AWARENESS AND UTILIZATION OF VISUAL INSPECTION WITH ACETIC - ACID FOR CERVICAL CANCER SCREENING BY HEALTH CARE WORKERS IN KADUNA STATE, NIGERIA

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BY

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DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION, FACULTY OF EDUCATION, AHMADU BELLO UNIVERSITY ZARIA- NIGERIA

MAY, 2015

DECLARATION

I declare that this thesis titled **"AWARENESS AND UTILIZATION OF VISUAL INSPECTION WITH ACETIC - ACID FOR CERVICAL CANCER SCREENING BY HEALTH CARE WORKERS IN KADUNA STATE, NIGERIA"** has been carried out by me in the department of Physical and Health Education. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this research work has been submitted for another degree or diploma at this or any other institution.

Fatima BALARABE …….. ……

Signature Date

CERTIFICATION

This thesis entitled "**AWARENESS AND UTILIZATION OF VISUAL INSPECTION WITH ACETIC - ACID FOR CERVICAL CANCER SCREENING BY HEALTH CARE WORKERS IN KADUNA STATE, NIGERIA**" by Fatima BALARABE meets the regulations governing the award of Master of Education in Health Education of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To my beloved husband Dr. Yusuf Tanko, Musa and Ahmad.

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ABSTRACT

The study aims at assessing the awareness, availability, and utilization of visual inspection with acetic-acid in cervical cancer screening among health workers in secondary health care institutions of Kaduna-state. An Ex-post facto design was used for the study. The study population comprises of all nurses, midwives, and nurse-midwives working in all the secondary healthcare institutions of the state. The sample size used for the study was 300 respondents using the Yamane sample size selection formula. The technique involved were stratified sampling method whereby the three existing senatorial zones served as strata. Each of the stratum was clustered according to the existing local government areas. A purposive sampling technique was further used to select nine local governments, three from each senatorial zone that have secondary health care institutions. A proportionate sampling technique was used at the various selected secondary health care institutions to distribute questionnaires to the health workers based on their total number. The instruments used for data collection was a modified four-point likert scale questionnaire which was structured. Three hundred (300) questionnaires was administered out of which (297) were retrieved. The data collected were analyzed using one way analysis of variance (ANOVA) and two sample t- test with a 0.05 level of confidence to test the hypotheses. A constant mean of 2.5 was used to ascertain the agreement of the respondents on the questionnaire items. Findings from the study shows that health workers in secondary healthcare institutions of Kaduna-state are not aware of using VIA in cervical cancer screening, VIA requirements are not available in the secondary health care institutions, as such they are not utilizing it in cervical cancer screening. There are significant differences in the demographic variables of (age-group, sex, professional category, years of working experience and secondary health care institutions) in the awareness, availability and utilization of VIA among health workers in secondary health care institutions of Kaduna-state where ($p<0.05$). It was therefore

recommended that the state hospitals management board in collaboration with the Nursing and Midwifery Council of Nigerian should mount awareness campaign for health workers through seminars and workshops due to negative awareness of the health workers on VIA, also specialist VIA units should be created in the hospitals specifically for VIA screening services, this will go along way in utilizing VIA to screen for cervical cancer by the health workers thereby reducing the high incidence of the disease.

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OPERATIONAL DEFINITION OF TERMS

Visual inspection using acetic acid (VIA): VIA is a procedure which involves naked eye examination of the cervix using 3-5% acetic acid without magnification, usually performed by nurses and other paramedical health workers with illumination provided by a bright light source.

Screening tool: Testing procedure done to detect the presence of a cancer in sexually active women before it progresses to cancerous stage.

Awareness: Having knowledge of (VIA) as a screening tool for cervical cancer, having observed it or been told about it.

Availability: The condition of (VIA) requirement to be available, especially of being accessible or obtainable by health workers.

Utilization: To make use of (VIA) requirement, practically and effectively to screen for cervical cancer.

Health workers: A qualified nurse, midwife or nurse-midwife working in secondary healthcare institutions of Kaduna state.

Secondary healthcare institutions: Are government general hospitals mounted by Kaduna state Government.

Opportunistic services: A state whereby cervical screening is provided in tertiary hospitals together with other medical investigation procedures.

ABBREVIATIONS

ABUTH	-	Ahmadu Bello University Teaching Hospital
ACCP	-	Alliance for Cervical Cancer Prevention
ACS	-	American Cancer Society
OMRU	-	Ottawa Model of Research
VIA	-	Visual Inspection with Acetic-acid
WHO	-	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Cervical cancer is reported to be the second most common and the fifth deadliest disease in women. It affects about 16 per 100,000 women per year and kills about 9 per 100,000 per year. Approximately, 80% of cervical cancer occur in developing countries. Globally, in 2008, it was estimated that there were 473,000 cases of cervical cancer, and 253,500 deaths per year (Dim, 2012).

Moon, Cordoso, Baptista, Mohsin, Sten and Vermund (2012), stated that globally, cervical cancer is the second most common cancer in women with approximately 500,000 new cases and 275,000 deaths per year, of which roughly 85% of the cases occur in low-income countries including Nigeria. Southeast Asia only contributes about 25% of the world total disease burden.

In the United States, it is the 8th most common disease in women and the incidence of new cases of cervical cancer in the United States was 7 per 100,000 women in 2004, but cervical cancer deaths decreased by approximately 74% in the last 50 years, largely due to wide spread screening programmes (Dim, 2012). In the United Kingdom, the incidence is 8.5/100,000 per year in 2006 with 42% reduction from 1997 – 1998 due to screening procedures, which have been highly successful. In Australia, there were 734 cases of cervical cancer in 2005, and the number of women diagnosed with cervical cancer has dropped on average by 4.5% each year since organized screening began in 2005.

The World Health Organization (2006) reported that over the past few decades, 60% of all deaths worldwide has been from chronic non-communicable diseases like cardiovascular diseases, cancer, chronic respiratory diseases and diabetes. Mortality due to communicable diseases has

decreased, while there is an increase in that of cancer and heart diseases. The cervical cancer incidence remains unchanged with about 44% overall survival rate or about 10 per 100,000 women dying from the disease over an average of 5 years (WHO, 2006).

According to a report of Alliance for Cervical Cancer Prevention (ACCP) (2004), the regions hardest hit by cervical cancer are among the world poorest regions which are in Central and South America, the Caribbean, sub-Saharan Africa and parts of Asia. Ferley, Bray, Pisani and Parkin (2002) earlier stated that approximately 1.4 million women worldwide are living with cervical cancer, up to 7 million women worldwide may have precancerous condition that needs to be identified and treated early.

In Nigeria, estimated incidence rate of cervical cancer is 25 out of 100,000 women with estimated 8000 new cases diagnosed each year (Adewole, Benedict, Brain and Follen, 2005). Equally, high rate of cervical cancer has been reported from several African countries including Uganda, Malawi, Ethiopia and Kenya (WHO, 2012).

Cervical cancer is a malignant neoplasm arising from cells originating in the cervix uteri. The cervix is the narrow portion of the uterus where it joins with the top of the vagina, and most cervical cancers are squamous cell carcinomas, arising in squamous (flattened) epithelial cells that lie in the cervix. One of the most common symptoms of cervical cancer is abnormal vaginal bleeding but in some cases, there may be no obvious symptoms until the cancer has progressed to an advanced stage (Dim, 2012).

Lauca (2003) earlier stated that Human Papilloma Virus (HPV) infection appears to be a factor in the development of almost all cases of cervical cancer. Usually, women contact HPV between their late teenage and early 30s, with peak infection, coinciding with the onset of sexual activity.

He stressed that most often, cervical cancer is found much often at age of 40, with peak incidence around age of 43 and peak mortality in the late 50s. There is typically a long delay period between the gaining entrance of the organism (infection) and the invasive cancer stage, making screening programmes to be effective.

In developed countries, the use of cytology screening has strongly reduced both cervical cancer incidence and mortality. Due to lack of technical skills, human resources and financing required, to maintain the screening procedure in developing countries, Nigeria inclusive, the need for visual inspection with acetic acid emerged as immediate help. (Basu, Sankanarayanan, Mandal, Roy, Das, Choudhury, Data, Karamakar, Tsu,Chakrabarti, and Siddiqi, 2002).

Cancer of the cervix is a preventable disease, and its prevention is through early detection of premalignant stages of the disease. In recent years, a screening test for cervical precancerous stage using visual inspection aided by acetic acid has been found to be a suitable low cost and a most feasible alternative modality for control of cervical cancer in developing countries (Basu et al., 2002). Visual inspection of the cervix with acetic acid (VIA) involves the inspection of the cervix with naked eye before and after application of 3-5% acetic acid solution with the use of a light source (Dim, 2012). A study conducted by Belinsan, Quao, Pretomus, Zhong, Elson, Li, Pan, Fischer, Lorincz, and Zahniser (2001) in far away rural China on 1,997 women, found that VIA had a 71% sensitivity and 74% specificity. Sankaranarayanon, Esmy and Rajkumar (2007) supported the position by stating that visual inspection with acetic acid (VIA) can be an effective and acceptable method of cervical cancer screening in developing countries like Nigeria. McCarey, Pirek, Tebeu, Boulvain, Doh and Patrick (2011) further stated that creating awareness among health workers on risk factors and current methods for cervical cancer screening is necessary and good step towards implementing effective prevention programs. They further

stated that lack of knowledge about visual inspection with acetic acid (VIA) in our population and among healthcare workers can be a prime barrier for access to cervical cancer prevention.

