QUALITATIVE ASSESSMENT OF KNOWLEDGE, PERCEPTION AND ACCEPTABILITY OF HUMAN PAPILLOMAVIRUS VACCINE AMONG MOTHERS OF ADOLESCENT GIRLS IN IBADAN NORTH-WEST LOCAL GOVERNMENT AREA, OYO STATE

BY

Risqiyat Tolulope AMBALI
B.Sc. Public Health (BABCOCK)
MATRIC. NO.: 209038

A Project in the Department of Health Promotion and Education
Submitted to the Faculty of Public Health
In Partial Fulfilment of the Requirement for the degree of

MASTER OF PUBLIC HEALTH

Of the

UNIVERSITY OF IBADAN

FEBRUARY, 2021

CERTIFICATION

I certify that this study was carried out by Risqiyat Tolulope AMBALI in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.

……..

Supervisor

Dr. Yetunde O. John-Akinola
B.Sc, MPH (Ibadan), PhD (Galway)
Department of Health Promotion and Education,
Faculty of Public Health, College of Medicine,
University of Ibadan, Nigeria.

DEDICATION

This work is dedicated to God Almighty whom in His love, kindness and faithfulness is the foundation of my strength and also for His protection through this master's program.

ACKNOWLEDGEMENT

To begin with, I humbly express my gratitude to God Almighty for sustaining me throughout this program. I am immensely grateful to my supervisor, Dr. Y.O John-Akinola for her professional guidance and support in the course of this work. She took out time to guide me through all the stages of this study and brought out the best in me. Her critical review and motivation are highly appreciated.

My special gratitude goes to all my lecturers, the Acting Head of Department, Dr. M.A. Titiloye, Professor (O. Oladepo, A.J. Ajuwon, and O.S. Arulogun). I seize this opportunity to thank my lecturers Dr. (O.E Oyewole, I.O. Dipeolu, Mojisola.M. Oluwasanu, Adeyimika.T. Desmennu, F. O. Oshiname (Late)), Mr. A.J. Imaledo and every member of staff, I am grateful for your support at one point or the other in the course of the research and programme. My profound gratitude goes to the secretary of the Department, Mrs. Pratt and other members of the administrative staff including Mr. O.L. Quadri and Mr. T. Oyeyemi who never got tired of attending to any matter related to this work.

I also want to tender my unending and sincere appreciation to the members of my family, my mother for ever supporting me both financially and spiritually. I cannot but remember my siblings, for their love, support, encouragements and patience during the research period. I love you all.

Finally, I appreciate all my friends and course mates of MPH (HPE/POP and REP), 2018/2019 set for their motivation and encouragement. May God bless you all.

ABSTRACT

Cervical cancer caused by Human Papillomavirus (HPV) accounts for the second most common cancer. Globally, it affects more than half a million women each year. Vaccination against HPV is considered one of the strategies that can provide 80-100% protection against anogenital warts and reduce the incidence of pre-malignant lesions to 60-80% but the knowledge and uptake of HPV vaccine remain low in Nigeria and among women. This study investigated mothers' knowledge, perception and acceptance of Human Papillomavirus Vaccine using a qualitative method.

This study was a descriptive cross-sectional qualitative study. A multistage and snowballing sampling technique was adopted to select the study participants. The study participants included mothers of adolescent girls between the ages of 9-15 years. An In-depth interview was conducted using an In-depth Interview guide to collect data on knowledge, perception, and acceptability of human papillomavirus vaccine among mothers of adolescent girls aged 9-15 years in a community setting. The audiotapes were played and replayed several times for clarity after which full verbatim transcription was done and analysed using thematic data analysis. Themes were generated and categories were developed from common themes. Each opinion of participants was highlighted in italics including means of identification for easy comprehension. Ethical approval was obtained from Oyo state ethical review committee.

Most of the women were between the ages of 30-49 years and most of them were traders. Almost all the participants had heard about cervical cancer, but they do not have good knowledge about it. Only a few of the participants had heard of HPV and HPV vaccine. Brief information was given on Cervical Cancer, Human Papillomavirus, and Human Papillomavirus Vaccine to those who do not know about it. Despite their low knowledge, most of the participants accepted for their adolescent daughters to take the HPV vaccine for the prevention of HPV. The cost of the HPV vaccine, side effects of the vaccine and exposure of their daughters to promiscuity as a result of taking the HPV vaccine were the major barriers expressed by the mothers as regards to uptake of the vaccine by their daughters.

The result from the qualitative study was able to establish the notion that Health education programs about cervical cancer, HPV and HPV vaccine should be put in place to increase

awareness and knowledge of mothers of adolescent girls. Also, HPV vaccination should be included as part of routine immunization for female adolescents.

Keywords: Cervical cancer, HPV vaccine, Knowledge, Barriers, Willingness

Word count: 397

TABLE OF CONTENTS

CHAPTER THREE: METHODOLOGY

CHAPTER FOUR: RESULTS

CHAPTER FIVE: DICUSSION, CONCLUSION AND RECOMMENDATIONS

LIST OF TABLES

LIST OF FIGURE

APPENDICES

GLOSSARY OF ABBREVIATIONS

CDC	-	Center for Disease Control and Prevention
CIN	-	Cervical Intraepithelial Neoplasia
HPV	-	Human Papillomavirus
IBNWLG	-	Ibadan North West Local Government
LG	-	Local Government
STI	-	Sexually Transmitted Infection
WHO	-	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Cervical cancer accounts as the second most common cancer which affects women all over the world and it affects more than half a million women each year (World Health Organization (WHO), 2018). It is known to be the leading cause of death among women with 270,000 deaths occurring each year (Bardají, Mindu, Augusto, Casellas, Simbine *et al.*, 2018). According to the World Health Organization (2018), an estimate of 570,000 new cases of cervical cancer occur representing 6.6% of all female cancers and approximately 90% of these cases occurred in low and middle-income countries. Annually, 70,722 new cases of invasive cervical cancer occur in Sub-Sahara Africa (Bisi-Onyemaechi, Chikani and Nduagubam, 2018) and also accounts for 22.5% of all cases of cancer in women and majority of these women live in the rural areas (American Cancer Society, 2014). East Africa is one of the most affected areas with the incidence of more than 30 cases per 100,000 women per year (Makuza, Nsanzimana, Muhimpundu, Pace, Ntaganira and Riedel, 2015). In Nigeria, new cases of cervical cancer are estimated to be about 14,098 annually (Bisi-Onyemaechi, Chikani and Nduagubam, 2018).

Human papillomavirus (HPV) is the most common sexually transmitted infection (STI). The virus is a small, double-stranded DNA viruses that infect the epithelium with more than 120 identified types and about 40 types infect the mucosal epithelium; these are grouped according to their epidemiologic association with cervical cancer which acts as carcinogens in the development of cervical cancer and other anogenital cancers (Centre for Disease Control and Prevention (CDC), 2015). Most sexually active men and women will be infected at some points in their lives. Human papillomavirus is found in 99.7% of cervical cancer specimen (Denny, Adewole, Dreyer, Moodley *et al.,*2014). According to the HPV information centre, (2019), cervical HPV infection is the most prevalent globally with an estimate of 560,000 new cases and 255,000 deaths. Africa has the highest new and death cases of cervical cancer with an estimate of 119,284 and 81,687 cases respectively (HPV information centre, 2019). In West Africa, 31,955 new cases of cervical cancer were reported with 23,529 deaths, however, it was also reported that there was an incidence of

14,943 of cervical cancer in Nigeria with an estimate of 10,403 death cases (HPV information centre, 2019). This was reported as the highest rate found in African women with a report that it ranges from 10% in Port Harcourt, 26.3% in Ibadan and 37% in Abuja, Nigeria (Nejo, Olaleye and Odaibo, 2018). Sexual promiscuity, early age at first sexual debut and immunosuppression have been linked to being some risk factors of HPV infection in women and this risk increases with the high rate of recent and lifelong sexual partners (Nejo, Olaleye and Odaibo, 2018). Symptoms of cervical cancer include irregular periods, intermenstrual (between periods) or abnormal vaginal bleeding after sexual intercourse; back, leg or pelvic pain; fatigue, weight loss, loss of appetite; vaginal discomfort or odorous discharge; and a single swollen leg (WHO, 2018). More severe symptoms occur at an advanced stage.

Quadrivalent vaccine is considered to be one of the effective strategies considered to prevent the occurrence of new cases of cervical cancer with protection of between 80–100% vaccinates for anogenital warts and 60–80% in reducing the incidence of pre-malignant lesions (Dantas, Sousa, Duarte, Baracat, Esposito, *et al* 2018). This vaccine generates HPV specific antibodies that bind to the virus and prevent cervical cancer. According to Achampong, Kokka, Doufekas and Olaitan, (2018), there are three types of HPV vaccines which are in use; Cervarix^{R} which is a bivalent vaccine that protects against HPV types 16 and 18, Gardasil^{R} which is a quadri-valent vaccine and it protects against HPV types 6 and 11 as well as types16 and 18, and Gardasil 9 is a nine valent vaccine against HPV types 6, 11, 16, 18 and types 31,33,45,52 and 58 (responsible for approximately 14% of HPV associated cancers in women).

The HPV vaccine is given in a series of shots. For people between ages 15-45years, they take three (3) separate shots of vaccine and it takes about 6 months to take the complete shots. The second shot is given two months after the first and the third is given 4months after the second shot. For people age 9-14years, two shots are given with 6months interval (WHO, 2013). It is recommended that adolescent girls between the ages of 9-13 years should take the vaccine because they likely would not have begun sexual activity and it is not recommended for pregnant women, girls younger than 9years and persons with a life-

threatening allergy to any component of the vaccine (WHO, 2013). However, the primary prevention of HPV is the use of a condom if sexually active.

1.2 Statement of the Problem

Cervical cancer is ranked the second most common kind of cancer and the fourth leading cause of death among women globally. About half a million women develop cervical cancer each year with the estimate of 85% in developing countries and 85% deaths are also as a result of cervical cancer in low and middle-income countries (Hailemariam, Yohannes, Aschenaki, Mamaye, Orkaido and Seta, 2017). A global report according to WHO, (2015) revealed that new cases of cervical cancer were 7.9%, with mortality of 7.5% and 5 years prevalence was 9%. The incidence rate of cervical cancer in sub-Saharan Africa was increasing, with 75,000 new cases being reported (Bouassa, Prazuck, Lethu,Jenabian, Meye & Bélec, 2017). In Nigeria, there were 250/100,000 new cases of cervical cancer which occur annually (Momenimovahed and Salehiniya, 2017).

Cervical Human Papillomavirus (HPV) infection is the most prevalent globally with the highest rate found in African women with a prevalence of 24.8% in Nigeria. In 2018, GLOBOCAN estimated that 311,365 deaths occurred due to cervical cancer worldwide with 8.2 deaths per 100,000 women (Dusek, Maluskova and Snajdrova, 2018). In Africa, approximately 80,000 women are diagnosed with cervical cancer per year, and about 60,000 women die from it (Denny and Anorlu, 2012). Nigeria has the highest number of deaths from cervical cancer in Africa with the incidence of 29 per 100,000 by age-standardized rate and about 3.28 girls are expected to develop cervical cancer. According to Vanguard newspaper, (2013), WHO, UN, World Bank and IARCGlobocan, 9,659 deaths occur as a result of cervical cancer was recorded annually in Nigeria.

Studies ought to fill knowledge gaps people lack in understanding such as a basic description of HPV, the association between HPV and cervical cancer, how HPV can be prevented considering the high incidence of deaths due to cervical cancer. Several studies have shown that lack of knowledge about the HPV and its vaccination and also the cost of the vaccination for mothers who have satisfactory knowledge on HPV contributes to reasons why mothers of adolescents do not vaccinate their daughters against this virus.

Mastura, Juwita, Siti and Wan, (2018) stated that poor knowledge exhibited by parents on HPV may affect decision-making and uptake of HPV vaccination for their daughters.

In a study carried out by Cunningham, Forbes, Ivankova, Mayo-Gamble, Kelly-Taylor and Deakings, (2018), mothers with low intention do not perceive their daughter as being sexually active or in the near future. Also, it notes that other barriers influencing mothers' decision include knowledge, daughters' age and mistrust in pharmaceutical companies and physicians. Also, adolescents are of the view that their parents' approval of the vaccination will determine if they will accept the HPV vaccination or not (Ndikom and Oboh, 2017). Therefore, this study assessed the knowledge, perception and acceptability of HPV vaccine among mothers' of adolescent girls using a qualitative method. Parents play an important role in determining the uptake of the HPV vaccine. Assessing their knowledge and acceptability of HPV vaccination will reduce the risk among the future generation.

1.3 Justification

Cancer of the cervix is preventable, yet its prevalence is high in Nigeria (Ezenwa, Balogun and Okafor, 2013). Nigeria is ranked second with the most frequent cases of cervical cancer among women between the ages of 15-44years and about 3.5% of women in the general population are estimated to harbour cervical HPV 16 and 18 infections at a given time and 66.9% of invasive cervical cancer are attributed to HPVs 16 or 18. (HPV fact sheet, 2018). Human papillomavirus can be prevented by the uptake of the HPV vaccine, however, the knowledge on the HPV and cervical cancer is important in making an informed decision as regards the acceptance of the HPV vaccine among mothers' of adolescent girls.

With the high prevalence of HPV infection and cervical cancer in Nigeria, there is low utilization of the vaccine which is a preventive measure and it is highly effective if administered before sexual activities begin. Many quantitative studies have assessed mothers and adolescents' knowledge, perception and willingness to the uptake HPV vaccine. However, an in-depth assessment using a qualitative assessment which explores mothers; in-depth perception is scarce. Therefore, this study utilized a qualitative method to assess knowledge, perception and acceptance of human papillomavirus vaccine among mothers of adolescent girls. The result of this study might help plan intervention strategies

which can be used to improve the knowledge of mothers' of adolescent girls on HPV and HPV vaccination.

1.4 Research questions

1. What is the level knowledge of mothers in Ibadan North-west Local Government Area on the HPV vaccine?
2. What is the perception of mothers in the local government on the HPV vaccine?
3. What is the level of acceptance of mothers in the local government regarding the uptake of the HPV vaccine for their adolescent daughters?
4. What are the barriers to acceptance of HPV vaccines among mothers in the local government?

1.5 Objectives of the study

1.5.1 Broad Objective

To investigate mother's knowledge, perception and acceptance of Human Papillomavirus Vaccine in Ibadan North-West local government of Oyo State, Nigeria.

1.5.2 Specific Objectives

1. To assess the knowledge of mothers Ibadan North-west Local Government Area of Oyo State on HPV vaccines
2. To determine the perception of mothers in the local government on the HPV vaccine
3. To investigate the level of acceptance of mothers in the local government towards the uptake of the HPV vaccine for their adolescent daughters
4. To determine the barriers to acceptance of HPV vaccines among the mothers in the local government

1.6 Operational definitions

Human papillomavirus – this is a viral infection that commonly causes skin or mucous membrane growth (warts)

Human papillomavirus vaccines – these are vaccines that help to protect against the virus that causes genital warts and may lead to come kinds of cancer.

Knowledge – this is an awareness or familiarity or understanding of a fact or situation

Perception – this is the way in which situation is regarded, understood, or interpreted

Acceptance –this is the action of consenting to receive or undertake something offered

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Non-communicable disease (NCDs)

Non-communicable diseases (NCDs) are chronic conditions that do not result from an (acute) infectious process and hence are not communicable, they have prolonged course which does not resolve spontaneously, and they have no complete cure (CDC, 2013). Types of NCDs include; cardiovascular disease (such as coronary heart disease, stroke), chronic respiratory disease, Diabetes, Cancer (such as cervical cancer), chronic neurologic disorder, Arthritis/Musculoskeletal diseases etc. According to WHO, 2017, the prevalence of heart disease, cancer, diabetes and chronic respiratory diseases which were once considered the close companions of affluent societies is now global and has the highest-burden in the low and middle-income countries. It was also estimated that about 40 million people die annually as a result of NCDs, accounting for 70% of death worldwide (WHO, 2017). Unhealthy lifestyle-related behaviour, old age are among the main contributing factors to NCDs (Gamage & Jayawardana, 2017).

Cancer is one of the NCDs which can start in almost anywhere in the human body whereby the body cells begin to divide without stopping and spread into surrounding tissues, as the cells become more and more abnormal, old or damaged cells survive when they should die and new cells form when they are not needed which then divide without stopping and may form growths called tumours (National Cancer Institute, 2015). According to CDC, 2018, types of cancers including but not limited to lung cancer, breast cancer, prostate cancer, cervical cancer, bladder cancer, ovarian cancer, colorectal cancer, kidney cancer, liver cancer, lung cancer, skin cancer, thyroid cancer

2.2 Concept of Cervical Cancer and Human Papillomavirus

Cervical cancer is a public health problem and the leading cause of morbidity and mortality worldwide and developing countries are said to have the highest incidence of cervical cancer (Mitiku & Tefera, 2016). It is the most common gynaecological cancer in the world. Although cervical cancer is preventable, the incidence is expected to increase by a double by the year 2025 (The GLOBOCAN database 2012). Over three-fourths of patients

diagnosed with cervical cancer are at the advanced stage which leads to poor prospects of long term cure and survival (Toye, Okunade, Roberts, Salako, Oridota & Onajole, 2017). Majority of cervical cancer cases occur among women in their 30s and 40s which is the age which women are often raising families (Chan, Aimagambtova, Ukybassova, Kongrtay & Azizan, 2019)

According to Kumar, 2016, early symptoms of cervical cancer include;

- Profuse, thin, watery, blood-tinged discharge
- Intermittent, painless metrorrhagia or spotting
- Postcoital /post-douching bleeding or spotting

Advanced symptoms include;

- Bleeding episodes become heavier, frequent and last longer
- Post-menopausal bleeding
- Rectal bleeding, obstipation due to rectum involvement
- Referring pain to flanks or legs due to involvement of ureters, pelvic wall, sciatic nerve routes
- Oedema lower extremities (one or both) due to lymphatic and nervous blockage by pelvic wall diseases

There are currently two types of diagnostic tests for cervical cancer screening which are Papanikolaou which detects early precancerous cells lesions to be treated effectively test and HPV test which detects HPV infections that could lead to cancer (Tsikoura, Stefanos, Manav, Tomara, Iatrakis *et al.,* 2016)

The Human Papillomavirus is the primary cause of cervical cancer with the high-risk genotypes and over 70% cases of cervical cancer is directly attributed to HPV 16 and 18 strains (a sexually transmitted agent) making it the only human cancer whose cause is known (Toye *et al.,* 2017). The secondary prevention involves using screening and treatment technologies for early detection before it progresses to invasive cancer such as Pap smear (Akpo, Deji, Idiake, Otohinoyi & Medavarapu, 2016). However, vaccines are available to prevent HPV and thus cervical cancer.

