things that would promote the delivery of this service?

1. \_\_\_\_\_
2. \_\_\_\_\_

25. Are you willing to administer HPV vaccine to adolescents visiting your hospital (1) Yes (2) No

26. If Yes to question (25), what are the reasons that makes you willing

1. \_\_\_\_\_
2. \_\_\_\_\_

27. If No to question (25), why are you not willing?

1. \_\_\_\_\_
2. \_\_\_\_\_

28. Do you know of anyone who has been given HPV vaccine? (1) Yes (2) No

29. If Yes to question (28), what is your relationship with the person \_\_\_\_\_

2. Where was it given \_\_\_\_\_
3. How old was the person when given \_\_\_\_\_

#### SECTION F: EFFICACY TO PROMOTE HPV VACCINE

30. Tick as appropriate from the options given

S/n	Statements	Options			
		Very confident	Somehow confident	Not confident	Don't know
1	How confident are you in recommending this vaccine to adolescents				
2	How confident are you in telling patients about the effectiveness of the HPV vaccine				
3	How confident are you in allowing your daughter get the vaccine, if this vaccine is for free				
4	How confident are you in managing the side effects of this HPV vaccine				
5	How confident are you in counseling adolescents on the need for HPV vaccine				
6	How confident are you in administering HPV vaccine compared to administering other vaccine				
7	How confident are you in dealing with the challenges that may arise as a result of giving this vaccine				

31. Should HPV vaccines be integrated into existing community outreach programs, such as child immunization days? (1) Yes (2) No

32. If Yes, Give reasons why? (1)-----

(2)-----

33. If No, why (1)-----

(2)-----

THANK YOU

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TELEGRAMS.....

TELEPHONE.....



**MINISTRY OF HEALTH**  
DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION  
PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. ....

All communications should be addressed to

the Honorable Commissioner quoting

Our Ref. No. AD 13/ 479/ 208

25<sup>th</sup> May, 2012

The Principal Investigator,  
Department of Epidemiology,  
Medical Statistic & Environmental Health,  
College of Medicine,  
University of Ibadan,  
Ibadan.

**Attention: Dairo Grace Oluronke**

Ethical Approval for the Implementation of your Research Proposal in Oyo State

This acknowledges the receipt of the corrected version of your Research Proposal titled: "Knowledge and Willingness of Nurses to promote HPV Vaccine among young Women in State Hospitals in Ibadan Metropolis."

2. The committee has noted your compliance with all the ethical concerns raised in the initial review of the proposal. In the light of this, I am pleased to convey, to you, the approval of committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the committee will monitor, closely, and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of the findings as this will help in policy making in the health sector.

4. Wishing you all the best,

  
Signature & Date  
Mrs. Adepaju  
Director, Research & Statistics

Secretary, Oyo State, Research Ethical Review Committee