Recent years have witnessed a significant development in cervical cancer prevention in developed countries in addition to cytology screening services. Previous efforts to implement cytology-based screening in developing countries have been conducted in the early 1980's but it has failed to reduce the mortality rates, mainly due to inadequate material resources, and lack of trained providers. In this regard, a recent cost-effective screening strategy using VIA emerged to be use, in developing countries like Nigeria. The screening and clinical services were available on a large scale in rural clinics of Africa.(Moon, Cordoso, Baptista, Mohsin, Sten and Vermund, 2012). Moon et al (2012) reported that VIA had been utilized by nurses and hospital physicians, with a regular clinical feedback for quality evaluation. The test is inexpensive and it's performed with minimal infrastructure, which may be done even in health facilities by health workers, and the results are made available immediately, thereby reducing multiple visits to the hospital health facility.

Globally, decrease uptake of cervical cancer screening is predominantly a problem of developing countries, due to limited access to screening facilities, thereby leading to the high increased in the number of women who come up with cervical cancer. The extent to which the number of women diagnosed with cervical cancer keep on increasing has remained a matter of grave concern to the present researcher that a study on awareness, availability and utilization of Visual Inspection With Acetic Acid (VIA) in screening for cervical cancer by health workers becomes necessary with a view to increase the deliverance of screening programmes and subsequently the decline of cervical cancer.

1.2 STATEMENT OF THE PROBLEM

Cervical cancer is the world's second deadly disease with an estimate of about 493,243 women diagnosed with it and 273,505 dying from it per year (WHO, 2002). It was responsible for over 250,000 deaths in 2005. Approximately 80% of this incidence occurred in developing countries. The American Cancer Society 2012, (ACS) estimated that in the United States, 12,170 new cases of cervical cancer was diagnosed in 2012. Internationally, more than 500,000 new cases are diagnosed each year; the rates vary widely, ranging from an annual incidence of 4.5 cases per 100,000 in Western Asia to 34.5 per 100,000 women in Eastern Africa. In industrialized countries with well establish cytology screening programs, the incidence of cervical cancer ranges from 4-10 per 100,000 women (American Cancer Society, 2012).The incidence of cervical cancer in Nigeria is 8,000 cases annually out of 10,000 women. Studies in Nigeria showed that it is the commonest female genital tract disease, accounting for 74% and 73.2% in Benin City and Ibadan respectively. It was further stated that 66.25% of all gynecological malignancies occur in Northwestern zone of Nigeria where Kaduna state is located. The relative frequency is 23.5% and at least 25,000 new cases are expected to occur yearly with incidence of 25 per 1000 women (Friday and Kunle, 2003) in future.

Worldwide, successful cervical cancer prevention is based on an organized screening program, and the goal of screening is to detect the pre-invasive stage of the disease and treat it appropriately before it progresses to cervical cancer. In developed countries, initiation and sustenance of cervical cytology programs involving screening of sexually active women yearly, or once every 2-5 years have resulted in a decline of cervical cancer incidence and mortality (Miller, Chamberlain, Day, Hakama and Provok, 1990).

However, an organized screening programme is difficult to implement in developing countries where resources are scarce and the population rate is high. Although cytology screening is being carried out in developing countries, Northwestern Nigeria, Kaduna state inclusive, it is mostly done in the context of opportunistic screening activities which are often inadequately performed (Holowaty, Miller and Rohan, 1999). In Northwestern Nigeria, where Kaduna state is located, there is no established screening service and where it is available, it is rather an opportunistic service (Friday and Kunle, 2003). Many developing countries do not have adequate resources to implement cytology-based prevention program, therefore an alternative low-cost test, of visual inspection with acetic acid (VIA) has emerged for use in low-resource settings where it can be performed by trained health workers (Basu et al., 2002).

The extent to which the number of women diagnosed with cervical cancer keep on increasing has remained a matter of grave concern. It is based on this interests that the researcher intends to find out the level of awareness of health workers in Kaduna state of visual inspection of the cervix with the use of acetic acid to screen cervical cancer, whether the requirements for (VIA) are locally available in Kaduna state, and whether the health workers in Kaduna-state are utilizing it to screen for cervical cancer.

1.3 RESEARCH QUESTIONS

This study was guided by the following research questions;

i. Are the healthcare workers in Kaduna state aware of VIA as a screening tool for cervical cancer?
ii. Are there qualified health personnel to offer VIA screening for cervical cancer in Kaduna state?
iii. Are the VIA requirement available for healthcare workers to use in Kaduna state?

iv. Are the healthcare workers in Kaduna state utilizing the VIA to screen for cervical cancer?

1.4 BASIC ASSUMPTIONS

On the basis *of the research questions, the following assumptions were made:*

1. *Health workers in Kaduna state are aware of visual inspection with acetic acid (VIA) as screening tool for cervical cancer.*
2. *Health workers in Kaduna state are qualified to offer visual inspection of the cervix with acetic acid to screen for cervical cancer.*
3. *Visual inspection with acetic acid requirements are available for health workers to use for cervical cancer screening in Kaduna state.*
4. *Health workers in Kaduna state are utilizing visual inspection with acetic acid (VIA) to screen for cervical cancer.*

1.5 PURPOSE OF THE STUDY

The main purposes of this study are:

i. To determine whether the awareness level of using (VIA) as a screening tool for cervical cancer among healthcare workers differ in Kaduna state.

ii. To determine whether the healthcare workers in Kaduna state differ in offering (VIA) screening for cervical cancer to their recipients.

iii. To identify whether the secondary healthcare institutions differ in the (VIA) requirements that are available for healthcare workers to use in Kaduna state to screen for cervical cancer.

iv. To identify whether the healthcare workers differ in the utilization of the (VIA) requirement to screen for cervical cancer in Kaduna state.

1.6 HYPOTHESES

On the basis of the research questions, the following hypotheses were formulated;

Major hypothesis

There are no significant differences among the healthcare workers demographic variables (Age-group, Sex, Professional category, Years of working experience, and Secondary healthcare institutions) in the awareness, availability, and utilization of VIA in cervical cancer screening in Kaduna-state.

Sub-hypotheses

1. There are no significant differences among the healthcare workers demographic variables of (Age-group, Sex, Professional category, Years of working experience and Secondary healthcare institutions) in their awareness of VIA cervical cancer screening in Kaduna-State.
2. There are no significant differences among the healthcare workers demographic variables of (Age-group, Sex, Professional category, Years of working experience and Secondary healthcare institutions) in the qualification of health personnel in VIA cervical cancer screening in Kaduna State.
3. There are no significant differences among the secondary healthcare institutions in the provision of available VIA requirements for cervical cancer screening in Kaduna State.
4. There are no significant differences among the healthcare workers demographic variables of (Age-group, Sex, Profession category, Years of working experience, and Secondary healthcare institutions) in the utilization of VIA cervical cancer screening in Kaduna-state.

1.7 SIGNIFICANCE OF THE STUDY

Cervical cancer screening has become a great necessity to woman existence and it is of great importance in stopping cancer, its spread and development. This research work would provide valuable information on the role of (VIA) screening, in the prevention of cervical cancer in Kaduna state, and Nigeria in general. Such information on awareness, availability of qualified health workers, availability of requirements for VIA and level of utilization of VIA among health workers of Kaduna state would go a long way in enrichment of the existing body of knowledge. Most importantly, the health workers in Kaduna state if not aware, will be informed about VIA. It is not known whether the health workers of Kaduna state are qualified to use VIA, this study would provide information on availability of qualified health workers. It is not known whether requirements of VIA is available in Kaduna state, this study would provide information on the availability of VIA requirements. It is not known whether health workers in Kaduna state use the available VIA requirements, this study would provide the level of usage. Moreover, the study will also stimulate healthcare planners/government to develop realistic strategies in providing VIA requirements to healthcare institutions in Kaduna state because of its cost effectiveness and efficacy.

1.8 DELIMITATION OF THE STUDY

The study was delimited to awareness, availability and utilization of visual inspection using acetic acid (VIA) in screening for cervical cancer among health workers (Nurses, Midwives, Nurse-Midwife) in secondary healthcare institutions of Kaduna state. . The use of nurses for this study is justified by the fact that the innovation of VIA is to increase the up-take of cervical cancer screening in developing countries, at primary and secondary health care institutions, also nursing staff have the highest percentage of workers among the health workers of Kaduna- state.

1.9 LIMIITATION OF THE STUDY

The response in the instrument for data collection which is the questionnaire depends entirely on the respondents' willingness to give accurate information relating to the study. However, effort was made by the researcher and research assistants to ensure that all the statements were very clear to respondents.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Carcinoma of the cervix, a preventable disease has continued to challenge today's gynaecologist. It is a very common gynecologic malignancy in Nigeria and other parts of Africa (Ijaiya, Aboyeji and Buhari, 2004). Adewuyi, Shittu, and Rafindadi (2008) argue that the true incidence of cervical cancer in Nigeria remains unclear because of lack of a cancer registry, but it remains a major challenge in the Nigerian society, Kaduna state in particular because of the very low uptake of cervical screening. Oguntayo, Zayyan, Kolawole, Adeniyi, Ismail, and Koladade (2011) stated that carcinoma of the cervix still remains the leading cause of gynecological concerns in Northern Nigeria, accounting for 65.7% of all gynecological concerns. This high incidence was also observed in Ibadan and Maiduguri (Nigeria) with 62.7% and 72.6% respectively.

Cervical cancer is a major health problem among women in most developing countries. It is the commonest female genital tract malignancy and a major cause of morbidity and mortality among women in Nigeria and other sub-Saharan African countries. The morbidity and mortality araising from cervical cancer can be minimized in Nigeria through effective screening practice. This will ensure that the diagnosis is made early enough for effective treatment as late presentation is one of the reasons why developing countries have high mortality rates from the condition (Sule and Shehu, 2005).