2.2.1 Human Papillomavirus (HPV)

HPV is the most common sexually transmitted infection globally (Milner, 2015) with an estimate of 569,000 new cases and 311,000 deaths occurring from cervical cancer (CDC, 2016). HPV has over 100 subtypes and they are further characterized into mucosal (cause genital wart, respiratory papillomatosis, cervical and other anogenital cancer and oropharyngeal cancer) and cutaneous (cause skin warts) depending on the epithelium they primarily infect (Eileen, 2016). The virus can affect anyone who is sexually active and often it has no symptoms (Satpute, Dhobale, Wani & Shirsat, 2018). Risk factors of HPV include; early age of initial gender, multiple sexual partners, smoking and immune suppression (Satpute et al, 2018). Young women are more vulnerable to these viruses and often become infected by multiple strains of the virus.

HPV can be prevented by three HPV vaccines which are; Bivalent Adjuvanted Vaccine (Cervarix; HPV2) used for HPV types 16 and 18. It is licensed for used for females from age 9 years to prevent against premalignant genital (cervical, vulva and vaginal) lesions and cervical cancer; Quadrivalent Adjuvantent (Gardasil; HPV4) used HPV types 6, 11, 16 and 18. It is also licensed for use for females from age 9 to prevent against premalignant genital lesions, cervical cancer and external genital warts and Nonavalent Vaccine(Gardasil 9; HPV9) used to prevent HPV types 6, 11, 16, 18, 31, 33, 45, 52 and 58. It is licensed for females from age 9 to prevent against premalignant genital lesions and cancers affecting the cervix, vulva and anus and external genital warts caused by specific types of HPV which were approved for use in many countries and they can help in the control of cervical cancer burden worldwide (WHO, 2014 and European Medicine Agency, 2015). The vaccines focus on higher risk types of HPV and they guard against HPV 16 and 18 which are the cause of most genital warts (Todd, 2019).

According to WHO, 2019, there are three types of recommended screening test which are;

- HPV testing for high-risk HPV types
- Visual inspection with Acetic Acid (VIA)
- Conventional (pap) test and liquid-based cytology (LBC)

2.2.2 Natural history of HPV

HPV is a relatively small non-enveloped virus that contains a double-stranded, closed circular DNA genome. The virus is diagnosed by detecting the viral DNA but not by isolating the virus. Skin-to-skin transmission is the primary mode of transmission of HPV in the genital tract and it infects the basal cells of the stratified squamous epithelium and the metaplastic cells of the transformation zone of the cervical squamocolumnar junction (Deborah & Provencher, 2007). HPV 1 and HPV are both sexually transmitted disease but they differ by the increase risk of certain sexual behaviours (Videla, Darwich, Canadas, Coll, Pinol*et al.,* 2013). Majority of HPV clears within two years in women and about 60% of women develop serum antibodies against HPV (HPV seropositive). A minority of the infection persists leaving the individuals at high risk of developing cervical precancer (Cervical Intraepithelial Neoplasia 3 (CIN3)). The CIN3 lesions are the targets of screening because more than one-third of these will progress to invasive cervical cancer within 10-20 years (Patti, 2011). Almost 70% of cervical cancer is associated with HPV 16 and 18. HPV infection occurs in about 80% women and the remaining 20% develops into a non-progressive cervical interepithicalialneoplasia grade 1 (CIN-1) which regresses without treatment while the minority if HPV infection persist and develops into CIN-2 and CIN-3 and 50% of CIN lesions progress to cervical cancer if left untreated. About 1% of high-risk infection develops into cervical cancer (Kabekkoda, Bhat, Pandey *et al.*, 2015)

2.2.3 Prevalence of HPV

HPV is a sexually transmitted disease that affects women more in low and middle-income countries. According to WHO, an estimate of 570,000 new cases of HPV occurred in 2018 representing 7.5% of all female cancer deaths. The global prevalence of HPV in women without cervical abnormalities is 11-12% with higher rates in sub-Saharan Africa (24%), Eastern Europe (21%) and Latin America (16%). HPV16 and 18 happen to be the two most prevalent HPV with 3.2% and 1.4% respectively (Forman, Martel, Lacey, Soerjomataram, Lortet-Tieulent *et al.,* 2012). In the United States, about 14 million new cases of sexually transmitted HPV occurs, with an estimate of 79million people to be currently infected with the virus (American Sexual Health Association, 2018). Sub-Saharan Africa countries such

as Guinea, Zambia, Tanzania, Malawi and Mozambique have the highest incidence of cervical cancer in the world (>50/100,000 women) (Vuyst, Alemany. Charles, Carla, Sahasrabuddhe *et al.,* 2013) Guinea was reported to have the highest prevalence of women with HPV-positive (47.9%) (Keita, Clifford, Koulibaly, Douno, Kabba *et al.,* 2009). In a study conducted in Ibadan, Nigeria, the overall prevalence of HPV infection was said to be 26.3% while women without cervical lesions were 24.8%. It is estimated in Nigeria that 23.7% of women harbour cervical HPV infection at a time (Agida, Akaba, Isah & Ekele, 2015).

2.2.4 Transmission of HPV

HPV is contracted through direct skin-to-skin contact which includes sexual intercourse, anal sex, oral sex and any other contact that involves the genitals and skin surfaces (Gregory, Smith and Lisa, 2011). About, half of the sexually active men and women at one point in their lives will be infected with a type of HPV (CDC, 2016). Some may be repeatedly infected. HPV infection occurs rapidly following sexual debut, with pre-coital transmission rates estimated at 40% (Burchell, Richardson, Mahmud, Troittier, Tillier, Hanley et al, 2006). HPV can be transmitted from mother to child at the time of delivery (Syrjanen, 2010). It can also be transmitted through inanimate objects such as sex toys from an infected person (Anderson, Schick, Herbenick, Dodge & Fortenberry, 2014).

2.2.5 Types of HPV

According to USAID, 2016, there are more than 170 HPV genotypes. 15 types are recognized as high-risk or cancer-causing genital HPV (types 16, 18, 31, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73 and 83) which have been linked to developing cancer. These types are strongly associated with anogenital cancers particularly cervical cancer and precursor lesion (Haedicke & Iftner, 2013 and Schiffman, Clifford &Buonaguro, 2009). Globally, HPV type 16 is the most prevalent, followed by type 18. They both cause about 70% of cervical cancer worldwide. Low-risk types are recognized to be associated with genital warts Type 6 and 11 are low-risk mucosal HPV which cause about 90% genital warts (USAID, 2016).

2.2.6 Signs, Symptoms and Consequences of HPV

HPV usually do not have particular signs and symptoms, it can be present in the body for many years without showing any symptoms. It does not always cause wart or any other symptoms. The virus can be present in the body without being aware of it. (American Cancer Society, 2016). HPV can go away on its own without it being treated but it becomes a health problem when it does not go away and it can cause genital warts, cervical cancer, vulva cancer, vaginal cancer, penile cancer, anal cancer, mouth and throat cancer.

2.2.7 Prevention, Screening and Treatment of HPV

HPV does not have a known cure but there are treatments for the health problems that HPV can cause such as genital warts and cervical cancer. The HPV vaccine could help prevent cancer and other types of diseases caused by HPV. HPV in most cases go away on their own. Not all cases of HPV leads to cancer and the ones that could lead to cancer can be prevented with vaccines. It is recommended that children and adolescents between the ages of 9-14 should take two doses of HPV vaccine (0, 6-12 months). The second dose should be administered 6-12 months after the first dose. Three doses of HPV should be given to females from age 15 and above, the second dose should be administered 1-2 months after the first dose, and the third dose should be administered 6 months after the first dose (0, 1-2, 6 months) (Vermont Cancer Registry, 2018).

Genital warts: it could be treated in several ways but the virus could remain even after the treatment and others may contact it. Genital warts may go away, stay the same or increase in size or number, but they will not turn to cancer.

Cervical cancer: Pap test should be done regularly for early detection so the cervix can be treated on time before the cells turn into cancer. Deaths from cervical cancer can be averted if detected early.

2.2.8 Concept of HPV Vaccination

HPV vaccination is a major prevention breakthrough for cervical cancer (Cartmell, Young-Pierce, McGue, Alberg, Luque *et al.,* 2017). According to WHO, the HPV vaccination is

primarily targeted at girl form age 9-14years for cervical cancer prevention while the secondary target population are females aged >15years and males. Two of these vaccines are made available worldwide: bivalent vaccine against HPV 16 and 18 and the quadrivalent vaccine against HPV 16 and 18 as well as 6 and 11 (WHO, 2013). Centre for Disease Control and Prevention recommended two doses of HPV vaccines before the 15th birthday for most people who are just starting the series of the vaccination. The second dose should be given 6-12months after the first dose and adolescents who received 2 doses less than 5months apart will require a third dose of the HPV vaccine. For those who start their dose at age 15-26years, the recommended dose schedule is 0, 1-2 and 6months.

2.3 Knowledge and awareness of mothers of adolescents on HPV infection and vaccine

The HPV is seen as a sexually transmitted infection worldwide. Mothers have a role to play concerning the prevention of cervical cancer among adolescent daughters because their knowledge is an important determinant of HPV vaccination of their adolescent daughters. There is a need for the mothers to create an awareness of HPV to their adolescent daughters and acceptance of the HPV vaccines. Mothers in the developing countries have inadequate knowledge and awareness on HPV and cervical cancer (Mouallif *et al.*, 2014 and Leser, 2014). Studies have shown that there is a significant association between knowledge of mothers and the acceptance of the HPV vaccine.

A study was carried out on parental knowledge gaps and barriers for children receiving the human papillomavirus vaccine in the Rio Grande Valley of Texas. The purpose of the study was to understand parental knowledge and attitudes about HPV and the HPV vaccine as well as child experience with HPV among the medically underserved, economically disadvantaged population. The result of the survey showed that most of the parents reported having heard of HPV and HPV vaccine but there a gap in knowledge as regards HPV and HPV vaccine among the parents. (Melissa, Thuy, Yong-Fang and Rodriguez, 2019).

In a qualitative study conducted by Kim and Kim, (2015) which was aimed at determining the awareness of cervical cancer prevention among mothers of adolescent daughters in Korea The study involved nine mothers with adolescent daughters who also participated in

the study and they were interviewed using open-ended questions. From the information gathered, mothers' awareness of cervical cancer was low and inadequate. They acknowledged that they serve as role models for their daughters and realized that it is necessary for them to educate their daughter regarding cervical cancer. The mothers however recommended that schools should enforce sex education and also provide financial support for HPV vaccination.

In a study that was conducted in Cameroon among health workers in a bid to assess their awareness and knowledge on cervical cancer. It was found out that majority of the health workers were aware of cervical cancer. Among the health workers, knowledge on cervical cancer was found to be lowest among nurse/midwives. To implement effective preventions programs among health workers on risk factors and current methods for cervical cancer, awareness creation is a necessary step to achieve the implementation. (McCarey, Pirek, Boulvian, Sama and Petignat, 2011). Likewise, in another study conducted by Hassan and and Awosan,(2018) which was aimed to assess the knowledge of HPV infection and Vaccination, and practices regarding HPV vaccination among female health-care professionals in Sokoto, Nigeria. From the data gathered, it was recorded that less than half of the respondents had good knowledge of HPV infection and only a few of them had good knowledge on HPV vaccination.

A cross-sectional study carried out by Bardají *et al* (2018) among in-school adolescents in Mozambique, which was targeted among girls age 10-19years. A total of 1147 adolescents were enrolled in three selected districts of the country. It was revealed that 84% of adolescents have heard of cervical cancer, while 76% believed that cervical cancer could be prevented. A large number of the participants had a positive response when asked if they would like to be vaccinated. Overall, there was low knowledge of HPV vaccine amongst the adolescents despite the high percentage of awareness.

HPV is a well-established causative factor for about 99 % of cervical cancers around the world. Lack of knowledge and awareness remain one of the barriers to the acceptability of the vaccine in developing countries. Awareness of HPV associated diseases and the benefits of vaccination for adolescents determines the success of HPV vaccination

programs (Kollar and Kahn, 2008). HPV vaccination programs for adolescent girls have been approved since 2006 to prevent annual mortality of HPV-related cancer (Walsh, Gera, Shah, Sharma, Powell and Wilson, 2008). Also, in 2009, the vaccines were licensed and introduced in Nigeria but they are being utilized by a few privileged populations (Odetola and Ekpo, 2012 and Ezem, 2007). Knowledge about HPV infection, cervical cancer and vaccination should be improved on, thereby laying more emphasis on the benefits of the HPV vaccination. Various studies have shown that there is low knowledge of HPV infection and vaccination among adolescents. According to CDC, (2012), 53,000 new cases of cervical cancer can be prevented during the lifetime of adolescent less than 12 years of age if health care providers can increase the coverage of HPV vaccination among adolescent girls by 80%. Prophylactic human papillomavirus vaccines, Gardasil and Cervarix are both licensed for the prevention of cervical cancer in females. Approximately, 44.3% of adolescent females have received at least one dose of the HPV vaccine, but only 26.7% had received all three doses (Sudenga, Rosyne and Sherestha, 2011). Efforts should be focused on HPV vaccine education programs in schools among adolescents, efforts should also be made to increase the decision-making capacity through an evidence-based approach. Screening and treatment should also be done to beat cervical cancer. These efforts should be geared towards decreasing the barriers that are associated with poor vaccine uptake and completion in adolescents before their sexual debut.

The utilization of HPV vaccine which is a preventive measure for cervical cancer and HPV infection is low despite the high prevalence in Nigeria. WHO recommends that HPV vaccines should be added in routine national immunization programmes in Nigeria because of its high cervical cancer prevalence and mortality (Fisher, Laniado, Shoval, Hakim and Bornstein, 2013). Estimates suggest that introducing HPV vaccination at 12 years of age alongside the current U.S. screening program for cervical cancer could reduce lifetime cervical cancer incidence by up to 94% (Moraros, Bird, Barney, King, Banegas and Suarez-Toriello, 2006). The roles HPV vaccines to prevent cervical cancers and genital warts are well established. Cervarix is a bivalent HPV vaccine that prevents HPV types 16 and 18 serotypes responsible for 70% of cervical cancers. The other quadrivalent HPV vaccine is Gardasil. It prevents HPV types 6, 11, 16 and 18. HPV 6 and 11 cause 90% of genital

warts. Gardasil also protects against cancers of the anus, vagina and vulva (Adesina, Saka, Isiaka-Lawal, Adesiyun, Gobir, Adebunmi *et. al.,* 2018).

On the other hand, in a bid to assess the knowledge and attitude of both mothers and daughters about cervical cancer and HPV vaccine, the result showed that both mothers and daughters had received enough information about cervical cancer and HPV vaccine in other to make decision about vaccination however there were still misconceptions about cervical cancer and HPV. (Proma, Scott and Nga, 2012)

2.4 Perception of mothers of female adolescents towards HPV vaccines

The HPV vaccine is targeted towards the prevention of related cervical cancer lesions and genital warts in adolescents before the commencement of the sexual activity. In other to have a successful vaccination program, parental consent is essential for adolescents.

Understanding women's perception of HPV infection and vaccine is important for wide vaccination coverage. A study was conducted in China on perception and barriers to HPV vaccination and it was found out that most of these women perceive that the vaccine is unnecessary because it is meant for women who are about to be sexually active, therefore, they do not think that their daughters needed to be vaccinated, some perceived that given their daughters the vaccine will encourage them to engage in sexual activities, more than half of the participant perceived that the vaccine will be harmful to their health (Sui, 2014). It was suggested in a study that CDC network will play an important role in promoting HPV vaccination program which will increase knowledge and encourage positive perception towards the acceptance of HPV vaccine for female adolescents.

Andrew, Elialilia, Wilson and Anne, (2017) carried qualitative research (Focus Group Discussion and Key Informant Interview) on Perceptions of human papillomavirus vaccination of adolescent school girls in western Uganda and their implications for acceptability of HPV vaccination. The study revealed that the participants understood that the vaccination was to prevent cervical cancer which was perceived to be incurable. However, fears and misconceptions initially discouraged the parents and girls from taking the vaccine when it was introduced. It was concluded that the perceived benefits and safety

of the vaccine stimulated the willingness of the parents to vaccinate their daughters without fear.

A quantitative study was carried out to determine knowledge, perception and acceptance related to cervical cancer, HPV vaccination and screening for cervical cancer among Indonesian women, particularly in Yogyakarta province, a convenience sampling of 392 women which consisted of 100 mothers of girls aged 12-15 years, and adult women. From the result presented, it was revealed that the high cost of HPV vaccine was said to be one of the factors that contributed to the negative perception of the respondents. (Endarti, Satibi, Susi, Muhaya, Yuni and Tika, 2017).

In a qualitative study carried out by Ko, Taylor, Mohammed, Do Gebeyaw, Ibrahim, Ali and Winer, (2018), on perceptions of the HPV vaccine and vaccine uptake among East African immigrant mothers in a Focus Group Discussion revealed that majority of the women associated their concerns about the vaccines to disease risk. Many risk perception was shaped by health care experiences in home countries. An Eritrean woman responded "vaccine is terrible" and another woman in the same group elaborated on her fear. She responded saying "our people are afraid of vaccine, I, myself, am afraid of vaccines. For example, I never get my children a flu shot and I also have never taken flu shots in my life". Ethiopian women also shared a similar view about flu shots. They indicated that they started having flu after getting flu shots in the U.S. there was overall mistrust for vaccine safety which may play an important role in the negative perception of the HPV vaccine. Also, social, cultural and religious factors influence the women's decision to vaccinate their children.

In a bid to describe providers perceptions of parents' attitude towards HPV vaccination, Perkins and Clark, (2013) recruited 34 providers from 4 federally qualified community health centres using semi-structured interviews related to their experience discussing HPV vaccination with low-income and minority parents. It was found out that parents were eager to prevent cancer in their daughters. Reasons for declining the vaccination were found out to be safety concerns, and they think the vaccine is unnecessary because their daughters are virgins.

2.5 Acceptance of HPV vaccination among mothers of adolescents

Several studies have been carried out among women and adolescent girls since HPV vaccines became available. Acceptance of HPV vaccine was said to be associated with the knowledge of HPV and acceptance of HPV vaccination has been reported to be associated with promiscuity and sexually transmitted infections, and the safety and effectiveness of the vaccine (Loke, Chan and Wong, 2017). Because of the awareness of the severity and risk associated with HPV, young adults and adolescents tend to accept HPV vaccine (Brewer and Fazekas, 2007; Kahn, Rosenthal, Jin, Huang, Namakydoust and Zimet, 2008). It was revealed in a qualitative study that explored parents' acceptance of HPV vaccines for their children that parents who had previously contracted HPV infections accepted the idea of vaccinating their children. In Hong Kong, mothers were found to be more receptive of HPV vaccination for their daughters if they considered their adolescent daughters to be susceptible to sexually transmitted infections (STI) (Loke, Chan and Wong, 2017). Another study carried out in Hong Kong revealed that adolescents between the ages of 13 and 20 who were interviewed perceived that they were at low risk of becoming infected with HPV and did not foresee themselves as engaging in sex soon (Chan, Cheung, Lo and Chung, 2007).