In developed parts of the world, there has been a steady decline in the incidence and mortality of the disease as a result of cervical screening programme. It has been possible to do this because

cervical cancer is a slowly evolving disease that begins as a mild dysplasia and progresses over as many as 10 or more years to invasive carcinoma (Ijaiye, Aboyeji and Buhari, 2004).

Nigeria has a population of about 40.43 million women who are at risk of developing cervical cancer. It is the commonest gynecological malignancy and current estimates indicate that every year, 9922 women are diagnosed with cervical cancer and 8030 die from it (WHO, 2010). The National Cervical Cancer Coalition (2008) stated that the main reason for the sharply higher cervical cancer incidence is the lack of effective screening programs aimed at detecting precancerous conditions and treating them before they progress to invasive cancer.

The current wisdom about cervical cancer control is the critical importance of early detection. Most women in Nigeria present with advanced disease when treatment (radiotherapy, hysterectomy) is of no benefit. Furthermore, it has been estimated that only 5% of women in Nigeria have been screened for cervical (dysplasia) cancer in the past 5 years compared to 40-50% seen in developed countries (National Cervical cancer Coalition, 2008). There are 36.59 million Nigerians aged 15 years and older who are at risk of cervical cancer. The high HPV prevalence of 26.3% in women correlates with the high cervical cancer incidence of 16.7 per 100,000 women. It constitutes 4.4% of gynecology admissions and 74.6% of all gynecological malignancies in Benin University Teaching Hospital and 4.2% and 66.2% respectively in ABUTH Zaria. It accounted for 60% of histological confirmed tumors in women in Ilorin and 19.9% of all cancer of women in Ibadan. More recently, in Zaria, Kaduna state, the figures have increased to 77% of all female genital tract tumors (Kolawole, 2008).

The literature review has been organized under the following headings:

2.2 Theoretical framework as it relates to the study

2.3 The concept of cervical cancer

2.4 The concept of cervical screening VIA

2.5 Awareness of VIA

2.6 Availability of VIA

2.7 Utilization of VIA

2.8 Availability of qualified health workers

2.9 Summary

2.2 THEORETICAL FRAMEWORK: THE OTTAWA MODEL OF RESEARCH USE

Awareness of lack of practical models to promote research use into a simple and useful framework leads to the formulation of the Ottawa model of research use (OMRU). The OMRU framework was created to be used by researchers who are interested in studying the process by which research becomes integrated into practice. The Ottawa Health Decision Centre also part of the Ioeb Research Institute in the United States, is a leader in developing evidence-based decision aids for patients and is increasingly focusing on research transfer strategies. The elements are primarily drawn from the literature relating to research utilization, the diffusion of innovations, physician behavior change and the development and implementation of practice guidelines.

The OMRU consists of six key elements that are connected to each other through the process of evaluation. These elements are believed to be the central components in the research use process:

- The practice environment
- Potential adopters
- The evidence-based innovation
- Strategies for transferring the evidence into practice
- The use of the evidence
- Health-related and other outcomes of the process (Logan and Graham, 1998).

The term innovation refers to research evidence that is new to the potential adoption, even though the evidence may have been available for some time. Evidence-based innovations may be evidence that some treatment or practice is beneficial and should be used, or evidence that some current treatment or practice is not beneficial and should be abandoned or used more selectively (Logan and Graham, 1998). All of the OMRU elements influence and are influenced by each

other. The dynamic interaction and interplay between the elements of the model distinguish this model from sequential stage models, which assume that the progression of research into practice occurs in an orderly, linear and rational way (Logan and Graham, 1998).

As patients and their health outcomes should be the primary focus of evidence-based practice, one assumption underlying the overall is that patients may play a key role in all aspects of the process and therefore must be considered within each model element. Another is that both the general and healthcare external environments will affect all aspects of the process (Logan and Graham, 1998).

2.2.1 Assessment, monitoring and evaluation of the model

Integral to the OMRU is the systematic assessment, monitoring and evaluation (AME) of the state of each model element prior to, during and following any research transfer efforts. The AME data serves four functions:

1. To identify potential barriers and supports to research use related to the practice environment, potential adoptors and the evidence-based innovation.
2. To provide direction for selecting and tailoring transfer strategies to overcome the identified barriers and enhance the supports;
3. To track the progress of the transfer effort; and
4. To evaluate the actual use of the evidence-based innovation and its impact on the outcomes of interest (Logan and Graham, 1998).

2.2.2 Elements of the Ottawa Model of Research Use

From the literature, barriers and supports to research use can arise from three distinct sources; the practice environment, potential adopters and the evidence-based innovation. The first step in

using the model as a guide is to assess these elements for barriers and supports (Logan and Graham, 1998).

1. **Practice environment**

The environment exerts a powerful set of influences on practitioners, researchers and policymakers. These influences can encourage or discourage the process of research transfer and use. This element of the model directs attention to identifying, describing and assessing such influences within the practice environment. These factors may be broadly categorized as structural, social, patient factors. Within the practice setting, structural factors such as the setting's, decision-making, rules, regulations and official policies, physical structure, workload, available resources and supplies and the system of incentives are all factors that have been shown to influence research use. Special factors include such things like the politics and personalities involved as well as the culture and belief systems operating within the setting (Logan and Graham, 1998).

2. **Potential adopters**

Patients, clinicians and other policy-makers on the system are all potential adopters of research. The OMRU directs policy makers to identify all potential adopters or target audiences to whom they intend to direct the evidence and to define and describe them in terms of their attitude, knowledge motivation for adopting the evidence, skills and current practices (Logan and Graham, 1998).

3. **Evidence-based innovation**

This model element focuses attention on potential adopter's perceptions of the attributes or characteristics of both the process by which research evidence was translated into some evidence-based innovation. The OMRU directs policy-makers to consider how perceptions of the

attributes of the innovation may affect potential adopters' decisions about adopter. This is to be done by identifying the attitudes likely to be viewed positively or negatively and tailoring transfer strategies appropriately. One potentially useful heuristic for conducting the barriers assessment is the "innovation decision process" proposed by Rogers. The innovation decision process is broken down into five stages potential adopters may go through as they decide to adopt an innovation. The stages in this process are knowledge (awareness of the innovation), persuasion (development of positive attitudes toward the innovation), decision (a cognitive decision to adopt the innovation), implementation (use of the innovation and confirmation (continue use of the innovation).

Although the evidence for the innovation process in health professions is extremely limited, conceptualization of the process of research use in stages may assist policy-makers to identify different barriers and supports depending on the stage. Furthermore, it may be necessary to emphasize different strategies at different times as the research use process evolves and more of the cohort of potential adopters move along the research use decision continuum from the early stages of awareness to the later stages of use and ongoing use (Logan and Graham, 1998).

Once policy-makers have assessed the practice environment, potential adopters and the evidence-based innovation and determined the potential barriers and supports related to each of these elements, the next step is to use all the information collected to efficiently select and tailor research transfer strategies to overcome identified barriers and enhance the existing supports (Logan and Graham, 1998).

4. Research transfer strategies

This model element represents the strategies for getting evidence-based innovations to potential adopters and encouraging them to use those strategies. These strategies range from passive

unplanned efforts (diffusion, e.g. publication of research findings or practice guidelines in a journal or putting them on the world wide web), to targeting and tailoring the evidence and the message for a particular audience (dissemination e.g. direct mailing), to systematic efforts to encourage adoption of the evidence (implementation, e.g. academic detailing, continuing health education).

Transfer strategies have included such things as provision of educational materials, social marketing, for example, the use of posters and other forms of advertising; educational activities such as continuing health education, conferences and workshops, individual or group instruction, outreach or academic detailing (Logan and Graham, 1998).

5. Research adoption and use

Adoption is making full use of an innovation as the best course of action available and represents behavioral change (using the evidence-based innovation). Determining the extent to which the innovation is used is the only way policy-makers can assess the success of the transfer strategies employed. By monitoring the adoption process, they can determine whether the innovation is being used as it was intended, whether it has been adapted to local condition and may no longer be used as intended, or whether it has been adopted and later abandoned, because the process of research for policy-makers to understand how the innovation has been adopted (or rejected) and how this may have changed over time. In so doing, policy-makers are in a better position to modify existing transfer strategies or select new ones to maximize research transfer (Logan and Graham, 1998).

6. Outcomes

The final element of the model is outcomes, which represents the impact of using the evidence-based innovation. The consequences of research use may be desirable, direct, anticipated or undesirable, indirect and unanticipated.

Direct outcomes can relate to patients and their families, practitioners and the system (economic outcomes). An important assumption of the OMRU is that a primary objective of research use in health care is that it improves patient health outcomes. For this reason, the evaluation of the initial and ongoing effectiveness of the research, use with respect to patient outcomes is needed (Logan and Graham, 1998).