Blumenthal, Frey, Worley, Tchabo, Soren and Slomovitz, (2012) evaluated the understanding and potential acceptance of the HPV vaccine among 223 adolescents aged 13 to 18 years at adolescent health clinics affiliated with New York-Presbyterian Hospital. Questionnaires were administered to all participants. Of the 223 adolescent surveyed, 33% stated that they had received the HPV vaccine, 64% had not had the vaccine, and3% were not sure. Many of the adolescents stated that they would seek advice from a parent or physician when deciding whether or not to accept the HPV vaccine. Education will play an important role in the implementation of an HPV vaccination program. In this study, only 53% of adolescents who had not yet received the HPV vaccine were willing to be vaccinated, and lack of education likely contributes to this hesitancy.

Also, a research carried out by Dantas, Sousa, Takiuti, Baracat, Sorpreso and Carlos de Abreu, (2018) aimed at describing the data collection constructs about knowledge and

acceptability of HPV vaccine among adolescents, parents and health professionals. An empirical review of the literature with a qualitative focus on PubMed database, from 2007 to 2014. A total of 31 questions were divided into six categories. Results revealed that three articles on the subject were found in the databases consulted that served as the basis for the elaboration of the questionnaire. There was a lower proportion of correct answers among adolescents about knowledge of HPV. Adolescents, parents, and carers showed a low proportion of correctness about the safety and efficacy of the vaccine. The three groups did not show any barriers to vaccine acceptability. A study was also conducted by Ganczak, Owsianka and Korzen, (2016) to determine willingness regarding vaccination among Polish parents and correlate the anticipated uptake of HPV vaccination for their adolescent children using self-administered questionnaire was used for data collection. The study involved 450 respondents which only 31.3% of parents were able to identify HPV as a sexually transmitted pathogen, 36.0% as a risk factor of cervical cancer. In multivariable modelling, parents who had positive attitudes toward vaccines, those who had ever heard of HPV and those employed were more likely to have their children vaccinated. Parents who were concerned about the side effects of the HPV vaccine were less willing to have their children vaccinated. Most of the parents surveyed obtained information regarding HPV from non-professional sources which may influence their knowledge level, however, most were in favour of their child being vaccinated against HPV.

A qualitative study was conducted by Belinda, Linda, Amirah, Siswanto and Christiana, (2019) which was aimed at exploring community readiness and acceptance of HPV vaccination and Cervical cancer prevention to determine facilitators and barriers to up scaling CC prevention in rural Central Java. The study consisted of four FGDs which included both married men and women. It was reported that one woman indicated that she would only give consent for her daughter to receive HPV vaccination if her husband also consented. However, most participants were supportive of vaccinating their children against HPV.

A descriptive study was carried out to identify the opinions of Turkish adolescent girls and their parents about HPV vaccination and consistency. Questionnaires were developed for data collection based on findings within the literature. It was found out that 43.5% of girls

and 31.9% of mothers wish to be vaccinated against HPV. The study revealed that an appropriate background has been partially provided about the acceptability of the vaccine between parents and their daughters in Turkey. However, many adolescent girls and parents are indecisive or reluctant about HPV vaccination. (Ayse, Memnun, Gulten, Aygul and Seval, 2012).

In a quantitative study carried out by Grandahl, Paek and Lundberg, (2018) aimed at examining the association between parents' knowledge, beliefs and acceptance of the HPV vaccination for their daughters, considering their socio-demographics and religious beliefs. A cross-sectional design was used among three Thailand schools. Parents of adolescent girls between the ages of 9-12 completed the questionnaires. It was revealed that background knowledge on HPV and HPV vaccine was positively related to their knowledge on HPV and cervical cancer. Parents' belief on susceptibility (i.e. parents' perceived risk of an HPV infection/related disease), severity and benefit were positively associated with their knowledge. It was also discovered that their knowledge was not associated with the barriers. Higher susceptibility and benefits were related to higher acceptance and greater knowledge was associated with higher acceptance. There was an association between parents' knowledge, beliefs and acceptance of the HPV vaccination for their daughters putting their socio-demographic and religious belief into consideration. Parents who reported religion as important as opposed to those who did not were more favourable toward the HPV vaccination. There was an overall high acceptance of the vaccine.

However, a qualitative study on adolescent acceptability of an HPV vaccine was researched on by Katahoire, Murokora, LaMontagne, Mugisha and Wani. (2014). A twenty-seven focus group discussion was conducted with girls who completed three doses and 17 with those who did not. It was found out that girls independently made decisions and took actions that resulted in their vaccination or non-vaccination. Their understanding of cancer, future concerns as mothers, fears of the consequences of being vaccinated or not, experience with the first dose and their understanding of the eligibility criteria for vaccination.

A cross-sectional descriptive study was carried out in Ilorin, Nigeria on mothers of adolescents by Adesina *et al.*, (2018). The study was aimed to determine the knowledge of parents about HPV infection, their awareness about the HPV vaccine and willingness to vaccinate their daughters. A self-administered questionnaire was used to gather information from the mothers. It was revealed that there was low willingness (44.9% which is less than half of the population) to accept HPV vaccine and there was the statistical difference between acceptability and knowledge of HPV infection and vaccination and cervical cancer. There was a high willingness to accept the vaccine despite the low knowledge. Women with good knowledge of HPV and cervical cancer were more willing to vaccinate their children than women with poor knowledge. About one-third of the women were willing to vaccinate their daughters even if the vaccine was not free.

Poole, Tracy, Levitz, Rochas, Sangare *et. al.,* (2013) conducted a study to assess HPV knowledge and HPV vaccine acceptability in Mali. A face-to-face interview was conducted with 51 participants and a standardized questionnaire was used to assess knowledge, vaccine acceptability and willingness to participate in an HPV vaccination program. Despite the poor knowledge of HPV vaccine knowledge, individuals are willing to receive HPV vaccination for themselves and their child was high. It was also discovered that men were active decision-makers as regards HPV vaccination and this could make them an important target for vaccine campaigns.

A cross-sectional study was conducted by Bach, Phung, Tien, Huong*et al.*, (2018)in a vaccination clinic of the Institute for Preventive Medicine and Public Health in Hanoi, Vietnam, from March to April 2016. The result showed that most of the participants were willing to pay for the HPV vaccine and willing to pay an average amount. Users who had attained more than a high-school education and heard about the HPV vaccine from doctors, nurses, or other health professionals tended to be willing to pay for the vaccine at a lower price than individuals with below secondary-level education and who had not heard about the vaccine from these health professionals.

Pieter, Veronica, John, David, Daniel *et al*, (2012) conducted a qualitative research in a bid to assess attitudes and knowledge about cervical cancer and HPV, and acceptability of and potential barriers to HPV vaccination of Tanzanian primary schoolgirls. Semi-structured

interviews and group discussions were conducted with a total of 169 respondents (parents, female pupils, teachers, health workers and religious leaders). Despite the high level of literacy among the participants, the study revealed that their most respondents had no knowledge of cervical cancer, HPV, or HPV vaccines. Only health workers had heard of cervical cancer but very few knew its cause or had any awareness about HPV vaccines. After participants were provided with information about cervical cancer and HPV vaccination, the majority stated that they would support HPV vaccination of their daughter to protect them against cervical cancer.

2.6 Barriers to the acceptance of HPV vaccines among mothers of adolescents

Knowledge of barriers influencing the acceptance of HPV vaccine among mothers and adolescents can help plan an intervention program among this group. Several barriers can be responsible for acceptance of HPV vaccines. Some of these include; the link between HPV and sexual activity has also brought about the stigmatization of HPV vaccination, however, mothers believe that vaccinating their daughter against HPV is life-giving them the permission to engage in sexual activities (Zimet, Perkins, Sturm, Bair, Juliar and Mays, 2005). Women worry about the potential side effects of the vaccines, the possible adverse effects on fertility and overall health, the cost of the vaccine and not wanting stigmatization for their daughter (Loke, Chan and Wong, 2017). Cost of vaccination is another major barrier to why some women did not accept the uptake of the HPV vaccine, they are willing to give the daughter the vaccine only if it is free (Adesina, *et al.,* 2018). Lack of knowledge and negative perception of HPV infection and vaccination also account to be one of the barriers to the acceptance of the HPV vaccine.

In a study carried out in Hong Kong, some mother believes that administration of HPV vaccine to their daughter may be unsafe or very unsafe (Li, Wong, McGhee, Kwan, Wong *et al.,*2018). Also in a study carried out by Nguyen and Alessio, (2011) to find out the facilitating factors and barriers for intentions to getting HPV vaccine among 15-25 years old females in Hanoi, Vietnam. A simple random sampling and cluster random sampling was adopted for the study and questionnaire was adopted to that effect. It was found out that lack of information about HPV and HPV vaccine fear of its side effects and cost of the vaccine were one of the barriers to the acceptance of the HPV vaccine.

2.7 Theoretical framework

The conceptual framework for this study will be the Health Belief Model (HBM). HBM is a psychological health behaviour change model which was developed to explain and predict health-related behaviours, particularly regarding the uptake of health services (Allen, 2017). A social psychologist at the U.S Public Health Services developed the HBM in the 1950s and it has remained one of the best known and most widely used theories in health behaviour research. The HBM suggests that people's beliefs about health problems, perceived benefits of action and barriers to action and self-efficacy explain engagement or lack of engagement in health-promoting behaviour a stimulus, or cue to action must also be present to trigger the health-promoting behaviour.

The HBM is the most suitable for this study because all the tenets of the model explain and predict the health behaviour of Mothers of adolescent girls in relation to their knowledge of HPV, their susceptibility to being infected with HPV, the severity and the benefits of intervention, they are likely to have good attitude and undertaking vaccination considered the modifying factor such as age, gender, level of education and so on. The tenets of this model have been used in predicting likely questions which can aid in answering the objectives of this study.

The tenets of the model are;

Perceived Susceptibility: individuals believe they are at risk of HPV. Mothers of adolescent girls lack vital information about HPV or may perceive they are at risk. They will adhere and practice preventive measures if they have the knowledge that they might be susceptible to HPV

Perceived severity: this explains the action that will be taken if mothers of adolescent girls see the seriousness of taking the vaccine for their daughters. Not taking the vaccine can expose adolescents to cervical cancer.

Perceived benefit: this is when both mothers of adolescent girls understand the importance of taking the vaccine to prevent cervical cancer. This enables them to take positive decision

to protect the health of adolescents. This will encourage the mother to accept the uptake of the vaccine for the adolescents

Perceived Constraints: this refers to the affordability, accessibility and inadequacies of the vaccine. The constraints are usually lack of information, awareness, finance and access to the HPV vaccine, side effects of the vaccine.

Cue to Action: this can be either internal cues to action such as pains or external cues to action such as mass media communication, interpersonal interaction. To get screened for the illness after seeing a public service announcement, events or information from close others, the media or health care providers promoting engagement in the health-related behaviours. Examples of a cue to action include a reminder, postcard from a doctor, the illness of a friend or family member and product health warning labels. Media advertisement, government endorsement, free vaccination, health workers endorsement.

Self-Efficacy: self-efficacy was included in the model in an attempt to explain individual differences in health behaviours in a more explanatory way. The model was originally developed to elaborate on engagement in one-time health-related behaviour such as being screened for cancer or receiving an immunization. The mothers' confidence to allow their daughters go for the vaccination.

2.8 CONCEPTUAL FRAMEWORK

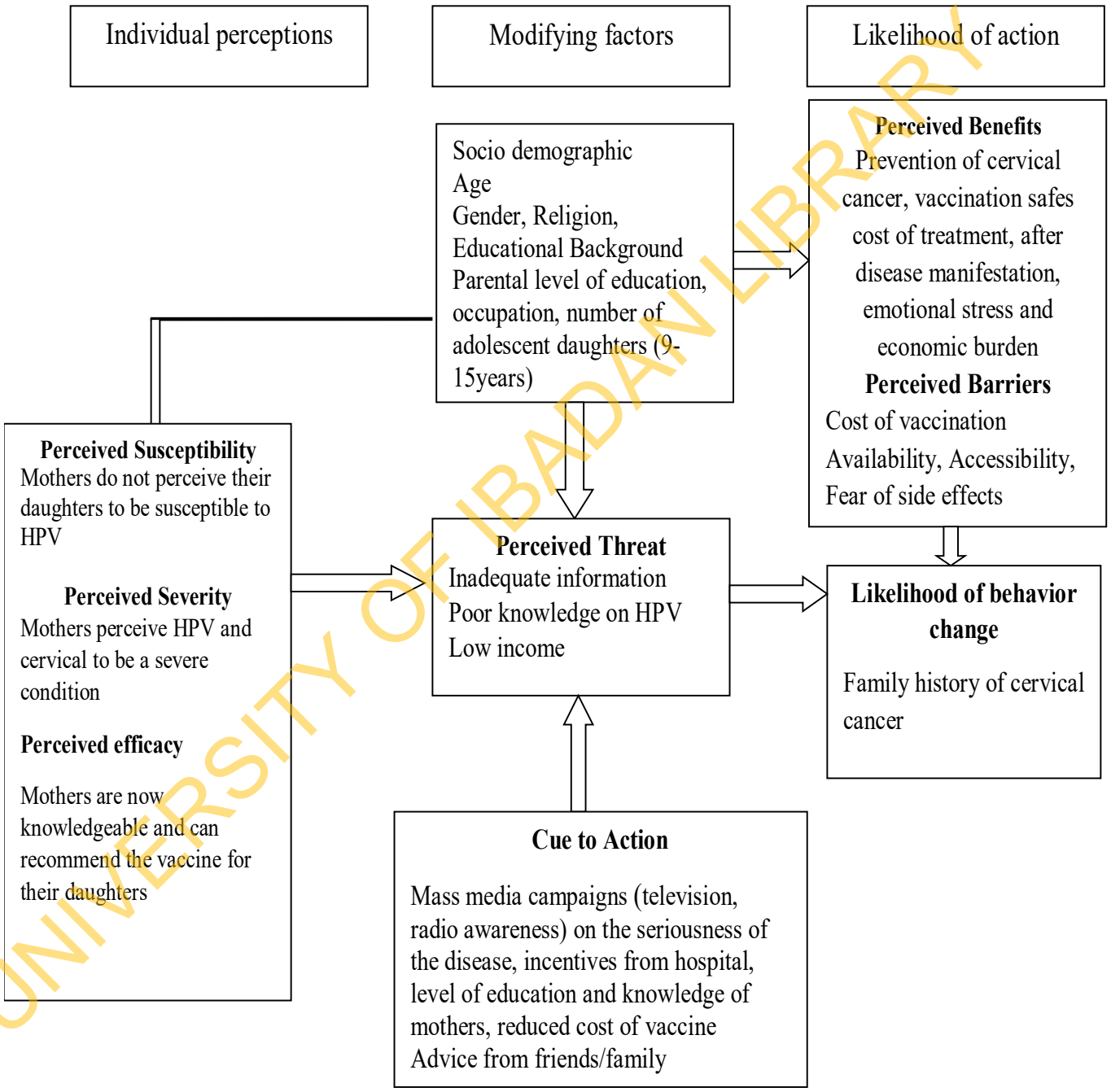


FIGURE 1: Application of Health Belief Model

2.9 Application of the variables in the IDI guide to the Health Belief Model

In regards to this study, the model was adapted as follows:

1. Perceived severity: this is what the mothers perceive as a serious disease (cervical cancer) and serve as a justification to why they are willing for their daughters to take the Human Papillomavirus vaccine. Questions relevant to the construct is seen in the 2nd and 3rd question of the IDI guide. (see Appendix 1)

2. Perceived benefit: this is when the mothers perceive that the HPV vaccine will protect their daughter again HPV and cervical cancer if they take the vaccine. Questions relevant to the construct is seen in the 5th question of the IDI guide. (see Appendix 1)

3. Perceived barriers: The mothers expressed that the cost of taking the vaccine, side effects, and exposure of their daughters to promiscuity are reasons why they may not want their daughters to take the HPV vaccine. Questions relevant to the construct are seen in question 6th question of the IDI guide. (see Appendix 1)

4. Cues to action: Mothers of adolescent girls can take action when there is public enlighten on the seriousness of the disease and there is reduced the cost of the HPV vaccine.

CHAPTER THREE

METHODOLOGY

3.1 Study Design

The study was a descriptive and cross sectional study design using an in-depth interview guide. Mothers of adolescent girls between the ages of 9-15years were involved in the study.

3.2 Study Area

The area selected for this study was Ibadan North West Local Government (IBNWLG). IBNWLG was created in 1991 by the then Military Head of State, General Ibrahim Babangida (Rtd). The Local Government (LG) covers a large area of land with a population of about 152,834 according to (2006) National Population Census. It is divided into eleven wards and has its administrative headquarters at Onireke. However, Oke'Badan North Local Council Development Area (LCDA) has been carved out of Ibadan North-West leaving it with six wards. Ibadan North-West Local Government is bounded in the North by Ido Local Government, in the West by Ibadan South West Local Government, in the East by Ibadan North and in the South by Ibadan South East Local Government. Its inhabitants include Yoruba, Hausa, Ibo and Other tribes who engage in trading, farming, artisanship and civil service. A predominantly urban area, IBNWLG has within her jurisdiction Onireke, Ayeye, Dugbe, Inalnde, Ologuneru, Sapati, Agbede Adodo, Beere, Asukunna, to mention just a few. The LG can boast of markets like Ayeye, Dugbe, Agbeni and Eleyele. The local government has eight (8) primary health centres where they provide services such as ante-natal care, delivery, immunization, family planning, health education/promotion, nutrition and rehydration therapy (ORT), growth monitoring laboratory and community medical outreaches. There are also sixteen (16) private clinics within the council area. The commercial activities in the LG take place mainly in Agbeni, Ogunpa, Dugbe and Eleyele markets. The major industrial establishment in the local government is publishing, matchmaking, plantain and fruit processing industries which are located at Jericho and

Eleyele areas respectively. There are many educational institutions which include both private and public enterprise.

3.3 Study Population

For this study, mothers in Ibadan North-west Local Government Area who have adolescent daughters within the age range of 9-15years and who consent to participate in the study in formed the target population.

3.4 Inclusion Criteria

Only mothers who have adolescent daughters within the age range of 9-15years who consent to participate in the study were included in the study.

3.5 Sample Size

The sample size for this study was determined following the qualitative descriptive approach, the criterion of saturation (whereby adding more participants to the study does not result in obtaining additional perspective or information) was used to determine the sample size. Data saturation criterion was used to determine the sample size. Data saturation is usually reached within 17 interviews in one study (Office of Data Analysis, Research, and Evaluation, 2016).

Data saturation is likely to be achieved before the end of seventeenth interview while the priori for saturation is pegged at twenty-five (25) In-depth interview, meaning that the data saturation is hoped to be achieved before the end of the tenth to the fifteenth interview.

Data saturation was achieved after conducting sixteenth (16th) interviews and four (4) more interviews were conducted to be sure of the saturation. In all, twenty (20) IDIs were conducted.

3.6 Sampling Technique

This study adopted a multistage and snowballing sampling technique. There are eleven (11) wards in Ibadan North-West Local Government Area.

Stage one: Stratified sampling was used to divide the 11 wards in Ibadan North-west Local Government Area into strata (inner core, transitory and peripheral) this was done to identify the heterogeneous population

Stage two: From each stratum, a simple random sampling technique (balloting was done by writing the number of the wards in a different tiny piece of paper and was put in a box) was used to select 4 wards

Stage three: Non-probability purposive sampling was used to select Eleyele, Jericho, Onireke, Ologuneru and Dugbe as the communities that were for the study.

The approval letter (see appendix 7) was shown to the Baale of each community, approval was given to engage the community women that met the inclusion criteria for the study. After completing the interview with the first participant in each community, they were asked to refer other participants that met the inclusion criteria.

3.7 Instrument for data collection – Interview Guide

An interview guide was designed to elicit information from the mothers using in-depth interview guide. The questions were open-ended and they were based on the specific objectives. The interview guide had two sections: personal information and the section for the open-ended questions.

3.8 Data Collection Procedure

Before the commencement of the In-Depth-Interviews, the researcher explained the details of the research and interviews was afterwards set up with participants. This offered the mothers the opportunity to consent to take part or dissent the interview if they did not wish to proceed. An IDI guide was used and questions were derived from a literature review and researchers' insight on HPV vaccination.

All interviews strictly followed the In-Depth-Interview guide within an hour and participants were asked prompting a question from the guide. The interview was conducted in both English and Yoruba language. Other issues raised by participants during the interviews were used as cues for additional prompting questions. Interviews were conducted in the participants' preferred venue and appropriate time. The IDI was

conducted with the help of a research assistant who was trained on the ways and methods of data collection. The research assistant was trained using the developed training manual. During the training, a participatory approach was adopted. Demonstration and return demonstration was used. The researcher was the moderator for all the interviews while the research assistant acted as the timekeeper and also recorded the important points during the interview. When respondents demonstrated no knowledge on cervical cancer, HPV and HPV vaccine, the interviewer gave a brief explanation and then continued with the questions.

3.9 Data Management and Analysis

All recorded data from the interviews were played again to ensure that it was well saved. The data collected was transferred from the audiotape recorder to the computer system for better audio presentation. The audio tape was played and replayed several times for clarity after which full verbatim transcription was done. After the transcription, the researcher typeset and read it to get familiar with the data by reading through the entire transcripts many times; to obtain a sense of totality; significant statements were underlined and extracted. Significant sentences that have similar opinions, as well as varying opinions of the participants, were labelled by the researcher. Different parts of the text that contained significant statements were marked with appropriate labels for further analysis. The manual qualitative thematic analysis method was used for the analysis of all transcribed interviews. Themes and categories were closely examined to identify common themes while subsequent information gathered were fitted into new categories. Each opinion was put in italics including the means of identification and for easy comprehension by the speaker.

3.10 Study Limitation

The limitation for this study was that it was a qualitative study which involved twenty participants in Ibadan Northwest Local Government Area of Oyo State, Nigeria and it cannot be generalized to the whole population.

3.11 Ethical Consideration

Before the commencement of the study, ethical approval was obtained from the Ministry of Health, Oyo State Research Ethical Review Committee. Verbal consent was obtained from participants before the audio-tape recorder was used for the IDI after providing them with information and benefits of the research. The research ethical review committee ensured that the research work followed the generally accepted scientific principles and international ethical guideline required in human subject research and to review the ethical components of the study.

Nature and purpose of the study were explained to the participants with emphasis on confidentiality, privacy and anonymity of the information provided. Pseudonyms were allotted to all mothers to safeguard confidentiality in all the in-depth interviews that were conducted. Interviews were recorded with audio tape recorder which was later transcribed, alongside the field notes for analysis. The informed consent forms were read to the participants just before the interview. Every individual participant gave verbal consent before enrolment for the study. They were informed that they have full rights to withdraw from the research at any stage of the study. The information gathered were analysed qualitatively. There also was translation and back translation of the instrument between English and Yoruba language. This was to ensure that the questions in the instruments are well understood by the research participants.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter shows the results of this study presented under the major themes and the sub-themes. The opinions of the participants during the In-depth interview were highlighted in this section thematically. The study consisted of only mothers of adolescent girl ages 9-15 years. The main issues discussed here were; participants' awareness on cancer, cervical cancer, HPV and HPV vaccine, knowledge on cancer, cervical cancer, HPV and HPV vaccine, perception on cervical cancer and acceptability to take HPV vaccine for their adolescent daughters. The participants consented willingly to the interview.

4.2 Socio-demographic characteristics of participants

Socio-demographic characteristics of participants		(N=20)	
Variable	**Responses**	Frequency	Percentage (%)
Age of participants			
	30-39	8	40.0
	40-49	11	55.0
	50-59	1	5.0
Religion			
	Christians	17	85.0
	Muslims	3	15.0
Ethnicity			
	Yoruba	16	80.0
	Igbo	2	10.0
	Edo	1	5.0
	Ibira	1	5.0
Educational level			
	Primary	1	5.0
	Secondary	7	35.0
	Diploma/OND/NCE	7	35.0
	B.Sc.	4	20.0
	Masters	1	5.0
Occupation			
	Trading	13	65.0
	Artisan	4	20.0
	Civil servant	3	15.0
Total number of adolescent daughters			
	One	16	80.0
	Two	4	20.0
Age of adolescent daughters			
	9-10	4	20.0
	11-15	16	80.0

Table 4.3Summary of the Research Result Showing the Theme and Sub-theme

Objectives	**Knowledge, Perception and Acceptability of HPV vaccine**
Major theme	**Sub-theme**
Knowledge on HPV vaccine	- For prevention against HPV - Females should take the HPV vaccine - Males also should take HPV vaccine - Should be taken before being sexually active - Should be taken at an early age
Perception on HPV vaccine	- Useful before the disease is contracted - Useful before sexual exposure
Acceptability of HPV vaccine by mothers for their adolescent girls	- Prevention against HPV - Government approved
Barriers to acceptance of HPV vaccine by mothers of adolescent girls	- Side effects - Cost of the vaccine - Daughters may be promiscuous - Not knowing about the vaccine - Not government approved

4.4 Awareness of Cancer

Virtually all of the participants stated that they have heard about cancer. The following statement represents the general remark:

> *"...I just know that cancer is a deadly disease that is not curable".... (P2)*

> *"....cancer is a disease that normally stays in the body".... (P3)*

> *"....I use to hear of it but I don't know about it".... (P8)*

> *"...I think the unusual abnormal growth of some cells. I can't explain but I sha know that it's something about cells when they replicate".... (P9)*

> *"....It is not a god disease, it is a powerful disease that they carry out an operation on someone who is affected. It kills some people if it becomes severe so it is not a good disease that is meant to affect people".... (P20)*

4.5 Knowledge of participants on Cancer

Many of the participants stated that they do not have extensive knowledge of cancer. They, however, described cancer as a deadly disease that affects several parts of the body which could result in death if necessary precautions are not put in place. Some of the participants noted that cancer is a disease that cannot be cured. On the contrary, some participants affirmed that cancer can be treated and controlled if detected early. Their typical responses included the following

> *"....I Just know that cancer is a deadly disease. That's all... Yes, that it is not curable for now. It doesn't have a cure".... (P2)*
>
> *"....I know that cancer is a deadly disease that is what I know. I don't know much about it whether it is breast cancer or womb cancer or vagina cancer or any type of cancer. I know it is a deadly disease." (P4)*

".....I just know that it happens to people and it's affecting some people in the breast, they say some people have cancer of the lungs, some they say they have cancer of the breast. So I... Ha I just hear they say cancer affects someone in the breast, it affects someone somewhere. I know they talk about breast lump if they don't treat it on time maybe they remove it that's when it turns to cancer for that of the breast. That is all I know".... (P16)

"....It is a disease which can be cured if prevention is taken fast and how to prevent it if you are feeling the sign or something like that symptom, that person will go to the physician that can take care of him or her so from there they will ermmmm given drugs and from there cancer may be cured if prevention is taken".... (P13)

"....It is not a good disease, it is a powerful disease that they carry out an operation for someone who is affected. It kills some people if it becomes severe. So it's not a good disease that is meant to affect people".... (P20)

Two of the participants believed that cancer is an abnormal growth of cells in the body and it comes in stages. The responses which reflected their views are as follows:

"....I know it is a killer disease that can affect any organ of the body... I know the disease is in stages and the result is death".... (P5)

"....I think ermmmmm the unusual of the abnormal growth of some cells. I don't know I can't explain but I sha know that it's something about cells when they replicate and they become very cancerous and dangerous. I don't have a definition for it".... (P9)

One of the participants mentioned that she was told that cancer could be inherited. The following statement represented her response:

"....The little I know about the cancer is... just as we were instructed about cancer that many people get cancer through heritage or through some disease which we don't know... I know it is really killing people. That's the only thing I know about it".... (P6)

However, few of the participants stated that they do not know anything about cancer because they have no family member or friend who is suffering or who has suffered from it. Their typical response included the following:

"....Ha I don't really know anything about that because I don't have any family member or a friend or anybody to have that".... (P12)

When probed further about the types of cancer that they know, they mentioned breast cancer, brain cancer, mouth cancer, skin cancer, blood cancer, cervical cancer etc. Their typical responses included the following:

"....Seem they said it happens to them on the breast or cancer of the skin or something like that".... (P1)

"....We have many cancers, we have breast cancer and other cancers.... Kidney cancer and breast cancer".... (P3)

".... Breast cancer, Vagina cancer, Cervical".... (P4)

"....I have heard of breast cancer, I have heard of ovarian cancer, I have heard about kidney cancer, liver cancer even eye cancer, lung cancer"..... (P5)

"....Ehnn we know the popular one that is the breast cancer is the one that I know that has cure but the other ones I don't I know them she further mentioned *"....I*

know cervical cancer I know prostate cancer I know ermm that one they call the cancer of bone marrow leukaemia shey is it leukaemia I know I know that brain tumour that one too they call it brain cancer and I think that this cancer, new ones are coming up and you know anybody part will just say that place is cancerous"…. (P9)

"….Breast cancer, blood cancer, bone cancer"…. (P12)

"….It affects some people in the breast, they say some people have cancer of the lungs"…. (P16)

"….Breast cancer, skin cancer, blood cancer. I think that's all"….

After further probing on the types of cancer, a participant mentioned that she has heard of cervical cancer, she stated

"*…. Yes yes... I think sometimes ago, they came to our church to give us a lecture about cervical cancer I think"…. (P2)*

4.6 Awareness of cervical cancer

Many participants have heard of cervical cancer and their source of information including the radio, television, hospital, friends, internet, books, church.

"*….I have heard of it when we went for a lecture that we were trained about cancer and the problems that cause cancer, I heard about that…." (P6)*

"….I have heard of it. The name is familiar but I don't understand it. It is only cancer of the breast that I know…." (P13)

Generally, there is poor knowledge of cervical cancer. Most of the women who know about cervical cancer were aware that it affects only females. They, however, said that it is cancer that affects the cervix and affects women only. Most of the participants who have heard of cervical cancer do not have extensive knowledge about it. The women who know about the cause of cervical cancer cannot give an extensive explanation of the causes. However, there is a misconception of the causes of cervical cancer. Some of the respondents expressed that washing of the vagina with soap is the cause of cervical cancer while some stated it can be contacted through multiple sexual intercourse.

4.7 Knowledge of cervical cancer

Generally, there was poor knowledge of cervical cancer amongst most of the participants who reported to have heard of cervical cancer. Some of the participants enunciated that they have heard of cervical cancer but they do not know about it.

> *"...I don't really know anything about that... I just heard on the radio that this is cancer of the womb that's all".... (P12)*

> *"....Heard of it. The name is familiar but I don't understand it. It's only cancer of the breast that I know... Though I didn't listen to them because we are all praying that we will not experience such cancer so since that I don't have interest in it I don't listen to it".... (P13)*

However, few participants who know of cervical cancer were of the opinion that it is sexually transmitted but they do not know that cervical cancer is caused by HPV. The following were some of their remarks:

> *"....That it is a disease that causes a problem. Cancer is a bad disease that kills... Maybe they take it through sex. Some people take it through sex. Ermmmm they*

said that cancer may not allow some people to get pregnant. That is what I just heard. I did not hear it much I just heard cancer but I don't understand it much"…. (P3)

"….The only thing I know is it has to do with the cervix in the woman's body and it is caused by having multiple sexual partners. That is all I know about it… Ermm, when a woman is having sexual intercourse with plenty people, is what will cause it to happen"….. *(P10)*

A participant said that the type of medicine we use to prevent pregnancy could cause cervical cancer,

"….They have been giving us a warning concerning how to prevent pregnancy or something like that. The type of the medicine that we are using that we should stop all this medicine that we are using because of that cervical problem"…. (P4)

Many participants who reported to have heard of cervical cancer were aware that it affects only women.

"….It is the cancer that affects the cervix and it's basically about women because men do not have ermm cervix" (P5)

"….Heard of it when we went for a lecture that we were trained about cancer and the problems that cause cancer I heard about that… I cannot explain (laughs). I don't even remember much of it. The only thing I remember, that's the one I've mentioned… They said it's female" (P6)

"....Did not hear I did not listen to it. I just heard them say there is a cancer that affects the entrance to the womb" (P8)

Another participant said,

"....I don't know what causes it though but it was just of recent that my friends told me that her mummy has cervical cancer so I don't know what causes cervical cancer but I sha know that it's something that has to do with cervix and womb its sha something opening to the womb. I knew about that one when my baby when I started having babies. I sha know that the cervix has to do with the womb and all so It has to do with like cancer of the womb or something or something like that".... (P9)

"....I think it's the one that happens in the vagina abi the one that happens in one's private part that... yes, cervical cancer is the one that happens in the private part. I don't know much... some people have it and they will always bleed, they will always have serious pains and always hiss that is cancer by bleeding".... (P15)

4.8 Perception of cervical cancer

Many of the women feel that they cannot have cervical cancer because they are not promiscuous and they do not engage in extramarital affairs, some think they do not have it in their family and some don't know if they can have cervical cancer. Nevertheless, few of the women feel they can have cervical cancer. Their responses included the following:

"....I can never have it... Though I am elderly, I have never gone out of my way to sleep with other men aside my husband and I have been married for almost 30 years. I have never had cause to go out of my marriage to engage in anything and my husband too does not do it".... (P5)

"....I cannot have it. Where will I get it from... when I don't sleep around. I don't do this one will come this one will come, I don't do all those nonsense".... (P8)

"....Ha based on what me I know o, is when somebody has multiple sexual partner and me I am married to only one man and I have sexual intercourse with only my husband so I don't think I can have it".... (P10)

One of the participants who felt that cervical cancer can be contacted through washing the vagina with soap said she takes necessary precaution by not washing her vagina with soap. Below is her:

"....No ooo... I cannot get it. Because I have always been conscious like when they told us that we should not wash that washing private part with soap I've heard that long before they lecture us from the church. So I have always been conscious of that".... (P2)

However, a participant said she does not know if she is susceptible to cervical cancer because she does not know what predisposes people to it. Her response is given below;

"....you know that that breast cancer that I've heard of something about cancers trending in the family and I know that if it is breast cancer that is probably if they have it in the family, that that might be the thing that they will probably continue to have. I don't know if I am susceptible to cervical cancer but because my I lost a sister to it so although she is my step sister but I know that I will still be cautious of my breast so I don't know if I am if I can have cervical cancer I don't know because I don't even know what predisposes people to it so I don't know if I can have it".... (P9)

However most of the participants' don't think their daughters can have cervical cancer. They believe that their daughter is still young to have the cancer and were of the opinion that they give their daughters the necessary home training required of them as a parent and also they teach them the way of the Lord. Their typical response included the following:

> *"....She cannot have it inshallau God forbid... It's only God that protects. That's what I know, though we can go for medical often and often, we can check up ourselves, we can treat our children but it's only God that cures. So that is it".... (P6)*

A participant said she makes sure she doesn't wash her daughter's private part when bathing her. She said,

> *"....God forbid and no... I make sure I don't wash her private part or when she's taking her bath".... (P2)*

Two participants said that their daughters cannot have cervical cancer because they do not have a history of cervical cancer in their family. Their typical response includes the following:

> *"....No, I don't think... It is not something that we will pray for. I don't think lailai God forbid they will not have. None of our relation has it. They will not have. Some go with the linage or something like that. We no get am for our family".... (P4)*

> *"....She can never have it. And I also know that it can be hereditary, people that have the history but there is no such history in my family and my husband's family so my husband I mean my children my daughters can never have it... And because they are not promiscuous too".... (P5)*

Three of the participants think that their daughters can have cervical cancer. One of the participants, however, acknowledged that fact that her daughter could be susceptible to having cervical. However, another participant said she does not know if her daughter is sexually active and the last participant said any woman can have cervical cancer.

> *"…. I said it that don't know the cause that I don't know how somebody can get so but when I get to the hospital, I will make enquiries but I think that every lady should just like breast cancer anybody can have breast cancer so she should I think she should she will she might… She might be susceptible like there's all tendency that she can….." (P9)*

> *"….me I don't now know whether my daughter is having sexual intercourse o but at the age of 14, I don't think she is. I don't know whether she is… I don't think so. I trust my daughter… I know she's in school, I don't know if she is doing anything there but I talk to my child and I try to make sure she doesn't indulge in such things"….. (P10)*

> *"….Yes, just as I told you that anybody can contact it. Any woman in particular can contact it"…. (P 15)*

However, few participants stated that their daughter cannot have cervical cancer because she is still young.