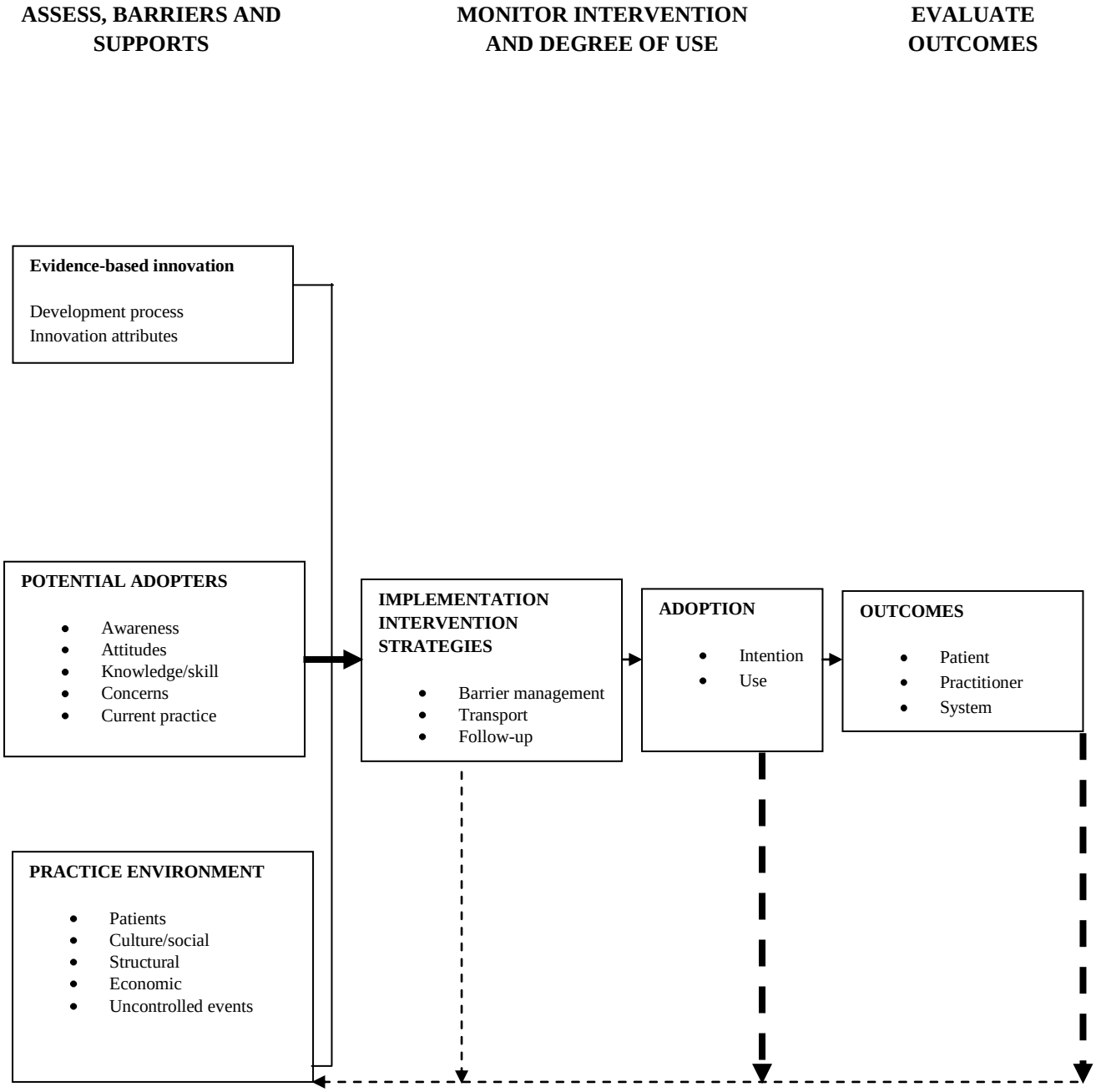


Figure 1: Ottawa Model of Research Use, Source: Logan and Graham, 1998

2.2.3 Application of Ottawa model of research to the study

The study, awareness, availability and utilization of visual inspection with acetic acid as a screening tool for cervical cancer among health workers in Kaduna state tries to assess the barriers, supporters, adoption, utilization and the outcome of using (VIA) to screen for cervical cancer. According to the OMRU, there are three domains in the model:

A. Assessment of barriers and supports

1. **Innovation:** VIA is produced through research as a simple procedure that can be done by health workers irrespective of the level of care they found themselves either primary or secondary healthcare not necessarily tertiary level of healthcare with sophisticated equipment.
2. **Adopters:** Health workers are the adopters of the innovation generated by using VIA to screen for cervical cancer.

Barrier to the adopter is lack of awareness, if they are aware of using VIA to screen for cervical cancer, it will promote adoption and utilization of the innovation as well as quality care.

3. **Practice environment:** Client/patient and physical structure constitutes the practice environment. The client to be considered here are sexually active women while the physical structures are the secondary healthcare institutions of Kaduna state.

B. Monitor intervention and degree of use

The second domain of the OMRU: The degree of utilization of the VIA by the adopters will be assessed. Barriers/supporters for the utilization that may arise is availability of the innovation in practice environment. The availability of VIA may promote its awareness and utilization, therefore, the availability of VIA in the practice environment will be assessed.

C. Evaluation of outcomes: This is the third domain of research use, outcome of the use of VIA will be assess by the study.

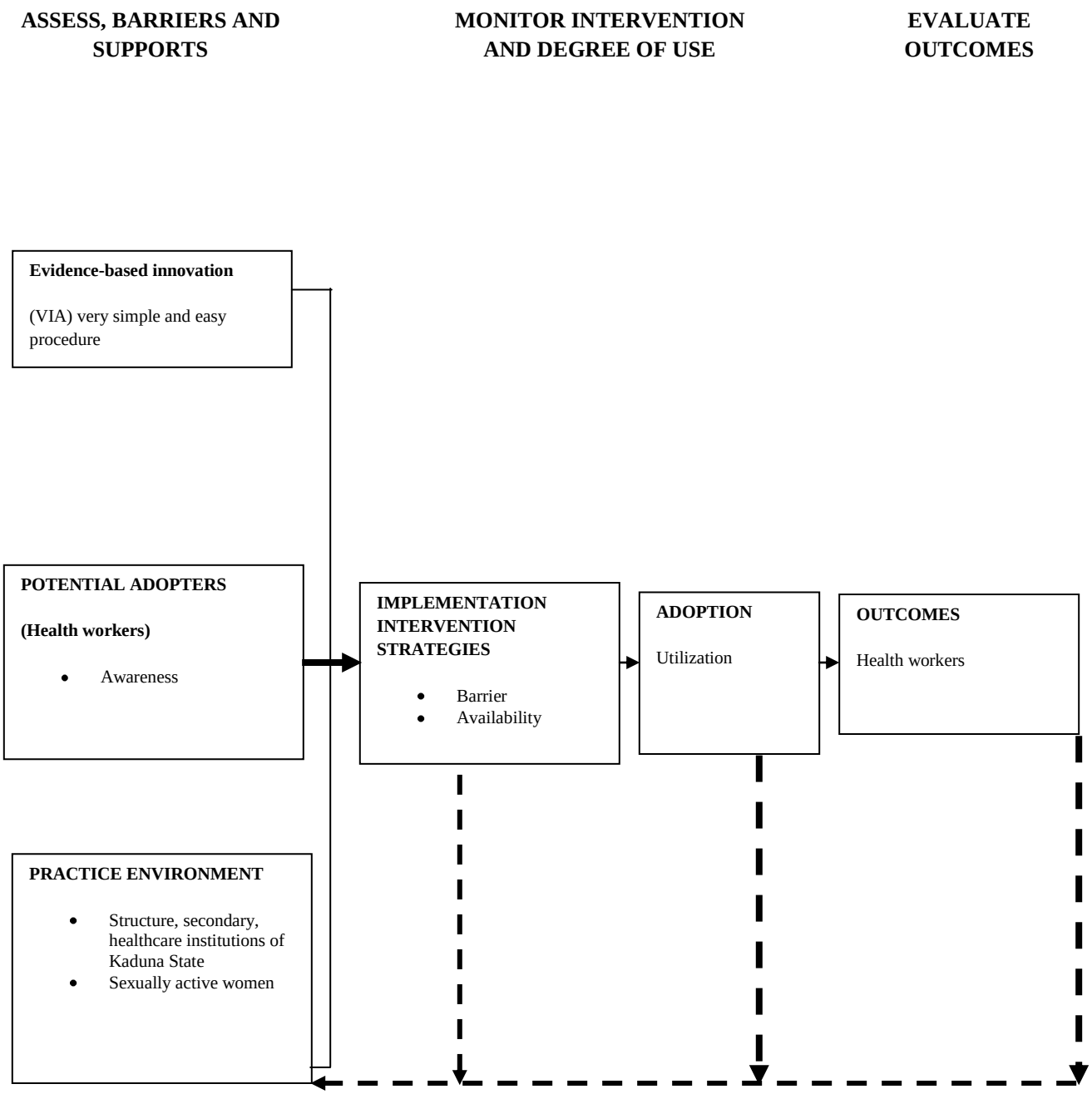


Figure 2: Adapted Ottawa Model of Research Use, Source: Logan and Graham, 1998

2.3 THE CONCEPT OF CERVICAL CANCER

Cervical cancer is a disease that affects the cervix in the female reproductive system. The cervix is the lower portion of the uterus that connects the upper vagina to the uterus. During childbirth, the cervix dilates, allowing the baby to travel from the uterus to the vagina. Cervical cancer is a malignant tumor deriving from cells of the cervix uteri, which is the lower part, that is, the "neck" of the womb, in the female reproductive organ. Cervical cancer is the second most common cancer in women worldwide and is the leading cause of cancer-related death in women in developing countries (Gupta, 2011).

Cervical cancer is the malignant neoplasm of the cervix uteri or cervical area. It may present with vaginal bleeding but symptoms may be absent until the cancer is in its advanced stages (Dim, 2012). Cervical cancer forms in the interior lining of the cervix, the junction of the vagina and uterus. The development occurs over a period of years. The progression to cervical cancer begins with the development of precancerous changes. Cervical cancer is most often diagnosed in middle age women (Cancer Facts and Figures, 2010).