> *"….because she is still young. I don't know may be young ermmm I think it gets to a certain age before that disease can occur… But I don't know"…. (P19)*

4.9 Awareness of Human Papillomavirus

Most of the women who have heard of cervical cancer mentioned that they have not heard of HPV before and one of the women said she has not heard of it because she is not in the medical line. Source of information for those that have heard of it include; friends, hospital and social media

> *"....at all, I don't know of that one o"..... (P2)*

> *"....my level of education is not up to that. I'm not in the medical line... I've not heard of it"..... (P6)*

A participant said she has heard of HPV but thought meant the same thing as HIV which made her not to make further findings of it. She said,

> *"....I've heard of it before but hat I was thinking was it was related to HIV... It's been long. I think it was when we were hearing about HIV that I heard about human papillomavirus or something like that... I can't remember"..... (P5)*

4.10 Knowledge of Human Papillomavirus

Among mothers who have heard of cervical cancer, there was limited knowledge of HPV. Few women indicated that they have heard of the virus but they do not know about it and there was poor understanding of the causal link between HPV and cervical cancer. However, a participant was able to give basic details about HPV that it causes cervical cancer. The responses gotten are as follows:

> *"....that is the virus that causes cervical cancer... I think it can be transmitted sexually or genetically... My friend now you know it was just two days ago she told me about it so the thing is still somehow fresh in my head... That cancer, her*

mother's cervical cancer is caused by the HPV is it HPV or HRV or something HPV HPV virus I don't know. Ehn they said human papilloma yes she said that is the virus that causes it because I was asking her that what causes all these things like this oh God. God should just have mercy on us"…. (P9)

"….Okayyyyy… is like I saw it it's like I saw it when I was reading it. Papilloma abi. It's like I saw it when I was reading it… Like it's the virus gangan that is causing the… when it is in the body it will generate to cervical cancer…." (P10)

"….seen something ermm ermm a case study like because somebody from the hospital that if we refuse to take care of our inner part that it can occur such a thing that you mentioned now…." (P13)

However, there was a misconception about HPV and HIV and how it can be contacted. The responses gotten are as follows:

Confusion between HPV and HIV

"*….I have heard of HPV before but I was thinking it was related to HIV but because of my thinking I did not try to know more about it"…. (P5)*

"….have heard of HPV. If one use soap to wash the private part one can get the virus"…. (P13)

The participants who reported to have heard of HPV were further probed on how HPV can be transmitted. A participant opined that it could be transmitted sexually or genetically

"….I don't know all this one o. I sha know, I think sexually and genetically. I don't know… Ehn maybe somebody that has a man that has HPV in his body and sleeps with another woman because that is the only way a woman can have contact. A man penetration is the only way a woman can have contact with the"…. (P9)

"....somebody is having sex with plenty people noni... Different men".... (P10)

4.11 Awareness of Human papillomavirus vaccine

Not all the women who have heard of HPV. Only a few of them were aware of the HPV vaccine. Those who have heard of the vaccine know that it is meant for the prevention of HPV. The responses gotten were as follows:

"....that is the one that my friend told me to take for my daughter... It is just like immunization that we collected for our children when we gave birth to them".... (P9)

"....it was part of the things that I saw... that if you take it if you collect the vaccine, you might not have the virus".... (P10)

The participant who responded that she thought HPV meant the same thing as HIV also said she has heard of the HPV vaccine from the hospital.

"....I think I heard of it in the hospital maybe it was in the vaccination card or something. Maybe it was in the vaccination card".... (P5)

4.11 Knowledge of Human Papillomavirus vaccine

There was unanimous response on what the vaccine is used for when the participants were further probed. They r that it is used for the prevention of HPV. The responses gotten are as follows:

"....will be for prevention... human papillomavirus".... (P5)

"....like immunization that the ones we used to that, we collected for our children when we gave birth to them. It is supposed to prevent you from getting the virus…Ehn they sha used to collect it to prevent it from happening in the future whatever exposure they are whatever thing they are exposed to sha prevent them from getting it".... (P9)

"....if you take it, if you collect the vaccine, you might not have the virus".... (P10)

The women who were aware of the HPV vaccine stated that females should take the vaccine and they also said that females of any age can take the vaccine. The following included their typical responses:

"....that is what I don't know I don't know o. I sha know that all ladies should because it is peculiar to women".... (P9)

"....should take it, all the women that all the women should take it…" (P10)

Furthermore, one of the participants expressed that she heard men should also take the vaccine. The response gotten was:

"....women should take the vaccine but I heard that men too should also take the vaccine… it was just something that we were talking about the causes of warts so I heard about HPV and a doctor friend just said it that men too should get the vaccine but I'm not sure, I didn't follow up on it".... (P9)

Diverse responses were given by the participants when probed further on what age group should take the vaccine, there was uncertainty about the age that should take the vaccine. One of the participants was of the opinion that any age can take the vaccine

"....I don't know much until know more about it I wouldn't know who should take it and who should not take it...." (P5)

"....like they said it is an early age but I think like once they start going to school better still maybe when they start seeing their period I don't know... my daughter has not started seeing her period but I think like 12 years 12 or 13...." (P9)

"....I think like my daughter now, I should take her for the vaccine because I don't know her I don't know if she's having sex. I just think any age can take it" (P10)

The participants were probed further to know when the vaccine is most useful or effective. The response gotten were as follows:

"....will be useful before the disease is contracted emmmm contracted...." (P5)

"....early enough at any time as early as possible so that before they get sexually exposed"..... (P9)

4.13 Participants' acceptability of Human papillomavirus vaccine

The benefit of taking HPV vaccine for their adolescent daughter(s)

Overall, most of the women were receptive and believe that the vaccine would be beneficial to their daughters if they should take it as it will help to prevent their daughters from having HPV. However, mothers who do not know about HPV and HPV vaccine were given brief information about it by explaining what cervical cancer is, the link between cervical cancer and HPV, the usefulness of HPV vaccine and who should take it. They also believed that the vaccine will be beneficial to their daughter since it is going to help prevent the virus. Their responses included the following:

"…. it is a good thing that they are doing now. Just like all this small kids that are still virgins, if they give them it is like getting water down till you are thirsty. So if there is any sexual intercourse with them with guys, it can prevent it that is if the guy has it in his body so that they will not have the disease"…. (P1)

"….the benefit is that it will prevent those girls that have not started having sex should in case they start having sex. It's training before you give them the vaccine, you have to train them. It's not that the vaccine will cure it even if they have multiple sexual partner"…. (P7)

"….prevention of cervical cancer is the number one benefit… You will not get the virus, you will not get cancer, and you will save money"…. (P10)

"….the benefit I think it has it that she won't contract the disease, the cervical cancer, so she won't contact it. If at all a guy has sex with her without using a condom so it can, the vaccine can cure it to the extent that she won't contact it"…. (P14)

However, despite knowing the benefit of the vaccine which is to prevent HPV, few of the participants were of the opinion that their daughters shouldn't take the HPV vaccine because it will encourage her to become promiscuous.

"*….I don't even encourage her to take such vaccine by now. But giving it to young children that are not ready to marry that are not yet disvirgin too. I don't think I can introduce that to her…." (P6)*

"….will prevent them from having the virus even if they have multiple sex? That means it is not good, it is not advisable… Because it's like you are encouraging those teenagers…. You are encouraging them that they can have multiple sex because they have given them injection that will prevent them from having any this cervical cancer which is not good. Hope you are getting me? Assuming you tell this ermm although it is good but you have to create the fear in them that for the fact that you have taken the

vaccine doesn't mean that you will not have errmm what do they call it infection or ehn ehn if you have multiple sex. Are you getting me? So it is good but you have to train those teenagers that you want to give the injection you have to train them and tell them that having multiple sex is not good. One, as a girl and also as a child of God, they should wait for their time when the right man will come so…." (P7)

The women were probed to know if those who have heard of the vaccine have taken the vaccine for their daughter. None of the participants' has taken the vaccine for their daughters.

"….She has not taken the vaccine before…." (R10)

Willingness to take the HPV vaccine and willingness to pay for it

Mothers during the IDIs were asked if they were willing to allow their daughters take the HPV vaccine. Many of the participants said they were willing to allow their daughters to take the vaccine based on its benefits. Their responses included:

"…. By the grace of God if I have the money, I will like to take the vaccine"…. (P3)

"….I want her to take it as you said it will prevent cancer now. I don't want them to be involved in such case"…. (P4)

"…. I can take it, the reason is that we cannot trust all these children we give birth to now. Like the one of 16 years, when she gets to the university, I don't pray for a bad thing for them to rape her because of that, I can take it"…. (P14)

A participant mentioned that she does not have the money to take the vaccine, she can save up for it for her daughter to take the vaccine.

> "….*Ha It depends o because I am a civil servant it's until the government pays salary so if at that time I don't have the money I won't take it but I can be sure I can save up for it if the doctor says that she's still in a safe condition I can take in I can take it any other time*"…. *(P9)*

In contrast, few of the participants stated that the cost of the vaccine will determine if they will be willing to allow their daughter to take the vaccine.

> *"….Yes yes I will but if it is 200 naira. If it is not more than 200 naira…." (P11)*

> *"…. Is it free (laughs)? we opt out when it comes to money but we will take it if it is free, if it is money and it is not too expensive, we can afford it… If it is 500 I can afford and they say they will do it for 5000, I don't have the power…." (P18)*

Several participants responded that they are willing to allow their daughters to take the vaccine since the vaccine will prevent their daughters from having cervical cancer

> *"…. Since they would have done orientation for everybody before they take the vaccine that this is what is happening and the government will abi and it's not that someone will just come and say they want to take it abi… Since everybody is aware that cancer which they are of different types and we don't know that it a disease that has no cure. So if we have what can prevent it there's no amount I can't spend"…. (P12)*

> *"…. I can allow her to take it, the reason is because we cannot trust all these children we give birth to now. Like one of 16 years, when she gets to the university.*

I don't pray for bad thing for them but in case of rape I can take it for her because of that".... (P14)

".... Yes because they say prevention is better than cure, so probably if one will get it, it can easily prevent the person from getting it".... (P15)

However, very few mothers were not willing for their daughter to take the vaccine

".... I may not be willing because naturally, I don't like anything foreign, anything medicine or anything like that until unless it is compulsory. I don't take vaccines I don't take medicine".... (P5)

".... I don't think I can introduce that to her... So the only thing is that maybe the government said it is necessary to be giving it to the children now, there's nothing we can do, we have to give it to them. But for giving her willingly on my own, I don't wish".... (P6)

However, the mothers were further asked how much they will be willing to pay for the vaccine. Most of the participants were willing for their daughter to take the vaccine if the amount is not more than what they can afford and if they have the money. Few of them said they are willing to pay amounts like 2500 naira, not more than 1000 naira, 1500 naira, and 500 naira

Their responses included:

"....don't know how much they sell it. By the grace of God if there is money".... (P3)

"…. God should help us, there is no ermm no amount that is higher than our health so when it's time for health, we need to take care of ourselves. We will pray that God should provide for us. If necessary to be taking it for them, if there is money there is nothing wrong in it if it is necessary to be taking it for them and it will not affect them we can be taking it for them if we have the money. So there is nothing wrong in that"…. (P6)

"….I think it's very good but maybe 2500"…. (P2)

"….Is it compulsory we pay? Is it not from the government hospital….? If it is not expensive more than what I can afford… Like 1000 is not too much… It should not be more than 1000"…. (P8)

"….I don't know my friend said it is 16000 but when o get to the clinic may be some other test and all maybe it will have more money"…. (P9)

"…. Ok, as for me o, me I suggest 200 nairas"…. (P11)

"….Errmmmm for me, I will say the government should just render it free to prevent our generation. Just as other ermm just to use it to prevent the life the generation I would have preferred it been free but if I am to suggest the money they can collect, they should take a token something not less than 1000 naira"…. (P15)

"…. Just that the amount that I can pay should not be more than this amount. It should not be more than 1500"…. (P16)

"….We are ready to take it but if it is more than what we can afford. Everyone knows their capability, where can say this is our worth and not be up to that. Shey you try to reach up to what is out of your reach and if you can't reach up to it I will stay within my reach. If it is 500 I can afford and they say they will do it for 5000, I don't have the power"…. (P19)

One of the participants who said she was not willing to allow her daughter take the vaccine also said she was not ready to put her money into taking the vaccine except she knows the benefit of the vaccine.

> *"....Until I know the benefit of the vaccine, I may not want to take it to let alone I want to put my money to it".... (P5)*

However, many participants think the vaccine is meant to be free

> *"....this one is not free. I don't know o because me I have not taken it before so I don't know. I don't know how much it cost. So I cannot ehn".... (P7)*

> *"....Ha I don't know o... Those kinds of vaccine, shey they are free and it's the government that gives it".... (P12)*

One of the participants expressed that she is willing to allow her daughter to take the vaccine if she can afford it and if her father agrees that she should take it. Her response is indicated below:

> *"I don't know how much it is going to cost but if I can afford it maybe. But I will ask her father first because I cannot decide on my own. Yes, I don't mind the amount it will cost but I will allow her father to know it. if her father rejects it, that means I cannot take it" (P13)*

Many participants were willing to allow their daughters to take the vaccine. However, they responded that the cost will determine if they will take it or not while some responded that

they will take the vaccine for their daughters not minding the cost. Some of their typical response included:

"....It's good. Prevention is better than cure it's cheaper and better than cure. Because if eventually, I have... I pray my children will not have it o but if someone should eventually have it if a child should have it without taking this vaccine, you how much you will spend. So it is, no amount is too much or too small to pay for this vaccine".... (P7)

"....Since everybody is aware that cancer which they are of different types and we don't know that it a disease that has no cure. So if we have what can prevent it there's no amount I can't spend".... (P12)

"....No o, it depends because if one does not have money, one will not go and steal because you want to take a vaccine. If it is too expensive and one does not have the money you will not force yourself or go and do otherwise just for you to get them something. So if it is cheap, one will go and take it but if it is costly".... (P15)

"....We are ready to take it but if it is more than what we can afford. Everyone knows their capability, where can say this is our worth and not be up to that. Shey you try to reach up to what is out of your reach and if you can't reach up to it I will stay within my reach".... (P18)

A participant said she will be willing to take the vaccine for her daughter but she has to inform her father first and take permission from him.

"....Yes, I don't mind the amount it cost but I will allow her father to know it. So if the father rejects it that means that I can't decide on my own".... (P13)

4.14 Participants concerns about the vaccine

Mothers think the HPV vaccine is beneficial to their daughters and they were willing to take it for them, however not being aware of the vaccine, side effects, promiscuity, the vaccine being government approved and cost were part of the worries reported by the women if they don't want to take the vaccine for their daughters.

"....What could be of worry to me is that I haven't heard of it. I am just hearing of it for the first time. So if it is common for example, like last week they were carrying it about and we do hear of it from the radio, they said that from 0-5 years.... But this one, this is my first time hearing it. If it is something I have heard of before, why not will I not take since it is good... If I have heard of it around, I just heard of it from you for the first time. If I have been hearing of it around why not will my daughter not take it".... (P1)

"....Maybe so that if she gets the vaccine, she may think that she is free, she can do anything... that is my only worry".... (P2)

"....Ehnnn if there is a side effect of the drugs so ehnnnn some drugs have side effects.so if there is side effect is the one that can make me worry... ha maybe it can cause a problem for her... You know some drugs used to have side effects. Maybe it may affect her when she's getting old it may affect her vagina that is just it".... (P3)

"....I will know the place they are taking it, whether it is official that the government knows about it. They will not just take any medicine anyhow".... (P4)

"....May God will not let us witness a bad thing. There is nothing o. it remains money for feeding. Since it's something that will benefit the child, I will let her take it...." (P8)

"....I heard that it is expensive.it is the... I heard that the money is plenty to get the vaccine. That is my worry and I am not very sure about her how many men she has started sleeping with ehn promiscuity can be another worry for me".... (P10)

"....the major problem to be that it must not have any side effect, the personnel involve should give and adequate education base on it and open one's eye to both the advantage and disadvantage. So the disadvantage can prevent if it is a severe disadvantage can prevent me from going for it".... (P15)

"....Ha uhmmm because if you take some vaccine for children, it could bring out another thing in the body of the child that other infections will appear in the body of the child it will push all those things out. So that could be of little worry for me to say I will take it because there was a time they said there is a vaccine for children from 3 years to 3 years. It later brought out other infections for some children we took it for that we had to start treating them".... (P20)

Meanwhile, few participants mentioned that they have no worries about taking the vaccine for their daughters because of its benefit which is to protect their daughters. Side effects of the vaccine were also mentioned.

"....I don't have any worry or any bias or what am I going to say because... ehn ehn so I will just be praying for her but I know that she won't go beyond what we've taught her. Though that is my belief sha. So I don't have any worry concerning he".... (P13)

"....there's nothing that could be of worry since it is like immunization abi. What will cause worry? It should prevent this bad disease if she should take it ... No, so far I have faith I don't have any worry. I can allow her to take it".... (R16)

"....hmmm .may we not be inflicted with cancer, cancer is not something that is good. Firstly the reason I could say she should not take it is what I have said earlier. If I trust my daughter that she is not promiscuous, there is no reason for her to take the vaccine. Do you understand me? That is what I can say about it".... (P17)

CHAPETER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

This study explores Knowledge, Perception and Acceptability of Human papillomavirus vaccine among mothers of adolescent girls. This chapter explains the result presented in the previous chapter. The demographic characteristics of the participants, their knowledge human papillomavirus and human papillomavirus vaccine, attitude perception towards human papillomavirus vaccine, level of acceptance of mothers towards the uptake of the vaccine and barriers to acceptance of Human papillomavirus vaccine among mothers were investigated. The implication of the findings of this study to health promotion and education was discussed and recommendations were made at the end of this report.

Participants Socio-demographic characteristics

The study findings revealed that the age range of the participants falls within 30-59 years. The age range also falls within the reproductive age of 15-45 years in Nigeria (National Demographic and Health Survey, 2013). This age range is in line with what was reported in a study that was conducted by Btoush, Brown, Tsui, Toler and Bucalo, (2019).

All the participants in the study at least had primary education and the highest form of education was postgraduate with most of them being Diploma and Secondary holders. As indicated in the NDHS, (2013), 17% of women have completed at least primary education. This implies that educational situation in the study area is better. It is good to note that the study area is in the south-western region of Nigeria that benefitted and has been benefitting from free primary education for several decades. The predominant religion of the participants practices Christianity.

Most of the participants represent Yoruba tribe which is one of the three main tribes in Southwest Nigeria where the study was conducted. The diverse ethnic group in the study serves as a plus to the study, this is so because the information gotten from the study encompasses the views of the participants from different family background and tribes.

Many of them been Yoruba is because the study was carried in the south-western part of the country.

Knowledge of mothers on HPV vaccines

Findings from this study showed a low level of awareness of human papillomavirus vaccine by the participants. Most of them do not know HPV as the major cause of cervical cancer. They responded that they have not heard of Human papillomavirus. There was misconception about HPV and HIV by one of the participants who reported to have heard of HPV which is similar to a qualitative study that was conducted in Uganda where there was misconception about HPV being mistaking with other sexually transmitted infections such as HIV and the influenza virus (Andrew, *et al* 2017). One participant mentioned to have heard of HPV but do not know about HPV. However, out of the four participants who reported to have heard of HPV two participants who are master's degree and B.Sc. holder had a fair knowledge about HPV and HPV vaccine to prevent HPV. This result corroborates with the findings of Pieter et al, (2012) on HPV acceptability in Tanzania. This could be said that the level of education of the respondents is linked to their low level of knowledge on the HPV vaccine. The finding is in contrast to that of quantitative research that was carried out in Abuja where it was discovered that despite the high level of literacy, awareness of HPV vaccine is very low (Agida *et al.*, 2015).