2.3.1 Anatomy and physiology of the cervix

The cervix is the lower one-third of the uterus and it is about 3cm in length and 2.5cm in diameter. The cervix is composed of dense fibro-muscular tissue lined by two types of epithelium cell, stratified squamous epithelium and columnar epithelium, both epithelium meet at the squamo-columnar junction. The lower part of the cervix (ectocervix) lies within the vaginal and is visible with a speculum. The upper two-third (endo-cervix) lies above the vagina. The cervical cancer run through the centre of the cervix from the internal Os (opening) leading into the uterine cavity to the external Os is seen as a small round opening in nulliparous women and as a wide, mouth-like, irregularly slit in multi-parous women. The stratified squamous

epithelium appears pink on visual examination and is located on the ecto-cervix. There are two types in adult: the original squamous epithelium which is formed during embryotic life and the meta-plastic squamous epithelium which is newly formed. The columnar epithelium lines the endo-cervical canal; it appears as a bumpy reddish Area. It is thinner than the stratified squamous epithelium (Wright,Massad, and Dunton, 2007). The cervix provides support to the uterus due to attachment of the muscles from the pelvic bone. The function of the cervix is to allow flow of menstrual blood from the uterus into the vagina and direct sperm into the uterus during intercourse. The arteries that supply the cervix are uterine, cervical and vaginal arteries branches of the internal iliac artery. The cervical branches descend along the length of the cervix at the 3 and 9 o'clock positions. The vein draining the cervix runs parallel to the arteries. The lymph nodes and ducts draining the pelvic organ lie close to the blood vessels and may act as a pathway for the spread of cervical cancer. The ecto-cervix has no nerve ending; the endo-cervix on the other hand is rich in sensory nerve ending (Wright, Massad, and Dunton, 2007).

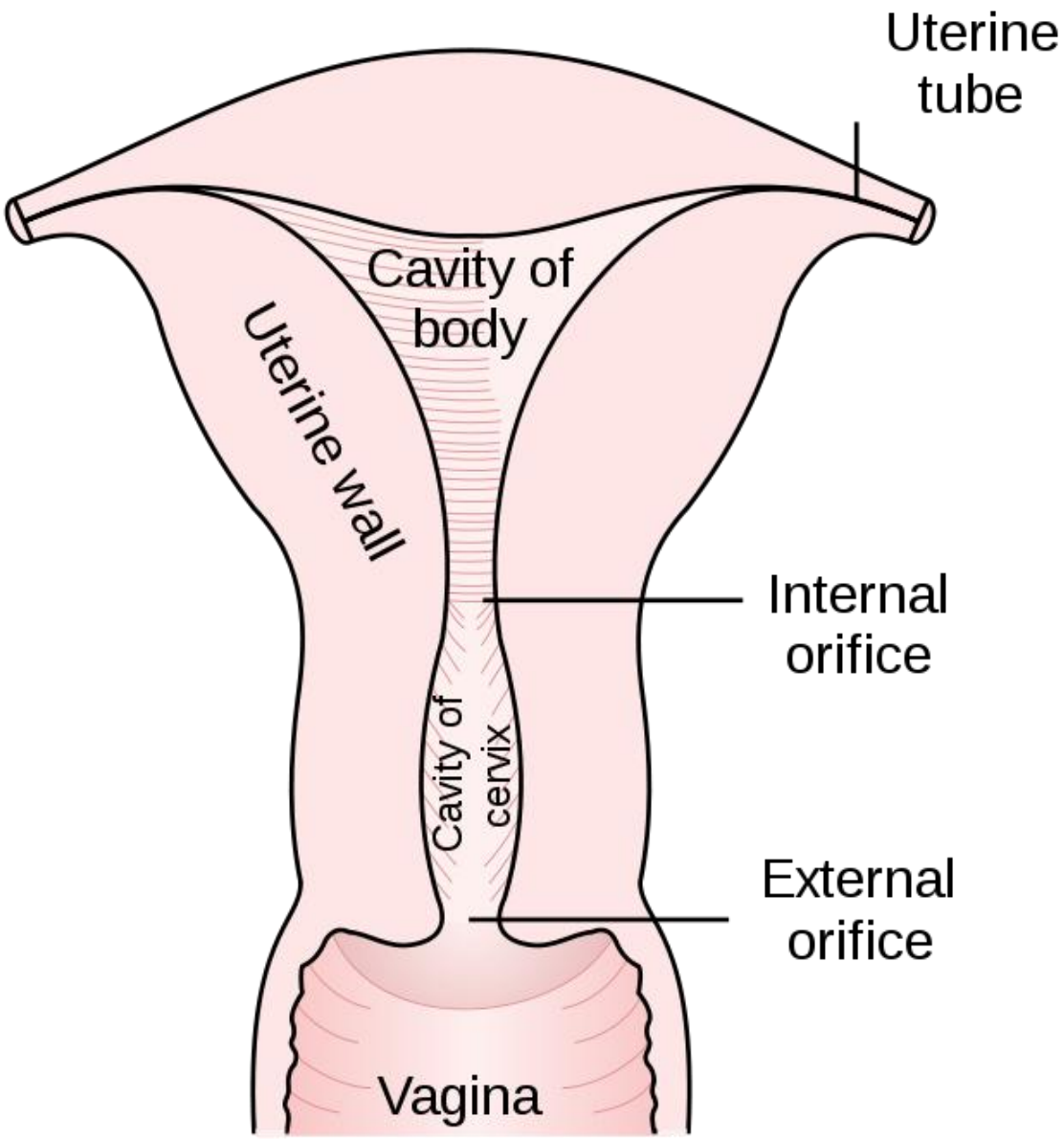


Diagram of the cervix and uterus

Source: Wright, Massad, and Dunton, 2007.

2.3.2 Causes of cervical cancer

Epidemiological studies have clearly established human papilloma virus (HPV) infection as the central cause of invasive cervical cancer. HPV is a sexually transmitted agent that infects cervical cells and slowly causes cellular changes that can result in cancer. HPV are transmitted to the genital tract through skin to skin contact. They infect the basal cells of the stratified squamous epithelium of the cervix. HPV are found in over 85% – 90% of all precancerous and invasive cancer lesions (Dim, 2012).

Kjaer, Brule and Paul (2002) reported that two viral on coprotein E6 and E7 of HPV 16 and 18 are responsible for viral oncogenesis by destabilizing two major cellular tumours suppressors, psR3 AND Retinoblastoma protein (Rb) respectively, as a consequence, the host cell accumulate more and more genetic (DNA) damage that cannot be repaired leading to transformed cancerous cell.

Solomon, Davey, Kumar (2001) supported the fact by stating that the most important cause of cervical cancer is infection with a high risk type of human papillomavirus (HPV). The human papilloma virus consists of a group of more than 100 different viruses. Some types of HPV cause warts on the hands or feet, others cause genital warts, while some have been linked with cancer, most notably cervical cancer. The types of HPV most commonly linked with cervical cancer are HPV 16 and HPV 18, but several other high-risk types contribute to cancer as well. The types of HPV that cause cervical cancer or genital warts are transmitted sexually. HPV infection is extremely common and generally occurs soon after an individual becomes sexually active. Although most infections resolve on their own, some persists and can lead to precancerous or cancerous changes to the cervix, vulva, vagina and arms. Resistant infections appear to pose the greatest cancer tract.

2.3.3 Risk factor for Human Papilloma Virus (HPV)

Kolawole (2008) stated that the strongest determinant of HPV infection is sexual activity. He further stressed that the number of sex partners a woman has or that her partner has over a lifetime is associated with likelihood of HPV infection. Circumcision of the male partner has been found to be protective against HPV. Condoms give partial protection and although disputed by some, a longitudinal study found reduced incidence and protection against new infections. The infection is common in younger ages below 25 years depending on the age of sexual debut, whereas in Nigeria and some rural areas in India, the prevalence of HPV is high in women of all ages due to inability to clear HPV, nutritional deficiencies or reduced immunity. The host genetic factors and immune response determines clearance of the virus, thus HPV is common in HIV-positive women. Other factors like cigarette smoking, micronutrient deficiencies increasing parity, long-term hormonal contraceptive use and presence of other STIs tend to facilitate HPV acquisition or reduce clearance (Kolawole, 2008).

Dim (2012) supported the above statement by reporting that there are many risk factors for cervical cancer, which include human papilloma virus infection, early age at first sexual intercourse, increased number of sexual partners, long-term use of oral contraceptive, smoking, and history of infertility, high parity, low education and low socioeconomic level. The factors responsible for reduction of cervical cancer include male circumcision, use of condoms, and abstinence from sexual intercourse during menstruation time.

2.3.4 The disease process (pathophysiology)

According to Hebner and laimins (2006), the stratified squamous epithelium covering the cervix provides protection from toxic substance infection. Under normal circumstances, the top layers are continually dying and sloughing off. The integrity of the lining is maintained by the constant

orderly formation of new cells in the basal layer. In postmenopausal cervix, the maturation of the squamous epithelium depends on the hormone estrogen. The multiple layers do not accumulate and squamous epithelium thins, becomes atrophic, looks pale and a susceptible to trauma. However, in the presence of persistent HPV infection and other co-factors, the metaplastic squamous cells of the transformation zone takes on a normal appearance cervical squamous precancer (dysplasia). These cells later multiply in a disorderly manner typical of cancerous change to produce squamous cell carcinoma.

During puberty, pregnancy and in women using hormonal contraceptive, the transformation zone on the ectocervix is enlarged. Exposure to HPV at such time may facilitate infection, which may explain the association between squamous cell cervical cancer and early sexual activity, multiple pregnancies and to a lesser extent long-term use of hormonal contraceptives. 90% of cervical cancer cases are squamous cell carcinoma arising from the metaplastic squamous, epithelium of the transformation zone. The other 10% are cervical adenocarcinoma arising from the columnar epithelium of the endocervix (Hebner and laimins, 2006).

2.3.5 Signs and symptoms of cervical cancer

Oguntayo, Zayyan, Kolawole, Adeniyi, Ismail and Koladade (2011) stated that the commonest symptoms at presentation was abnormal vaginal bleeding as seen in 82% of cases, though most of them had more than one symptom at presentation. Hebner and Laimins (2006) supported the above finding by stating that women with early invasive cervical cancer may have a cervix that appears normal to the naked eye or they may have a small ulcerated lesion that may seem to represent a benign inflammatory process. Most of these women are asymptomatic but women with advanced cancer often experience symptoms. They further stated that the common abnormality associated with invasive cancer is irregular vaginal bleeding, post-coital spotting

and heavy bleeding. Some may present with yellowish vaginal discharge that is offensive. Another symptom is pain in the lower abdomen, pelvic or back. Presence of blood in urine (hematuria) or rectal bleeding may occur if bladder or rectal invasion exists.

2.3.6 Staging of cervical cancer

According to Passmore, Morroni, Shapiro, Williamson, Hoffman (2012), the staging of cervical cancer are:

Stage I cervical cancer

A stage I cancer is said to exist if the cancer is confined to the cervix. Stage I cervical cancer is curable if surgery, radiation and chemotherapy are appropriately used. Stage I cervical cancer are divided into two groups. Cancer that is visible only under the microscope have stage IA cancer, cancers that can be seen or felt on examination have stage IB cancer.

Stage II cervical cancer

A stage II cancer is said to exist if the cancer lies extended beyond the cervix to the upper portion of the vagina (stage IIA) or to the tissues next to the cervix, called the parametria (stage IIB). Stage II cervical cancer are generally treated with a combination of radiation therapy and chemotherapy.

Stage III cervical cancer

A stage III cancer is said to exist if the cancer has extended beyond the cervix to the lower portion of the vagina (stage IIIA), has extended to one or both sides of the pelvis (stage IIIB) or causes a blockage of drainage from the kidneys (stage IIIB). Stage III cervical cancer are generally treated with radiation therapy and chemotherapy.

Stage IV cervical cancer

A stage IV cancer is said to exist if the cancer has extended beyond the cervix into adjacent organs such as the rectum or bladder (stage IVA) or the cancer has spread to distant locations in the body which may include the bones, lungs or liver (stage IVB). Cervical cancer in this stage is often difficult to treat.

2.3.7 Treatment of cervical cancer

According to Passmore, Morroni, Shapiro, Williamson, Hoffman (2012), the treatment option for cervical cancer depends on the stage of the cancer, size of the cancer, and resources within the health sector. Treatment for precancerous lesions differ from that of invasive cancer. When a precancerous lesion requires treatment, cryosurgery (freezing), cauterization (burning) or laser surgery may be used to destroy the abnormal area without harming nearby healthy tissue. Treatment option for invasive cancer according to Kolawole (2008) includes surgery, radiotherapy and chemotherapy. The extent of surgery varies depending on the stage of the cancer. Radiotherapy uses high energy ray to damage cancer cells. chemotherapy involves the use of drugs such as methotrexate and cyclophosphamide to kill cancer cells.

2.3.10 Complications of cervical cancer

Passmore, Morroni, Shapiro, Williamson, Hoffman, (2012) stated that the complications that usually arise as a result of cervical cancer is severe anaemia as a result of chronic bleeding from the cervix, kidney failure due to destruction of the uterus by infiltrating cancer which continues to spread to the pelvic wall, lymphatic drainage get blocked too which may lead to swelling of the lower limbs. Severe pain as a result of infiltration of the sacral nerve and mortality is common due to anaemia and uraemia.

2.3.11 **Prevention strategies for cervical cancer**

Kolawole (2008) stated that 43% of all cancers are preventable usually by primary, secondary or tertiary means. Primary measures include increasing physical fitness, control of obesity, tobacco and alcohol as well as promotion of healthy diet rich in vegetables and fruits. Cervical cancer is now considered a sexually transmitted disease and thus preventable. HPV is the primary aetiological factor which interacts with often risk factors like high risk sexual behaviour (multiple sex partners, early sexual activity), smoking, poverty and others. Prevention of HPV infection will also prevent cervical cancer. Primary prevention aims at preventing incidence or onset of risk usually in the absence of signs and symptoms. Primary prevention of cervical cancer involves risk reduction, preventive vaccination and probably diet modification or supplementation.

Kolawole (2008) further stated that secondary prevention should reduce the prevalence of disease by early detection in asymptomatic people. it aims at the pre-clinical phase of the disease. Measures for secondary prevention of cervical cancer include screening using papanicoloau's smear, HPV-DNA testing, visual inspection with acetic acid (VIA), visual inspection with lugols iodine (VILI), cervicography and speculoscopy. Tertiary prevention is targeted at people with proven disease. The aim is early and appropriate treatment to prevent recurrence or complications. It includes palliative cancer for incurable disease. The most effective prevention approach if resources are available is combination of HPV vaccination of pre-adolescents, sex education and screening of women above 30 years of age (Kolawole, 2008).

2.4 THE CONCEPT OF CERVICAL SCREENING

It is based on early detection of pre-malignant HPV-induced abnormalities in the cells of the cervix. Oguntayo, Zayyan, Kolawole, Adeniyi, Ismail and Koladade (2011) stated that modern

screening techniques means that carcinoma of the cervix is a preventable cancer of our time. He further said that the incidence and prevalence of the disease has reduced significantly in developed countries compared to developing countries.

Screening means to test for the presence of a cancer before the appearance of any symptom. Regular cervical cancer screening for all sexually active women and treatment of precancerous tests remains the key strategy to prevent cervical cancer. The primary goal of cervical cancer screening is to detect and treat any cervical intraepithelial neoplasia (CIN) thereby preventing the occurrence of invasive cancer. Screening requires an effective and accurate test. Effective screening program however, have often being associated with the use of sophisticated technology and high level infrastructure and resources. Moreover, organized screening programs can be effectively implemented in limited resource settings without relying on sophisticated technologies. For example, using alternative approach has been successfully applied using visual inspection with acetic acid (VIA) to screen for precancerous lesions (Sankaranarayanan, 2002). The National Cervical Cancer Coalition (2008) stated that the main reason for the strongly highly cervical cancer incidence is the lack of effective screening programs aimed at detecting precancerous conditions and treating them before they progress to invasive cancer. It has been estimated that only 5% of women in Nigeria have been screened by cervical dysplasia in the past 5 years compared to 40-50% seen in developed countries (National Cervical Cancer Coalition, 2008). Nigeria has not had a great deal of success in implementing effective cervical cancer screening until date. The delivery of cervical cancer screening in Nigeria is usually conducted in an opportunistic manner. Services are only available in teaching hospitals and are not adequately utilized. Constraints against underutilization were found to be poverty, ignorance and system failure.

2.4.3 **Visual inspection using acetic acid (VIA)**

Ibrahim, Rasch, Pukkala and Aro (2004) reported that cervical cancer screening based on cytological examination is largely unavailable in developing countries or available only to a small, select group of women in private facilities, maternal and child health sites, or family planning clinics, thereby missing the age groups at the highest risk for precancerous lesions. The failure of a conventional cytology-based approach to reducing cervical cancer in developing countries, particularly in Africa, can be attributed to several factors including scarcity of trained skilled professionals, lack of resources and expense. Therefore, an interest in a new screening method using visual techniques to identify cervical cancer developed. The technique involved is the simple screening method, such as the visual screening by use of acetic acid (VIA), during which the cervix is visualized with the naked eye under a direct source of light and application of a solution of 3% - 5% acetic and that is used as a chemical contrast agent to highlight areas of metaplastic changes. The mechanism of the VIA test is a chemical reaction between neoplasia and acetic acid. When neoplastic tissue is stain with acetic- acid (3%-5%), it uptakes the acetic acid and changes to a whitish colour (aceto-white area). If this occurs, a positive VIA test is reported, and it indicates that there is a malignant change in the aceto-white area in the cervix, which is precisely around the squamo-columnar junction, the main anatomical site where cervical malignant neoplasia develops. Moon, Cordoso, Baptista, Mohsin,Ster and Vermund (2012) reveals that in developed countries, the use of papanikolaou (pap) smear screening has correlated strongly with a reduction in both cervical cancer incidence and mortality. Due to a lack of technical skills, human resources and the financing required to maintain effective cytology-based follow-up services, sustainable pap smear-based screening programs have not been mounted effectively in developing countries.

Dim (2012) stated that many developing countries cannot provide regular screening and must rely on infrequent screening. A study of cervical cancer screening of 131,746 women in rural India found that a single cytology test reduced the number of advanced cervical cancers and deaths over 8 years. However, the test is expensive that makes it unaffordable in many regions. It is time-consuming and requires a sophisticated laboratory infrastructure. A simple, affordable and accurate test is now available in many developing countries like the VIA.

Visual inspection of the cervix, using acetic (white vinegar, VIA or lugols iodine (VILI) to highlight precancerous lesions so that they can be viewed with the "naked eye", shifts the identification of precancer from the laboratory to the clinic. Such procedures eliminate the need for laboratories and transport of specimens, require very little equipment and provide women with immediate test results. A range of medical professionals – doctors, nurses or professional midwives – can effectively perform the procedure, provided they receive adequate training and supervision. As a screening test, VIA may perform as well as or better than cervical cytology in accurately identifying precancerous lesions.