Perception of mothers on HPV vaccine

There was low knowledge on HPV vaccine among the participants and brief information was given on cervical cancer, HPV and the benefit of the HPV vaccine. The participant perceived that the vaccine will be of great benefit to their daughters if they take it as it will prevent them from having HPV and cervical cancer after they were provided with the information. This corroborates with a qualitative study that was conducted in Uganda by Andrew et al, (2017) where participants were given information on the HPV vaccination which enhanced their understanding about the vaccine and perceived it to prevent cervical cancer which is said to be a deadly disease and otherwise has no cure. Also, mothers' perception in terms of beliefs and concerns which was mentioned as not knowing of whether their daughters are sexually active or not and preventing the virus is better than

curing it were however related to their acceptance to take the vaccine for their adolescent daughters which is corroborates with the findings of Adesina *et al.*, (2018)

Level of acceptance of mothers towards the uptake of HPV vaccine for their adolescent daughters

Most of the participants had positive views on vaccination against cervical cancers, they expressed their desire for their daughters to take the HPV vaccine as it is perceived to prevent HPV and cervical cancer. This was due to the information that was provided on the HPV vaccine. This is similar to the findings of where there was a high level of vaccine acceptance among the participants. Gitte, (2010); Endarti *et al.,*(2017) and Pieter *et al.,*(2012). However, two of the participants expressed conditional support for her daughter's uptake of the vaccine against HPV which were obtaining permission from her husband and if it's given by health personnel or recommends by the government respectively. This is similar to Belinda *et al.,* 2019 findings where father's approval and child's consent were some conditions that were given for the uptake of the vaccine. On the other hand, two of the participant responded that they may not be willing to give their daughter the vaccine. The reasons stated included that she does not like anything foreign except it is made compulsory by the government and giving her the vaccine will seem like she is being encouraged to be promiscuous.

However, most of the participants accepted to take the vaccine for their daughters. They believe that prevention is better than cure so it is necessary they take the vaccine for their daughters. Some accepted to take the vaccine for their daughters if the cost of the vaccine is within the amount they can afford. Similarly, in a study carried out in Vietnam, a high proportion of the participants were willing to pay for the HPV vaccine (Bach *et al.*, 2018)

Barriers to acceptance of HPV vaccine among mothers

Although a high proportion of the participants accepted to take the HPV vaccine for their daughters, few participants expressed some of their worries about taking the vaccine which also served as a major obstacle to why they may not accept to take the vaccine for their daughters. Some of these included their daughters being promiscuous after taking the

vaccine, the cost of the vaccine, the side effects of the vaccine. The findings were similar to the qualitative research that was carried by Loke *et al.,*(2017)where barriers to acceptance of HPV vaccine by mothers and female adolescents were mentioned to be the cost, uncertainty of side effects, daughters engaging in riskier sexual behaviours among others. However, many participants reported that nothing could serve as a barrier or obstacle for them not to take the vaccine for their daughter since its primary purpose is to prevent them from having HPV.

5.2 Conclusions

This study assessed the knowledge, perception and acceptability of human papillomavirus vaccine among mothers of adolescent girls in Ibadan Northwest local government area, Ibadan. It can be concluded that participants have low knowledge of HPV and HPV vaccine. They also accepted to take the HPV vaccine for their daughters after being provided with information on the benefits of the vaccine for their daughters. There is a need for mothers to be informed on the importance of early prevention of cervical cancer in other to save lives. The benefits and safety of the HPV vaccine and also the understanding of HPV has enhanced the acceptability of the vaccine. The findings suggest that public enlightenment will increase knowledge of mothers on HPV and HPV vaccine which could have influenced the uptake of the vaccine for the adolescent girls.

5.3 Recommendations

From the findings, of this study, it is evident that awareness and knowledge of HPV and HPV vaccine are generally low. In view of this, the following recommendations were made

- Public enlightenment through the mass media such as the radio and television on HPV and the importance of HPV vaccine
- There is need to emphasize health education on cervical cancer, HPV and HPV vaccine which would benefit all females in general (both young and old) and the general populace in future especially when it comes to their sexual and reproductive health.

- Health education on the link between cervical cancer and HPV should be given to mothers and adolescent girls, in general, to promote good knowledge on sexually transmitted infection such as HPV and help them do away with bad attitudes and misconception about cervical cancer and HPV
- The government should subsidize the cost of the HPV vaccine in other to make it affordable for parents
- The government should ensure that both government and private hospitals include HPV vaccine as part of the compulsory immunization for all female adolescents
- The government, non-government and faith-based organization should promote access to HPV vaccine by subsidizing the cost of the HPV vaccine in public hospitals
- There should be male involvement as regards HPV vaccination of their adolescent daughters.
- Public health professionals and policymakers should conduct better health promotion efforts in communities based on the knowledge deficit that have been identified

Recommendations for further studies

Based on the findings from this study, it is suggested that further studies be carried out to throw more light on the following:

- Carrying out with a large sample size, which should include mothers across the geopolitical zones in Nigeria, to generalize the information gotten on matters on the willingness of mothers to take of HPV vaccination for their adolescent daughters.
- Determination of knowledge, perception and acceptability of HPV vaccines among fathers of adolescents girls to find out their predisposition and involvement about the uptake of HPV vaccine for their daughters.

5.4 Implication of the findings for health promotion and education

The findings of this study have several implications for planning, development and implementation for health promotion and education on factors that influence the acceptability of HPV vaccine among mothers of adolescent girls. It has been deduced from this study that, although the participants' awareness and knowledge on HPV and HPV vaccine were low. It is imperative not for only health personnel but the general population to have good knowledge on health matters such as cervical cancer, HPV, HPV vaccination, and cervical cancer screening. There is a need for efforts to be made to improve the uptake of HPV vaccine among adolescent girls in the prevention of cervical cancer thereby reducing the death that arise from it in Nigeria, It is necessary that this is directed towards increasing the knowledge of mothers on cervical cancer, HPV and HPV vaccine. Therefore, the study is important in the following areas;

Health education and public awareness: the results from the study revealed that most of the participants lacked good knowledge and understanding on both cervical cancer and HPV; the description and the ability to link cervical cancer to HPV. These outcomes call for an educational approach such as public enlightenment/awareness and health education to ensure that everyone has basic knowledge of cervical cancer and HPV, screening and prevention. The school is a good ground for harnessing awareness activities, market places and religious institution are necessary and important places to pass essential information on health because they capture many people. Also, adopting other public enlightenment methods which could be in form of a campaign could be used to create awareness. This method has the potential of reaching a large audience at a time. Campaigns should be organized on television and radio station, where health professional would be invited to enlighten people on cervical cancer, HPV and HPV vaccine. Furthermore, with most of the participants being female, there may be a need for a female-focused educational intervention aimed at increasing the awareness and knowledge of mothers towards the importance of HPV vaccine for their daughters.

Social approach/advocacy: advocacy is one major public health strategy for achieving health public policy and overcoming various public health problems. This social approach

should be enforced in Nigeria to help increase awareness on HPV and HPV vaccine. The Faith-Based Organization such as mosques and churches should endeavour to pursue the goal of alleviating cervical cancer in the country. Issues on cervical cancer including HPV vaccination among other health issues that should be given topmost priority on their agenda of funding and promoting programmes and services.

Medical/preventive approach: HPV vaccination services should be provided to adolescents in school with the awareness of their parents which could be added to the school fees of the adolescents. The report from the study revealed that the adolescent daughter of mothers that participated in the study have not vaccinated any of their daughters against HPV.

REFERENCES

Achampong, Y., Kokka, F., Doufekas, K., and Olaitan, A. 2018. Prevention of Cervical Cancer. *Journal of Cancer Therapy;* 9:79-88.

Adesina, K., Saka, A., Isiaka-Lawal, S., Adesiyun, O., Gobir, A., Olarinoye, A., and Ezeoke G. 2018. Knowledge, Practice and Acceptability of HPV Vaccine by Mothers of Adolescent Girls in Ilorin, Nigeria. *Sudan Journal of Medical Sciences* 13(1):33-49.

Adesina, K., Saka, A., Isiaka-Lawal, S., Adesiyun, O., Gobir, A., Olarinoye, A., and Ezeoke, G. 2018. Parental perception of human papillomavirus vaccination of prepubertal girls in Ilorin, Nigeria. *Saudi Journal for Health Sciences;* 7(1):65-70.

Agida, T., Akaba, G., Isah, A., and Ekele, B. 2015. Knowledge and Perception of Human Papillomavirus Vaccine among the Antenatal women in a Nigerian Tertiary Hospital. *Nigerian Medical Journal;* 56(1):23-27.

Akpo, D., Deji, P., Idiake, V., Otohinoyi, D., and Medavarapu, S. 2016. Cervical Cancer: Knowledge, Screening Practices and Vaccines among Female Medical Students in the Commonwealth of Dominica. *iMedPub Journals,* 8(5): 1-5.

Alleh, U., 2017. Method of Stress Management. Retrieved from psu.pb.unizin.org/ kines082/chapter/the-health-belief-model. Accessed on February 5, 2021.

American Cancer Society, 2016. HPV and Cancer. Retrieved from https://www.cancer.org/ latest-news/american-cancer-society-updates-hpv-vaccine recommendations-to-include-males.html. Accessed on June 9, 2019.

American Cancer Society. Cancer Facts and Figures 2014. Am Cancer Soc: 72. https://www.cancer.org › research › cancer-facts-figures-2014. Accessed on June 9,2019.

American Sexual Health Association, 2018. Fast Fact about Human Papillomavirus. www.ashasexualhealth.org › stdsstis › hpv › fast-facts. Accessed on June 9, 2019.

Anderson, T., Schick, V., Herbenick, D., Dodge, B., and Fortenberry, J. 2014. A study of Human Papillomavirus on virginally inserted sex toys, before and after cleaning, among womenwho have sex with women and men. *British Medical Journal;* 90(7): 529-531.

Andrew, K.T., Elialilia, S.O., Wilson, W.M., and Anne R.K. 2017. Perceptions of human papillomavirus vaccination of adolescent schoolgirls in western Uganda and their implications for acceptability of HPV vaccination: a qualitative study. Retrieved from https:// doi.org/ 10.1186/s13104-017-2749-8. Accessed on 2019, September 25.

Ayse, K., Memnun, S., Gulten, G., Aygul, A., Seval, C. 2012. Acceptance of Human Papillomavirus Vaccine by Adolescent Girls and Their Parents in Turkey. *Asian Pacific Journal Cancer Prevention;* 13:4267-4272.

Bach, X., Phung, T., Tien, T., Huong, L., Hue, T., Trang, H., Huong, T., Carl, A., Melvyn, W. 2018. Knowledge, attitude, and practice on and willingness to pay for human papillomavirusvaccine: A cross-sectional study in Hanoi, Vietnam. Retrieved from https://dovepress.com/. Accessed on September 9, 2019.

Belinda, R., Linda, R., Amirah, E., Siswanto, A., and Christiana A. 2019. A Qualitative Study of Parental Knowledge and Perception of Human Papillomavirus and Cervical Cancer Prevention in Rural Central Java, Indonesia: Understanding Community Readiness for Prevention Intervention. *Asian Pacific Journal of Cancer Prevention;* 20(8):2429:2434.

Bardají, A., Minduc, C., Augusto, O., Casellasa, A., Cambaco, O., Simbine, E., Matsinhe, G., Macete,E., Menéndez, C., Sevene, E., and Munguambe K. (2018). Awareness of Cervical Cancer and Willingness to be vaccinated against Human Papillomavirus in Mozambican girls. Retrieved from https://doi.org/10.1016/j.pvr.2018.04.004. Accessed on June 2, 2019.

Bisi-Onyemaechi, A,, Chikani, U., and Nduagubam, O. 2018. Reducing incidence of cervical cancer: knowledge and attitudes of caregivers on Nigerian city to human papilloma virus vaccination. *Infectious agent and cancer;*13(29): 2-6.

Blumenthal, J., Frey, M., Worley, M., Tchabo, N., Soren, K., and Slomovitz, B. 2012. Adolescent Understanding and Acceptance of the HPV Vaccination in an Underserved Population in New York City. *Journal of Oncology;* 9:1-8.

Bouassa, R., Prazuck, T., Lethu, T., Jenabian, M., Meye, J., and Bélec, L. 2017 Cervical cancer in subSaharan Africa: A Preventable Non-communicable disease. Expert Rev Anti Infect Ther; 15(6): 613-627. https://doi.org/10.1 080/14787210.2017. 1322902.

Brewer, N.T., and Fazekas, K.I. 2007. Predictors of HPV vaccine acceptability: a theory informed, systematic review. *Preventive Medicine;* 45(2–3):107–114.

Btoush, R., Brown, D., Tsui, J., Toler, L., and Bucalo, J. 2019. Knowledge and Attitude towards Human Papillomavirus vaccination among Latina Mothers of South American and Caribbean Descent in the Eastern US. *Health Equity;* 3(1):219-230.

Burchell, A., Richardson, H., Mahmud, S., Troittier, H., Tillier, P., Hanley, J., Coutlée, F., Franco, EL.2006. Modelling the sexual transmissibility of Human Papillomavirus infection using Stochastic Computer Simulation and Empirical data from a Cohort study of young women in Montreal, Canada. *American Journal Epidemiology;* 163(6):534-543.

Cartmell, B., Young-Pierce, J., McGue, S., Alberg, J., Luque, J., Zubizarreta, M., and Brandt, M. 2017. Barriers, Facilitators, and Potential Strategies for increasing HPV vaccination: A Statewide Assessment to inform action. Retrieved from https://doi.org/10.1016/j.pvr.2017.11.003. Accessed on June 9, 2019.

Centre for Disease Control and Prevention, 2013. Overview of Non-communicable Diseases and Related Risk Factors. Retrieved from https://www.cdc.gov › new-8 › Overview-NCDs_FG_QA-Review_091113. Accessed on December 12, 2019.

Centre for Disease Control and Prevention. Human Papillomavirus. 2015. Retrieved from https://www.cdc.gov>downloads>hpv. Accessed on June 2, 2019.

Centre for Disease Control and Prevention, 2018. Kinds of Cancer. Retrieved from https://www.cdc.gov/cancer/dcpc/about/index.htm. Assessed on December 3, 2019.

Centre for Disease Control and Prevention. What is HPV? Retrieved from https://wer. archive.org/web/20160807084000/http://cdc.gov/hpv/parents/whatishphtml. Accessed on June 8, 2019.

Centre for Disease Control and Prevention. Vaccines and Preventable Diseases. Retrieved from https://www.cdc.gov/vaccines/vpd/hpv/hcp/recommendations.html. Accessed on June 9, 2019.

Chan, C., Aimagambtova, G., Ukybassova, T., Kongrtay, K., and Azizan, A. 2019. Human Papillomavirus Infection and Cervical Cancer: Epidemiology, Screening and Vaccination – Review of Current Perspectives. *Journal of Oncology,* 5: 1-11.

Chan, S., Cheung, T., Lo, W., and Chung, T. 2007. Women's attitudes on Human papillomavirusvaccination to their daughters. *Journal of Adolescent Health;* 41(2):204–207.

Clifford, G., Koulibaly, M., Douno, K., Kabba, I., Haba, M., Sylla, B., Kemnade, F., Snijders. P., Meijer, C., and Franceschi S. 2009. HPV Infection in Women with and without Cervical Cancer in Conakry, Guinea. *British Journal of Cancer; 101(1)*:202-208.

Cunningham, J., Forbes, L., Ivankova, N., Mayo-Gamble, T., Kelly-Taylor, K., and Deakings, J. 2018. Black mother's intention to vaccinate daughters against HPV: A mixed method approach to identify opportunities for targeted communication. *The journal of Consultation and Liaison Psychiatry;*149(3):506-512.

Dantas, P., Sousa, L., Duarte, T., Baracat, E., Sorpreso I., and Carlos, L. 2018. Knowledge and acceptance of HPV vaccine among adolescents, parents and health professionals: construct development for collection and database composition. *Journal of Human Growth and Development;* 28(1*)*:58-6.

Deborah, M., and Diane, M. 2007. Epidemiology and Natural history of HPV infection. Retrieved from https://jogc.com>article>pdf. Accessed June 8, 2019.

Denny, L., and Anorlu, R. 2012. Cervical Cancer in Africa. Cancer Epidemiology and Prevention Biomaker; 21(9):1434-1438.

Denny, L., Adewole, I., Dreyer, G., Moodley, M., Smith, T., Synman, L., Wiredu, E., Molijn, A., Quint, W., Ramakrishnan, G., and Schmidt, J. 2014. Human papillomavirus prevalence and type distribution in invasive cervical cancer in Sub-Saharan Africa. *International Journal of Cancer;* 134:1389-1398.

Dusek, L., Maluskova, J., and Snajdrova, L. 2018. Epidemiology of cervical cancer: international comparison. Retrieved from https://www.cervix.cz/indexen.php?pg=professionals cervical-epidemiology international-comparison. Accessed June 2, 2019

Eileen, F.D. 2012. Human Papillomavirus. Retrieved from https://www.sciencedirect.com/topic/neuroscience/human-papillomavirus. Accessed June 8, 2019

Endarti, D., Satibi, S., Susi, K., Muhaya, F., Yuni, R., and Tika, A. 2017. Knowledge, perception and Acceptance of HPV Vaccination and Screening for Cervical cancer among Women in Yogyakarta Province, Indonesia. *Asian Pacific Journal of Cancer Prevention;* 19(4):1105-1111.

Ezem, B.U. 2007. Awareness an uptake of cervical cancer screening in Owerri, South Eastern Nigeria. *Ann African Medicine;* 6:94-98.

Ezenwa, B.N., Balogun, M.R., and Okafor, I.P. 2013. Mother's Human Papillomavirus knowledge and willingness to vaccinate their adolescent daughters in Lagos, Nigeria. *International Journal of Women's Health;* 5(1):1-7.

Felay, J., Dikshit, R., Eser, S., Mathers, C., Rebel, D., Parkin, D.M., Forman, D., Isabelle, S., and Bray, R. 2014. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012.*International Journal of Cancer;* 136(5): 359-386

Fisher, W., Laniado, H., Shoval, H., Hakim, M., and Bornstein J. 2013 Barriers to human papillomavirus vaccine acceptability in Israel. *Vaccine;* 31: 153-157.

Forman, D., Martel, C., Lacey, C., Soerjomataram, I., Lortet-Tieulent, J., Bruni, L., Vignat, J., Ferlay, J., Bray, F., Plummer, M., and Franceschi, S. 2012. Global Burden of HumanPapillomavirus and Related Diseases.*Vaccine;* 30(5):F12-F23.