One of the limitations of VIA is that results are highly dependent on the accuracy of an individual's interpretation. This means that initial training and ongoing quality control are of paramount importance. VIA can often have significant advantages over papanicolas smear in low-reasource settings, particularly in terms of increased screening coverage, improved follow-up, care and overall program quality. Due to the needs for fewer specialized personnel and less infrastructure, training and equipment with VIA public health systems can offer cervical cancer screening in more remote (and less equipped) healthcare settings and can achieve higher coverage. Furthermore, providers can share the results of VIA with clients immediately, making it possible to screen and treat women during the same visit. This helps to reduce the number of

women who may miss out any treatment because they are not able to return to the clinic at another time (Dim, 2012). Sankaranarayanon, Esmy, and Rajkumar (2007) reported that VIA can be an effective and acceptable method of cervical screening in low resource setting; they found a 25% reduction in cervical cancer incidence and a 35% reduction in mortality rate.

VIA has been evaluated in a number of large, clinical trials and is considered to be a possible alternative to cervical cytology for primary cervical cancer screening in low-resource settings. The advantages of VIA is that it is inexpensive, it does not require laboratory infrastructure, and it provides an immediate result, allowing the use of "screen and treat" protocols. The simple visual screening methods are being evaluated as an alternative to cytology in low-resource settings where screening using cervical cytology is not feasible. Multiple studies have shown VIA to have sensitivity similar to that of cervical cytology. VIA showed a sensitivity of 79% and specifically of 85%. VIA therefore can be easily implemented as a quick and inexpensive test in unsophisticated healthcare settings (Ibrahim, Rasch, Pukkala and Aro, 2004).

World Health Organization (2012) further stated that cervical cancer is potentially preventable, and effective screening programmes can lead to a significant reduction in the morbidity and mortality associated with the disease. In sub-Saharan Africa, there are few organized efforts in low-resource setting to ensure that women over the age of 30 years are screened, consequently, women with cervical cancer are not identified until they are at an advanced stage of the disease, resulting in high morbidity and mortality.

In developed countries, regular screening with a pap smear has been shown to effectively lower the risk for developing invasive cancer by detecting precancerous changes. However, in developing countries, only approximately 5% of eligible women undergo cytology-based screening in a 5-year period. This is because there are too few trained and skilled professionals to

implement such programme effectively. In addition, healthcare resources are not available to sustain such programme. In virtually all developing countries, cytology-based services are confined to teaching hospitals or private laboratories in urban areas. Furthermore, delays in reporting cytology results make it less likely that test positive women even receive their results, let alone treatment or follow-up. Recent studies have demonstrated that VIA is an alternative sensitive screening method. it is cheap and non-invasive and can be done in a low level health facility like a health centre. More importantly, VIA provides instant results and those eligible for treatment can receive treatment of the precancerous lesions using cryotherapy on the same day and in the same health facility. This "see and treat" method ensures adherence to treatment soon after diagnosis, hence stemming the problem of failing to honor clients' referral (WHO, 2012).

2.4.2 Visual inspection with acetic acid procedure

Carr and Sellors (2004) stated that VIA can be performed at any time during the menstrual cycle, including during menstruation (provided the flow is not too heavy), during pregnancy, at a postpartum examination, or during post-abortion checkup. It can also be done when a woman comes for care-related to sexually transmitted infections, HIV screening or follow-up care. Most VIA programs recommend performing VIA screening on any sexually experienced women age 30 or above until the age of 40 to 50.

2.4.3 Preparing for VIA

Carr and Sellors (2004), further stated that healthcare providers need to provide a careful explanation of the procedure, why it is being done, what the possible findings might be, as well as what follow-up care might be necessary. A reproductive and health history should also be taken including menstrual history, bleeding pattern (irregular or post-coital bleeding), parity, age, current pregnancy status or contraceptive method and family history of mother or sister with

cervical cancer. The woman should be draped with her own clothing or a sheet, if available, and placed on an examination table as comfortably as possible.

2.4.4 Equipment needed for Visual Inspection with Acetic Acid (VIA)

The following equipment are needed to perform VIA:

- Report form or register to record the result
- Examination table that enables the woman to position herself so that the clinician can insert a speculum and view the cervix
- Adequate light source (halogen torch or flash light)
- Instrument tray
- Cotton swabs
- Vaginal speculum that can be looked upon leaving the examiner's hands free to adjust the light and swab the cervix
- New examination/surgical gloves
- 3% to 5% acetic acid (white table vinegar) solution.

  (Carr and Sellors, 2004).

2.4.5 VIA procedure

The following are steps that are essential to perform VIA:

- Assemble equipment and arrange equipment in the tray.
- Ensure that the light source is working.
- Assist woman into the examination table after she has emptied her bladder
- Wear gloves and arrange equipment on the tray.
- Inspect the external genitalia for the presence of lesions, vesicles, ulceration, discharge, redness, and swelling.

- Tell the woman that you will touch her, check for inguina lymph nodes.
- Lubricate the speculum with clean, preferably warm water.
- Slowly and carefully insert the speculum without scraping the cervix.
- Adjust the speculum so the entire cervix is in view and adjust the light as needed.
- Inspect the cervix for inflammation, cysts, ulcers, warts, polyps, leukoplakia (thickened, white patches) or tumors. Look for vesicles, small papules, is there any bleeding from the cervix especially after touching it?
- Observe the size and shape of the cervix and the external Os.
- Check for signs of infection such as vaginitis, cervicitis or mucopurulent discharge. Use a big cotton swab to wipe away any discharge, blood or mucus from the cervix.
- Identify the anterior and posterior hip of the cervix, red columnar epithelium, pink squamous epithelium, the squamo-columnar junction and the transformation zone.
- Observe all the four vaginal fornices to make sure they are free from any growth.
- Record any abnormal visual findings
- Seek a clean swab in 3% to 5% acetic acid and apply to the cervix liberally. Wait at least 1 full minute for the acetic acid to be absorbed (use a watch). Tell the woman that she might feel a slight burning sensation.
- Check the transformation zone carefully, especially near the squamo-columnar junction, for any dense non-movable aceto-white areas in the epithelium. Look around the entire transformation zone for any raised and thickened white plagues or aceto-white lesions and note the following characteristics: If acetowhite areas are identified, note the location, extension, intensity of whiteness, borders and demarcations, as well as the size. Lesions vary in size, thickness, capacity and border definition. Larger, thicken, more

opaque lesions with clearly defined borders next to the squamo-columnar junction suggest more severe cervical disease (Carr and Sellors, 2004).

2.4.6 Describing VIA findings

The results of VIA are reported as VIA-negative, VIA-positive or suspicious for cancer. VIA-negative means there are no significant aceto-white lesions. A positive test result means there are sharp, distinct, well defined, dense (opaque/dull white) aceto-white areas, with or without raised margins close to the squamo-columnar junction near the transformation zone. Findings that are suspicious for cancer include an ulcerative, proliferative growth that may bleed easily when touched. If there is doubt about the description or the outcome of the test, it can be gently repeated without inducing bleeding (WHO, 2012).

2.4.7 Treatment of VIA positive cases

Women with aceto-white lesions are usually treated with cryotherapy or loop electrical excision procedure (LEEP). LEEP is an excision treatment that uses a thin electrified wire to remove the entire transformation zone to a depth of up to 7mm. This electro=surgical procedure requires equipment, including an electricity source, and a smoke evacuator. It also requires local anaesthesia and has more risk of bleeding for the woman. Cryotherapy is a simpler and less expensive outpatient procedure that requires a steady supply of compressed, refrigerant gases (N_2O or CO_2) and a low temperature probe to freeze the abnormal cells. it does not require electricity. Cryotherapy is effective in treating 90% of patients and can often be done during the screening visits. It is less effective when lesions extend into the endocervix or are longer. LEEP is 90% to 95% effective in treating high-grade precursor lesions. However in developing countries, this may only be available at regional centers. Both LEEP and cryotherapy have

failure rates of 10% to 15%, therefore, post-treatment follow-up within 1 year is recommended (WHO, 2012).

Women with very early stage invasive cervical cancer may be offered hysterectomy at the regional hospital, for later stage cancers, if radiotherapy and chemotherapy are not available, palliative cancer or counseling and pain control are recommended. The cost of medications, treatment and in some cases, surgery and hospitalization can be very expensive and beyond the means of many women and their families. This makes the focus on screening and treating precancerous lesions all the more urgent (Carr and Sellors, 2004).

2.5 AWARENESS OF VISUAL INSPECTION WITH ACETIC ACID

McCarey, Pirek, Tebeu, Boulvaln, Doh and Petigna (2011) in a study awareness of HPV and cervical cancer prevention among Cameroonian healthcare workers reveals that most healthcare workers (75%) are not aware of the use of VIA to screen for cervical cancer. Many respondents (54%) believed screening uptake in the general population is poor because it is too expensive.

Oguntayo, Zayyan, Kolawole, Adewuyi, Ismail and Koledade (2011) in their study cancer of the cervix in Zaria, Northern Nigeria, stated that the reason for the high incidence of cervical cancer is lack of awareness, affordable and accessible screening facilities, also poor health decision-making can only be explained by lack of knowledge. Adefuye (2006) supported the facts in his study, knowledge and practice of cervical cancer screening among female professional health workers, in a sub-urban district of Nigeria by stating that healthcare providers should improve on opportunistic screening of patients and adopt alternative screening techniques such as visual inspection with acetic acid (VIA) so as to widen patient's coverage.

According to a survey carried out in Ahmadu Bello University Teaching Hospital Shika, Kaduna state by Kolawole (2011), among female health workers, the study shows that only 26% of the respondents are aware that visual inspection with the use of acetic acid can be done to screen for cervical cancers.