Gamage A.U and Jayawardana P.L, 2017. Knowledge of non-communicable disease and practices related to healthy lifestyle among adolescents, in state schools of a selected educational division in Sri Lanka. *BMC Public Health* 18(64):1-9.

Ganczak, M., Owsianka, B., and Korzen, M, 2016. Parental willingness for their school aged children to receive the human papillomavirus vaccine. European *Journal of Public Health;* 26(1):446-447.

Gitte L.M. 2010. Drivers and barriers to acceptance of human papillomavirus vaccination among young women: a qualitative and quantitative study. Retrieved from http://www.biomedcentral.com/1471-2458/10/68. Accessed on September 8, 2019

Grandahl, M., Paek, S., and Lundberg, P. (2018). Parents' Knowledge, beliefs and Acceptance of the HPV Vaccination in relation to their Socio-demographic and Religious belief: A Cross-Sectional study in Thailand. Retrieved from https://doi.10.1371/journal.pone.0193054. Accessed on October 25, 2019.

Gregory D., Smith, D., and Travis, L.2011. Getting to know HPV and HPV Vaccines. *The Journal of American Osteopathic Association;* 111(3): S29-S34

Haedicke, J., and Iftner, T. 2013. Human Papillomaviruses and Cancer. *Journal ofElectro cardiology*; 108(3):397-402.

Hailemariam, T., Yohannes, B., Aschenaki, H., Mamaye, E., Orkaido, G., and Seta, M. 2017. Prevalence of cervical cancer and associated risk factors among women attending cervical cancer screening and diagnosis centre at Yirgalem general hospital, southern Ethiopia. *Journal of Cancer Science and Therapy;* 9(11):730 735.

Hassan, M., and Awosan, K. 2018. Knowledge of Human Papillomavirus Infection and Vaccination and Practices Regarding Human Papillomavirus Vaccination among female Health-care Professionals in Sokoto, Nigeria. *International Journal of Scientific Study;* 6(8):62-70.

Human Papillomavirus and Related Cancers, Fact Sheet, 2018.

Human Papillomavirus. 2019. Available at www.ema.europa.eu. Accessed on June 6, 2019.

Human Papillomavirus Information Centre, 2019. Retrieved from https://www. hpvcentre.net. Accessed on December 7, 2019.

Kabekkoda, S., Bhat, S., Pandey, D.,Varghese, V., Shukla, V., Ghosh, S., Kushtagi, P., Bhat, P., Gopinath, P., and Satyamoorthy. K.2015. Prevalence of Human Papillomavirus types and Phylogenetic analysis of HPV-16 L1 variants from Southern India. *Asian Pac Journal Cancer Preview;* 16:2073-2080.

Kahn, J.A., Rosenthal, S.L., Jin, Y., Huang,B., Namakydoust, A., and Zimet, G., 2008. Rates of human papillomavirus vaccination, attitudes about vaccination, and human papillomavirusprevalence in young women. *Obstet Gynecol.* 111(5):1103.

Katahoire, A., Murokora, D., LaMontagne, D., Mugisha, E., and Wani, J. 2014. Uganda: Acceptability of HPV vaccine among young adolescent girls. Retrieved from https://www.researchgate.net/publication/288259526_Uganda_Acceptability_of_ PV vaccine_among_young_adolescent_girls/amp. Accessed on October 29, 2019.

Keita, N., Clifford, G., Koulibaly, M., Douno, K., Kabba, I., Haba, M., Sylla, B., Kemenade, F., Snijder, P., Maijer, C., and Franceschi, S.2009. HPV infection in women with and without cervical cancer in Conakry, Guinea. *British journal of cancer; 101(1)*: 202-208.

Kumar, N. 2016. Cervical cancer; a Nightmare for Womanhood: Review of recent advances. *Women's Health and Gynaecology,* 2(2):1-9.

Kim, H.K., and Kim, H.D. 2015. Awareness of cervical cancer prevention among mothers of adolescent daughters in Korea: qualitative research. Retrieved from https://doi:10.1136/bmjopen-2014006915. Accessed on June 10, 2019.

Ko, L.K., Taylo,r V.M., Mohammed, F.B., Do, H.H., Gebeyaw, F.A., Ibrahim, A., Ali, A.A., and Winer, R.I. 2018 "We brought out culture here with us": A qualitative study of perceptions of HPV vaccine and vaccine uptake among East African immigrant mothers. Retrieved from https://www.doi.org/10.1016/j.pvr.2018.12.003. Accessed on October 7, 2019.

Kollar, L., and Kahn, J. Education about human papillomavirus and human papillomavirus vaccines in adolescents, 2008. *CurrOpin Obstet Gynecol; 20*:479–483.

Leser K.A., Francis S.A. 2014. Mother-child communication about sexual health, HPV and cervical cancer among antenatal clinic attendees in Johannesburg, South Africa. *AfricanJournal of Reproductive Health;* 18:123-126.

Li, X., Wong, I., Mcghee, S., Kwan, M., Wong, C., Ip, D., Chau, J., Chan, E. 2018. Mothers' preference and willingness to pay for human papillomavirus vaccination for their daughters: a discrete choice experiment. *Hong Kong Medical Journal;* 24(5):34-36.

Loke, A., Chan, A., and Wong, Y. 2017. Facilitators and barriers to the acceptance of human papillomavirus (HPV) vaccination among adolescent girls: A comparison between mothers and their adolescent daughters in Hong Kong. *BMC Res Notes* 10:390. DOI10.1186/s13104-017-2734-2.

Loke, A., Kwan, M., Wong, Y., and Wong, A. 2017. The Uptake of Human Papillomavirus Vaccination and Its Associated Factors among Adolescents: A Systematic Review. *Journal of Primary Care & Community Health;* 8(4):349-362.

Makuza, J., Nsanzimana, S., Muhimpundu, A., Pace, L., Ntaganira, J., and Riedel, D. 2015. Prevalence and risk factors for cervical cancer and pre-cancerous lesion in Rwanda. *The Pan African Medical Journal;* 22(26): 1-8.

Mastura, M., Juwita, S., Siti, S., and Wan, M. 2018. Knowledge, Decision-Making and Acceptance if Human Papillomavirus Vaccination among Parents of Primary School Students in Korta Bharu, Kelantan, Malaysia. *Asian Pacific Journal of CancerPrevention*; 19:1509-1515.

Melissa, V., Thuy, Q., Yong-Fang, K., and Rodriguez, A. 2019. Parental Knowledge gaps and barriers for children receiving human papillomavirus vaccine in the Rio GrandeValley of Texas. Retrieved from https://doi.org/10.1080/21645515.2019.1628551.Accessed on October 6, 2019.

Milner, D.A. 2015. Diagnostic Pathology: Infectious Diseases. Elsevier Health Sciences: page 40.

Mitiku, I., and Terefa, F.2016. Knowledge about Cervical Cancer and Associated Factors among 15-49 Year Old Women in Dessi Town, Northeast, Ethopia. *Plos One* 11(9): 1-10.

McCarey, C., Pirek, P., Boulvian, M., Sama, A., and Petignat, P. 2011. Awareness of HPV and cervical cancer prevention among Cameroonian health workers. Retrieved from https://www.biomedcentral.com/1472-6874/11/45. Accessed on October 3, 2019.

Momenimovahed, Z., and Salehiniya, H. 2017. Incidence, Mortality and Risk factors of Cervical Cancer in the world. *Biomedical Research and Therapy;* 4(12): 1795 1811.

Moraros, J., Bird, Y., Barney, D., King, S., Banegas, M., and Suarez-Toriello, E. 2006. A Pilot Study: HPV Infection Knowledge &HPV Vaccine Acceptance among Women Residing in Ciudad Juárez, México. *Californian Journal of Health Promotion;* 4:177-186.

Mouallif, M., Bowyer, H., Festali, S., Albert, A., Filali, Y., Guenin, S., Delvenne, P., Waller, J., and Ennaji, M. 2014. Primary cervical cancer prevention in Morocco: HPV vaccine awareness and acceptability among parents. *Procedia in Vaccinology*; 8:68–76.

National Population Commission (NPC) [Nigeria] and ORC Macro. 2013. National Demographic and Health Survey. Calverton.Maryland.

National Cancer Institute, 2017. What is Cancer? Retrieved from https://cancer.gov/about cancer/understanding/what-is-cancer. Assessed on December 3, 2019.

Ndikom, C.M., and Oboh, P.I. 2017. Perception, Acceptance and Uptake of Human Papillomavirus Vaccine among Female Adolescents in Selected Secondary Schools in Ibadan, Nigeria. *African Journal Biomedical Research;* 20:237-244.

Nejo, Y.T., Olaleye, D.O., and Odaibo, G.N. 2018. Prevalence and risk factors for genital human papillomavirus infections among women in Southwest Nigeria. *Arch Basic Applied Medicine; 6(1)*:105-112.

Nguyen, H., and Alessio, P. 2011. Facilitating factors and barriers for Intention to get HPV vaccine among female in Hanoi, Vietnam. *Journal of Health Research;* 23(3): 117 122.

Odetola, T., and Ekpo, K. 2012. Nigerian Women's perception about human papillomavirusimmunizations. *Journal of Community Medical Health Education;* 2:191-201.

Office of Data Analysis, Research and Evaluation. 2016. Qualitative research methods in program evaluation: considerations for federal staff. Washington, DC, USA: United States Department of Health and Human Services.

Patti, E.G. 2011. The known unknowns of HPV Natural History. *Journal of Clinical Investment;* 121(12*)*: 4593-4599.

Perkin, R.B., and Clark, J.A. 2013. Providers' Perception of Parental Concerns about HPV Vaccination. *Journal of Health Centre for the Poor and Underserved;* 24(2): 828-839.

Pieter, R., Veronica, S., John, C., David, A., Daniel, A., Daniel, W., Silvia, S., Saidi, K., Richard, J., and Deborah, W. 2012. A qualitative study of HPV vaccine acceptability among health workers, teachers, parents, female pupil and religious leaders in Northwest Tanzania. Retrieved from http://dx.doi.org/10.1016/j.vaccine.2012.06.025.Accessed on September 8,2019.

Poole, D., Tracy, J., Levitz, L., Rochas M., Sangare, K., Yekta, S., Tounkara, K., Aboubacar, B., Koita, O., Lurie, M., and De Groot, A. 2013. A Cross-Sectional Study to Assess HPV Knowledge and HPV Vaccine Acceptability in Mali. PLoS ONE; 8(2): 1-7.

Proma, P., Scott T., and Nga, T. 2012. Knowledge of Cervical Cancer and HPV Vaccine Post Vaccination among Mothers and Daughters in Vietnam. *Asian Pacific Journal of Cancer Prevention;* 13:2587-2592.

Satpute, V., Avinash, D., Rakesh, W., and Mrunal, S. 2018. A project on human papillomavirus– A review. *International journal of advanced pharmaceutical sciences;* 9(4): 51-66.

Schiffman, M., Clifford, G., and Buonaguro, F. 2009. Classification of weakly carcinogenic HumanPapillomavirus types: addressing the limits of epidemiology at the borderline. Infect Agent Cancer: 4-8.

Society for Family Health. 2013. Cervical Cancer Screening for Nigerian Women. www.sfhnigeria.org/cervical-cancer-screening-for-nigerian-women/. Assessed on June 9, 2019.

Sudenga. S., Rosyne, K., and Sherestha, S. 2011. Roles and uptake of Human Papillomavirus Vaccine in Adolescents Health in the United States .*Adolescents Health, Medicine and Therapeutics;* 2:63-74.

Sui, J. 2014. Perceptions of and Barriers to vaccinating daughters against Human Papillomavirus (HPV) among mothers in Hong Kong. Retrieved from https://www.biomedcentral.com/1472-6874/14/73. Accessed on June 9, 2019.

Syrjanen, S. 2010. Current concepts on Human Papillomavirus Infection in children. *The Author Journal Compilation APMIS; 118:* 494-509.

Todd, N. 2019. What is HPV? WebMD Medical Reference. Retrieved from https://webmed.com/sexual-conditions/hpv-genital-warts/hpv-virus-information about human-papillomavirus. Accessed on June 8, 2019.

Torre, L., Bray, F., Siegel, R., Ferlay. J., Lortet-Tieulent, J., and Jemal, A. 2015. Global cancer statistics, 2012. A *cancer journal of clinicians;* 65: 87-108.

Toye, M., Okunade K., Roberts, A., Salako, O, Oridota, E and Onajole, A. 2017.

Knowledge, perception and practice of cervical cancer prevention among female public secondary school teachers in Mushin Local government area of Lagos State, Nigeria. *The PanAfrican Medical Journal,* 28*:* 221.

Tsikoura, P., Stefanos, Z., Manav, B., Tomara, E., Iatrakis, G., Romanidis, C., Bothou, A., and Galazios, G. 2016. Cervical cancer: Screening, diagnosis and staging. *Journal of the Balkan Union of Oncology,* 21(2):320-325.

USAID, 2016. HPV, HIV and Cervical Cancer: Leveraging synergies to save women's lives. Retrieved from www.unaids.org/en/resources/document/2016/HPV-HIV-cervical cancer. Assessed on June 8, 2019

Vanguard Newspaper. 2013. Cervical cancer crisis: Nigeria, 4 others in the eye of the storm. Retrieved from www.https://www.googl.com/am/s/www.vanguardngr.com/2013/05/cervical cancer-crisis-nigeria-4-others-in-the-storm/amp/. Assessed on June 8, 2019

Vermont cancer registry. 2018. HPV Associated Cancers – Data Brief Vermont Cancer Registry, 2018. Retrieved from https://www.healthvermont.gov. Assessed on June 8, 2019

Videla, S., Darwich, L., Canadas, M., Coll J., Pinol, M., Garcia-Cuyas, F., Molina-Lopez, R., Cobrasi, P., Clotet B., and Sirere, G. 2013. Natural History of Human Papillomavirus Infections involving Anal, Penile and Oral sites among HIV Positive men. *Journal of the American Sexually Transmitted Diseases Associated;* 40(1):3-10.

Vuyst, H., Alemany, L., Charles, L., Carla, J., Sahasrabuddhe, V., Banura, C., Denny, L., and Parham, G. 2013. The Burden of Human Papillomavirus Infection in Sub Saharan Africa. *Vaccine;* 31(0 5): F32-F46.

Walsh, C., Gera, A., Shah, M., Sharma, A., Powell, J., and Wilson, S. 2008. Public knowledge and attitudes towards human papilloma virus (HPV) vaccination. *BMC Public Health;* 8: 368-371.

World Health Organization, 2013. Comprehensive Cervical Cancer Control: A guide to essential practice. Retrieved from https://apps.who.int › iris › bitstream › 9789241548953_eng. Accessed on June 6, 2019.

World Health Organization. 2014. Cervical Cancer, Human Papillomavirus (HPV) and HPV vaccines: key points for policy makers and health professionals. Retrieved from https://www.who.int › publications › cancers › RHR_08_14. Accessed on June 06, 2019.

World Health Organization. 2017. Non-communicable diseases: the slow motion disaster. Retrieved from https://www.who.int › publications › 10-year-review › ncd. Accessed on June 2, 2019.

World Health Organization. 2018. Cervical Cancer. Retrieved fromhttps://www.who.int. diagnosis-screening. Accessed on June 2, 2019.

Zimet, G.D., S.M., Sturm, L.A., Bair, R.M., Juliar B.E., and Mays, R.M. 2005. Predictors of STI vaccine acceptability among parents and their adolescent children. *Journal of Adolescent Health; 37(3)*:179–86.

APPENDIX 1

INFORMED CONSENT LETTER

KNOWLEDGE, PERCEPTION AND ACCEPTABILITY OF HUMAN PAPILLOMAVIRUS VACCINE AMONG MOTHERS OF ADOLESCENT GIRLS IN IBADAN NORTH-WEST LOCAL GOVERNMENT AREA

Dear Participant,

I am postgraduate student of department of Health Promotion and Education, University of Ibadan, Oyo State, Nigeria. I am conducting a study on the knowledge, perception and acceptability of human papillomavirus among mothers in Ibadan Northwest Local Government, Ibadan, Oyo State**.** There are no physical risks associated with participation in this study; your maximum co-operation will assist in making this research a success.

Please note that your participation in this study is voluntary and you can withdraw at any stage of the project without being penalized or disadvantaged in anyway because the main intension of this study is not to associate individual response with their real identity, therefore, all response gotten will be treated with utmost confidentiality

Your participation in this study is very important as it would help the researcher her study. Please note that there are no right or wrong answers to the questions asked or statements made.

The time required to complete this interview is approximately 30-60 minutes. Your willingness to participate in this interview implies that you have understood the purpose of the interview and given your consent to participate

Thank you for your cooperation.

APPENDIX 2

COPY OF THE IDI GUIDE ON KNOWLEDGE, PERCEPTION AND ACCEPTABILITY OF HUMAN PAPILLOMAVIRUS VACCINE AMONG MOTHERS OF ADOLESCENT GIRLS IN IBADAN NORTH-WEST LOCAL GOVERNMENT AREA

Greetings, My name is Ambali, Risqiyat Tolulope. I am from the College of Medicine, University of Ibadan. I would like to know more about your knowledge, perception and acceptability of human papillomavirus vaccine for your adolescent daughter. Is that okay?

Bio data of participants

Mother's Occupation

_____

Highest Level of Education Attained by the Mother

_____

Ethnicity

_____

Religion

_____

Mother's Age

_____

Number of Adolescent daughter(s)

_____

Age of Adolescent daughter(s)

_____

Interview's Time, Date and Venue

_____

Participant's knowledge on cancer and cervical cancer

1. What do you know about cancer?
   (Types of cancer, cervical cancer, causes, mode of transmission, who can contact cervical cancer).
   Probe for Cervical cancer

Participant's perception on cancer and cervical cancer

2. (i) Do you think you can contact cervical cancer? Probe for reason
   (ii) Do you think your adolescent daughters could have cervical cancer? Probe for reason

3. Have you ever heard of Human papillomavirus (HPV)?
   Probe for source of information, what is HPV, who can contract HPV, how can it be contracted

4. (a) Have you ever heard of Human Papillomavirus vaccine?
   Probe for what it is used for, age it can be taken, why it should be taken
   Probe: have you taken the vaccine before or has your daughter taken the vaccine before or do you know of anyone who has taken the vaccine before
   (b) (i) Who do you think should take the HPV vaccine?
   (ii) Who do you think should not take the HPV vaccine?

Participant's acceptability of Human papillomavirus vaccine

5. What do you think would be the benefit(s) of the HV vaccine of your daughter should take it?
   Probe for willingness to take the vaccine
6. What are your worries/barriers that might keep you from taking the vaccine for your daughter?
7. What is the most important thing to you of all things we have discussed?
8. Is there anything else you will like to add/say?

Thank you for your time.

AFIKUN 3 (APPENDIX 3)

IWE IGBASE LOWO OLUKOPA

IMO, ERO OKAN ATI TEWOGBA ABERE AJESARA KOKORO PAPILOMA LAARIN IYA AWON OMODE BIRIN NI AGBEGBE IJOBA IBLE ARIWA IWO-OORUN, IBADAN, IPINLE OYO

Eyin Olukopa wa Owon,

Mo je akeko ile iwe giga Yunifasiti ti ilu Ibadan ni eka ti ati n risi idanileko ati igbega to ilera ti o wa ni Koleeji ti ati n se itoju pelu oogun, ni abala to n risi ilera awon ara ilu. Mo nse iwadii lori imo, ero okan ati gigba abere ajesara kokoro papiloma laarin iya awon omode birin ni agbegbe ijoba ibile ibadan north-west, ilu ibadan, ipinle oyo, ni orilede Naijiriya. Ko si eewu kankanti kiikopa ninu iwadi yii; ifowosowopo yin yoo ṣe iranlọwọ fun aseyori iwadi yii.

E jọwọ e ṣe akiyesi pe ikopa yin ninu iwadi yii jẹ atinuwa ati pe e le dekun kikopa ni eyikeyi ipele iwadi laisi itanran lonakona nitori afojusun iwasdi yii kii se lati se idanimo idahun ẹni kọọkan, nitorinaa, a o se itoju gbogbo esi yin pelu asiri to lagbara julọ. kikopa yin ninu iwadii yii ṣe pataki pupọ nitoripe yii o se iranlowo fun oluwadi yii. E jowọ ṣe akiyesi pe ko si awọn idahun ti o tọ tabi ti ko tọ si awọn ibeere ti a beere tabi awọn alaye ti a ṣe.

Akoko ti a nilo lati pari ibeere yi jẹ iṣẹju ọgbọn-Ogota. Kikopa ninu ibere ijomitoro yii tumọ si pe e ti loye idi iwadi yii ati wipe e ti gba fifun aṣẹ rẹ lati kopa.

Adupe fun ifowosowopo yin.

AFIKUN 4 (APPENDIX 4)

IMO, ERO OKAN ATI ITEWOGBA ABERE AJESARA KOKORO PAPILOMA LAARIN IYA AWON OMODE BIRIN NI AGBEGBE IJOBA IBILE ARIWA IWO-OORUN IBADAN, IBADAN, IPINLE OYO

Mo ki yin, oruko mi Ambali. Mo jẹ akẹẹkọ ile ìwé giga Yunifasiti tí Ilẹ Ibadan ni ẹka n risi eto nipa idanilẹkọọ ati igbega eto ilera, ti o wa ni Kolẹẹji ti ati n se itọju pelu oogun, ni abala to n risi eto ilera awọn ara ilu. Mo fe mo nipa imo, ero okan ati itewogba abere ajesara kokoro papiloma laarin iya awon omode birin. Nje e faramo?

Àlàyé lori eto igbesiaye olùkópa

Ise won ni e nse (iya awon omode birin)?

_____

Ipele eko ti e ka?

_____

Eya wo ni e ti wa?

_____

Kini esin yin?

_____

Kini ojo ori yin (iya awon omode birin)?

_____

Oyo omode birin melo lebi

_____

Kini ojo ori awon omode birin yin?

_____

Akoko, ojo ati ibi Ifọrọwanilẹnuwo

_____

Imo olukopa lori arun jejere ati arun jejere ti ibi enu ona ile omo

1. Ki le mo nipa arun jejere?

(Awon orirsi arun jejere, arun jejere ibi ile omo, olufa, bi a se le ko, eni ti o le ko arun jejere ti ibi enu ona ile omo).

Se iwadi fun arun jeje ti ibi enu ona ile omo

Ero okan olukopa lori arun jejere ati arun jejere ti ibi enu ona ile omo

2. (i) Se e lero pe e le ko arun jejere ti enu ona ibi ile omo? Se iwadi fun idi

   (ii) Se e lero pe omode birin yin le ko arun jejere ti enu ona ibi ile omo? Se iwadi fun idi

3. Nje e ti gbo nipa kokoro papilloma ti eniyan ri?
   Se iwadi fun ibi ti won ti gbo ni pa e, kini kokoro papiloma, ti eniyan? Ta ni o le ko? Bawo la ti se le ko?

4. (a) Nje e ti gbo ni pa abere ajesare fun kokoropapiloma ti eniyan ri?
   Se iwadi fun nkan ti won fin se, ojo ori eni ti ole gba, idi ti a se gbodo gba
   Se iwadi lati mo ti won ba ti gba abere ajesara kokoro papilloma ri, tabi fun omode birin won ri, tabi ti won ba mo eni ti o ba ti gba abere ajesara papiloma ri?
   (b) (i) Tanie le lero pe o le gba abere ajesar kokoro papiloma?
   (ii) Tani e le lero pe ko leto lati gba abere ajesara kokoro papiloma?

Itewo gba abere ajesara kokoro papiloma laarin awon olukopa

5. Ki le lero pe o le je anfani abera ajesara kokoro papiloma ti omode birin yin ba gba?
6. Ki lo le je bi isoro tabi idena fun yin lati ma fe gba abere ajesara kokoro papiloma fun omode birin yin?
7. Ki lo je bi koko fun yin ni nu gbogbo nkan ti ati n so lateyin bo?
8. Se eni nkan miran ti e fe fikun gbogbo nkan ti ati so seyin?

Ese pupo fun akoko yin.

APPENDIX 5

INFORMATION IN CERVICAL CANCER, HPV AND HPV VACCINE

Cervical cancer is a disease that is caused by sexually acquired infection known has Human Papillomavirus (HPV) which happens to females only. It could lead to death If it is not detected on time

Human papillomavirus is a sexually transmitted infection which happens to most sexually active men and women at one point in their lives. Cervical cancer is by far the most common HPV related disease which nearly all cases of cervical cancer can be attributed to HPV infection

Human Papillomavirus vaccine is the vaccine that was developed to protect against HPV which is the major cause or cervical cancer. The vaccine works best if administered prior to exposure to HPV. Therefore, WHO recommends that girls between the ages of 9-14 years should be vaccinated before sexual activity begin. The vaccine cannot treat HPV infection but can protect one from contracting the virus.

APPENDIX 6

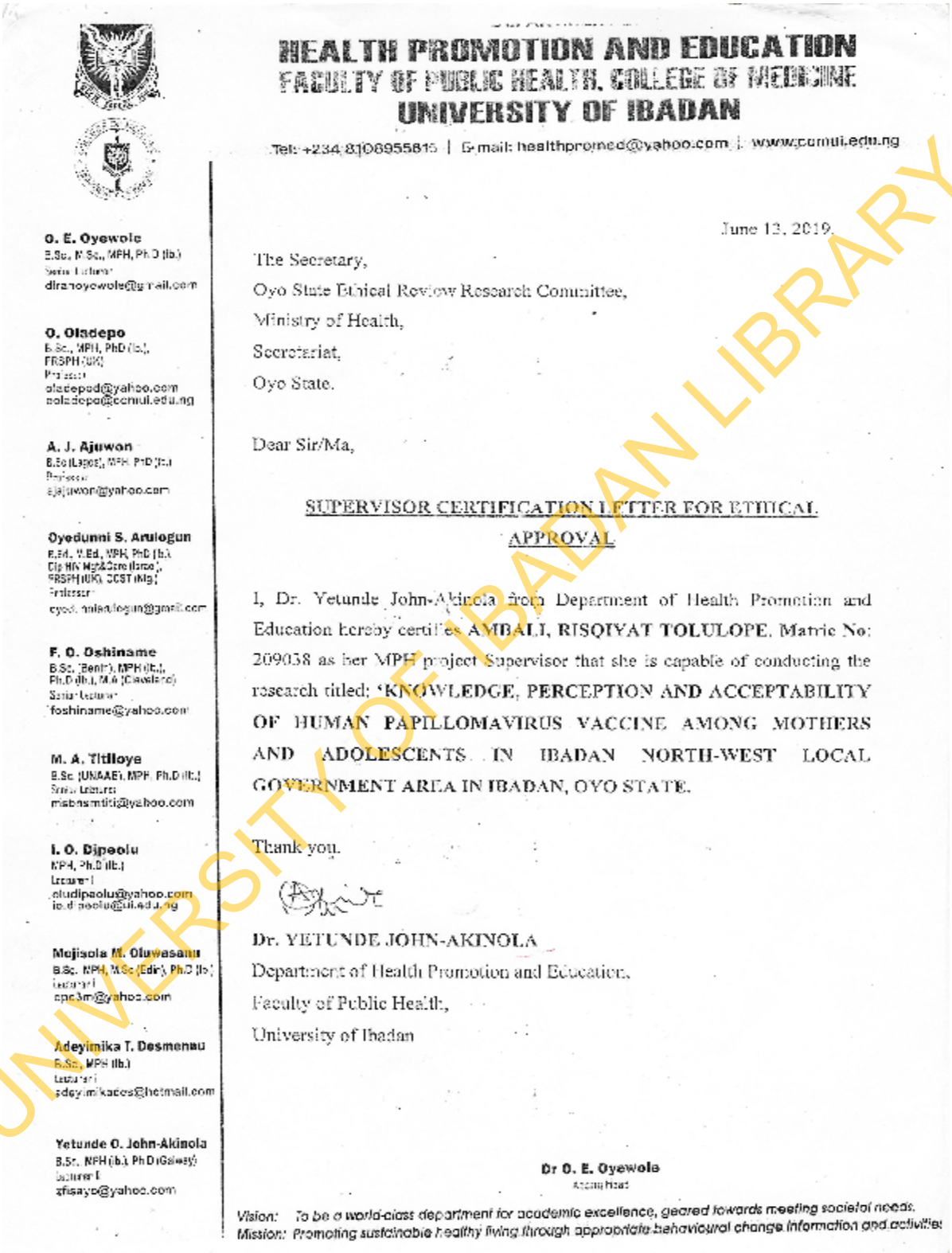
ALAYE LORI ARUN JEJERE TI ENU ONA IBI ILE OMO, KOKORO HUMAN PAPILLOMA ATI ABERE AJESARA TI KOKORO PAPILOMA, CERVICAL CANCER, HPV AND HPV VACCINE

Arun jejere ti enu ona ile omo je arun ti a le ko nipa ibalopo ti kokoro papiloma je olufa e. Oje arun ti o ma sele si awon obirin. O le la ku lo ti a o ba moju to ni asiko.

Kokoro papiloma je kokoro ti a le ko ni pa ibalopo lara awon okunrin ati obirin ti won ti won ti ba laga ni akoko kan ni igbesi aye won. Arun jejere ti enu ona ibi ile omo ma n je arun ti a wopo mo kokoro papiloma.

Awa da Abere ajesara ti o le dena kokoro human papilloma sele, iyen kokoro papiloma ti o je o un lo n ma fa arun jejere ti ibi enu ona ile omo. Abere ajesara yi ma n sise to peye ti a ba gba fun ki a to ko kokoro papiloma. Nitori na ni WHO se so wipe ki won gba abere ajesara yi fun awon omode birin ti won to ojo ri mesan si merinla kin won to balaga. Abere ajesara yi okin eni ti oba ti ko kokoro papiloma yi lara da.

APPENDIX 7



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

Tel: +234 8106955815 | E-mail: healthpromed@yahoo.com | www.comui.edu.ng

O. E. Oyewole
B.Sc., M.Sc., MPH, Ph.D (Ib.)
Senior Lecturer
dlranoyewole@gmail.com

O. Oladepo
B.Sc., MPH, PhD (Ib.),
FRSPH (UK)
Professor
oladepod@yahoo.com
ooladepo@comui.edu.ng

A. J. Ajuwon
B.Sc (Lagos), MPH, PhD (Ib.)
Professor
ajajuwon@yahoo.com

Oyedunni S. Arulogun
B.Ed., M.Ed., MPH, PhD (Ib.)
Dip HIV Mgt&Care (Lond.),
FRSPH (UK), DCST (Mg.)
Professor
oyodunni.arulogun@gmail.com

F. O. Oshiname
B.Sc. (Benin), MPH (Ib.),
Ph.D (Ib.), M.A (Cleveland)
Senior Lecturer
foshiname@yahoo.com

M. A. Titiloye
B.Sc. (UNAAB), MPH, Ph.D (Ib.)
Senior Lecturer
misbasmtiti@yahoo.com

I. O. Dipeolu
MPH, Ph.D (Ib.)
Lecturer I
oludipeolu@yahoo.com
io.dipeolu@ui.edu.ng

Mojisola M. Oluwasanu
B.Sc. MPH, M.Sc (Edin), Ph.D (Ib.)
Lecturer I
opc3m@yahoo.com

Adeyimika T. Desmennu
B.Sc., MPH (Ib.)
Lecturer I
adeyimikaces@hotmail.com

Yetunde O. John-Akinola
B.Sc., MPH (Ib.), PhD (Galway)
Lecturer I
zfisayo@yahoo.com

June 13, 2019.

The Secretary,
Oyo State Ethical Review Research Committee,
Ministry of Health,
Secretariat,
Oyo State.

Dear Sir/Ma,

SUPERVISOR CERTIFICATION LETTER FOR ETHICAL APPROVAL

I, Dr. Yetunde John-Akinola from Department of Health Promotion and Education hereby certifies AMBALI, RISQIYAT TOLULOPE, Matric No: 209038 as her MPH project Supervisor that she is capable of conducting the research titled: 'KNOWLEDGE, PERCEPTION AND ACCEPTABILITY OF HUMAN PAPILLOMAVIRUS VACCINE AMONG MOTHERS AND ADOLESCENTS IN IBADAN NORTH-WEST LOCAL GOVERNMENT AREA IN IBADAN, OYO STATE.

Thank you.

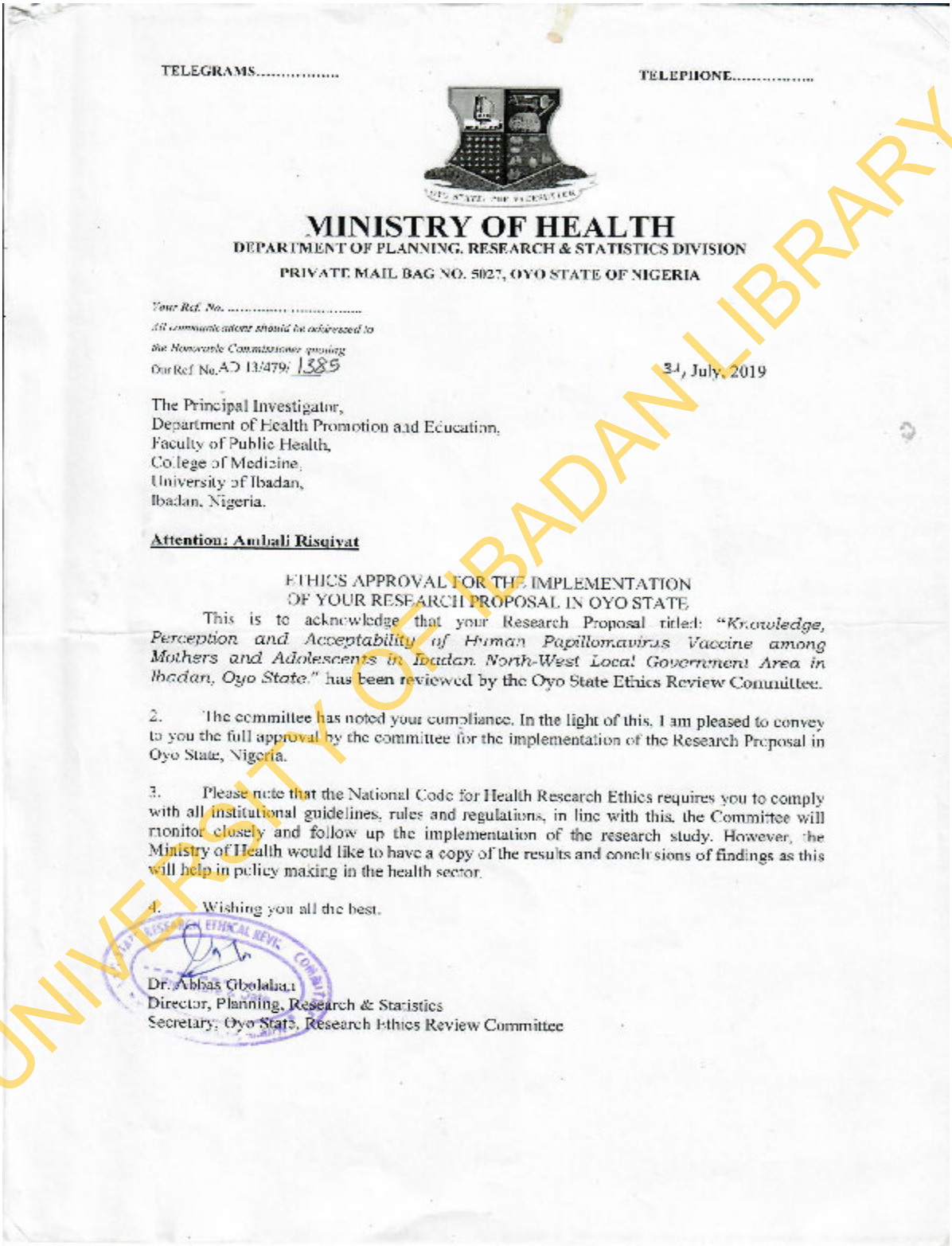
Dr. YETUNDE JOHN-AKINOLA
Department of Health Promotion and Education,
Faculty of Public Health,
University of Ibadan

Dr O. E. Oyewole
Acting Head

Vision: To be a world-class department for academic excellence, geared towards meeting societal needs.
Mission: Promoting sustainable healthy living through appropriate behavioural change information and activities

APPENDIX 8

ETHICAL APPROVAL LETTER



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/ 1385

31, July, 2019

The Principal Investigator,
Department of Health Promotion and Education,
Faculty of Public Health,
College of Medicine,
University of Ibadan,
Ibadan, Nigeria.

Attention: Amballi Risqiyat

ETHICS APPROVAL FOR THE IMPLEMENTATION
OF YOUR RESEARCH PROPOSAL IN OYO STATE

This is to acknowledge that your Research Proposal titled: "*Knowledge, Perception and Acceptability of Human Papillomavirus Vaccine among Mothers and Adolescents in Ibadan North-West Local Government Area in Ibadan, Oyo State.*" has been reviewed by the Oyo State Ethics Review Committee.

2. The committee has noted your compliance. In the light of this, I am pleased to convey to you the full approval by the committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations, in line with this, 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 findings as this will help in policy making in the health sector.

4. Wishing you all the best.

Dr. Abbas Gbolahan
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethics Review Committee