World Health Organization (2012) in a demonstration project in six African countries, Malawi, Madagascar, Nigeria, Uganda, the United Republic of Tanzania and Zambia reveals that the level of awareness of visual inspection with acetic acid is low, therefore, the need to increase the awareness level is necessary. On the contrary Moon, Cordoso, Baptista, Mohsin, Ster and Vermund (2012) in their study implementation of cervical cancer screening using visual inspection with acetic acid in rural Mozambique reveals that clinic nurses and hospital physicians are aware of using VIA to screen for cervical cancer, as VIA procedure was taught to clinic nurses and hospital physicians with a regular clinical feedback for quality evaluation and retraining.

Eze (2009) in a related study awareness and uptake of cervical screening in Owerri, southeastern Nigeria among female health workers stated that 52.8% of the respondents are aware of using VIA to screen for cervical cancer. Sankaranarayanan et al (2008) further supported the above fact in his study, "Visual inspection as a screening test for cervical cancer control in developing countries" studied 3000 women, who had VIA and cytology provided by trained cyto-technicians. Nurses were equally trained to provide VIA services. Sankananarayanan and colleagues provided intensive and extensive training for the health workers, nurses and doctors involved. Additionally, continues quality control procedures were in place. Both training and quality control need to be stressed because VIA can give variable results depending on the

training of personnel. There is a danger that countries with skimp on training and instigate VIA programmes, which will not give results as good as those that Sankarananayanan found.

2.6 AVAILABILITY OF ACETIC ACID TO SCREEN FOR CERVICAL CANCER

USAID (2010) stated that the choice of screening test usually depends on the resources available. Many developing countries are now using the single visit approach which combines detection of lesions using visual inspection with acetic acid (ordinary vinegar) followed by immediate treatment if necessary. Cervical cancer screening services with acetic acid staining (VIA) are available only in research settings and/or referral centres of Rwanda, Nigeria and Corte d'Ivoire but not available at multiple sites/levels of care throughout the country.

Gaffikin, Mcgrath, Arbyn, Blumenthal (2007) stated that cervical cancer, the second most commonly diagnosed cancer among women worldwide, can be a preventable disease. Although the pap smear remains the most common screening test for cervical cancer, many developing countries do not have adequate resources to implement cytology-based prevention programmes. An alternative, low-cost test, visual inspection using acetic acid (VIA), has emerged for use in developing countries, Nigeria inclusive where the resources are available.

Mustafa, Jindal and Singh (2010) supported the fact by stating that though cytology (pap smear) is reliable, the laboratory infrastructure and logistics including technical expertise may not be available in developing countries. The cost factor on testing for human papilloma virus (HPV) using DNA testing, coupled with requirement of trained manpower makes the option non-viable for developing countries, thus, accentuating the need for alternative screening procedures. Visual inspection using acetic acid (VIA) has emerged as a promising cost-effective, non-cytology-based, 'see and treat' alternative for economically developing geographic regions where it is available.

2.7 UTILIZATION OF (VIA) IN CERVICAL CANCER SCREENING

Nigeria has not had a great deal of success in implementing effective cervical cancer screening until date. The delivery of cervical cancer screening in Nigeria is usually conducted in an opportunistic manner, whereby screening depends on the initiative of the healthcare provider. This may lead to inappropriate screening utilization and inadequate follow-up of abnormal results. There is currently no mass screening program for the detection of cervical cancer in Nigeria. Services are only available in teaching hospitals and are not adequately utilized (Evaluation of Cervical Cancer in Nigeria, 2013).

Ajenifuya, Gage, Adepiti, Wentzensen, Eklund, Reilly, Hutchinson, Burk and Schiffman (2013) in a population-based study of visual inspection with acetic acid (VIA) for cervical screening in rural Nigeria, stated that 7 health workers who had been screening women with (VIA) for approximately 2 years at local government health centres in rural Nigeria were retrained in a 2-week programme, the health workers usually used the local available acetic acid (vinegar) to screen for cervical cancer.

WHO (2012) stated that VIA screening is performed by nurses, provided in the community and is free of charge for clients. Doctors provide support to the nurses carrying out the screening procedures through distance consultation, monitoring and evaluation through a weekly review of all clinical cases and continuing medical education in UK. In a related study by Sankanarayanan et al (2008), on cervical screening by visual inspection with acetic acid in UK shows that VIA can be effective and acceptable method of cervical screening in low-resource settings. They found a 25% reduction in cervical cancer incidence and a 35% reduction in mortality rate because of the utilization of the service by health workers.

Sherigar, Dalal, Durdi and Dhumale (2010) further in their study on cervical cancer screening by visual inspection with acetic acid inter -observer variability between nurses and physicians at a teaching hospital, they found out that women who fulfilled the selection criteria under went (VIA) done by both physicians and nurses and the findings were interpreted. Moreover, Mustafa, Jindal and Singh (2010) in a cluster sampling based-randomized controlled trial conducted in Tamil Nadu to assess the efficacy of VIA screening in reducing cervical cancer incidence and associated mortality has demonstrated that the test is highly effective in low-resource settings because the health workers are utilizing it effectively.

2.8 AVAILABILITY OF QUALIFIED HEALTH WORKERS FOR VIA CERVICAL SCREENING

The health workforce has been identified as the key to effective health care service. However, workforce shortages are the most commonly reported staff-related problem in health care, especially in resource-constrained countries. Ebuehi and Campbell (2011) stated that among the many challenges facing Nigeria's health system is an acute shortage of competent healthcare providers. As a result of inadequate infrastructure locally and poor compensation packages, a sizeable number of physicians, nurses and other health professionals migrate to developed countries in search of fulfilling and lucrative positions. Nigeria is a major health-staff-exporting nation accounting for 22% of nurses who emigrated out of Africa. However, the true extent of this migration is masked by under-reporting has resulted to acute shortages of health staff in Nigerian health facilities, which has drastically reduced access to local healthcare.

In Nigeria, scarce data on the availability, distribution and trends in human resources for health (HRH) has been a burden to effective HRH planning. There are 13 doctors, 92 nurses/midwives and 64 community health workers (CHWS) per 100,000 population. An urban Nigerian resident has a 3-fold greater access to doctors and there are twice as many nurses/midwives, compared

with a rural resident. Attrition rates of between 1.3% and 2.3% are highest among doctors and pharmacists, with the attrition rate of doctors and nurses being highest at the primary care level. The attrition rate of doctors and nurses is much higher in rural areas, and double the urban attrition respectively (Ebuehi and Campbell, 2011).

The IHRIS quality data (2012) reveal that there are around 136,000 qualified nurses and midwives registered with the Nursing and Midwifery Council of Nigeria. But this number of nurses and midwives are far fewer available than expected to provide much-needed health services to Nigerians. Additionally, given limitations in available workforce data within the country, the councils data on active registration remain the most reliable proxy for determining the combined number of qualified and available nurses and midwives in Nigeria, across both the public and private sectors.

In 2006, the World Health Organization, World Health Report defined 57 countries facing a critical shortage of health workers – those with fewer than 2.3 doctors, nurses and midwives per 1000 population. Against that ratio, Nigeria reported a shortage of nearly 40,000 health workers. The new data may indicate that Nigeria's shortage is closer to 144,000 – over three times the amount reported in 2006. This would be the seventh highest shortage of the 57 crisis countries. In Africa, only Ethiopia reported a higher shortage of 152,000 health workers. Nigerian Demographic Health Survey (2003) stated that many health institutions in Nigeria had trained staff but the number is insufficient to meet the needs of the entire population.

2.9 SUMMARY

The review examined visual inspection with acetic acid as a screening procedure for cervical cancer in different part of the world. Literatures in the areas of cervical cancer , visual inspection

with acetic acid, screening procedures, awareness, availability and utilization as well as availability of qualified health workers in Nigeria were also reviewed.

CHAPTER THREE

RESEARCH METHODOLOGY

3.4 INTRODUCTION

This chapter discussed the methods employed in conducting the study. Accordingly, the research design, population, sample size and sampling techniques, instrumentation, validity of the instrument, administration of the instruments and statistical analysis were explained.

3.5 RESEARCH DESIGN

The research design adopted in this study is an ex-post facto design. This design was used when a researcher intends to describe conditions that had already existed, and attempts to determine reasons for the existing differences in behavior in status of groups of individuals (Gay, 1992).

Asika (2001) affirmed the above by stating that an ex-post-facto (after the fact) research is a research type that is undertaken after the events have taken place. This study will therefore, examined the awareness, availability and utilization of visual inspection with acetic acid in screening for cervical cancer among health workers in secondary healthcare institutions of Kaduna state. Therefore, the information required were available with the respondents.

3.3 POPULATION OF STUDY

The research population comprises of all Nurses working in secondary healthcare institutions of Kaduna state. According to the State Ministry of Health (2013), the distribution of Nurses working in the secondary healthcare institutions of the state is as follows:

Table 3.1: Distribution of Secondary HealthCare Institutions and numbers of Nurses working in the facilities

S/N	Secondary healthcare institutions	L.G.A	Senatorial zone	Numbers of nurses	No selected
1*	Barau Dikko Specialist Hospital	Kaduna North	Kaduna central	219	100
2*	Yusuf Dantsoho memorial hospital	Kaduna south	Kaduna central	179	82
3	Dr. Awan Kakuri Kaduna	Kaduna south	Kaduna central	150	
4	General hospital Kawo Kaduna	Kaduna north	Kaduna central	40	
5	General hospital Sabon Tasha	Kaduna south	Kaduna central	50	
6	General hospital Rigasa	Igabi	Kaduna central	13	
7*	Hajiya Gambo Sawaba memorial Hospital	Zaria	Northern Kaduna	56	26
8*	Major Ibrahim memorial hospital	Sabon-Gari	Northern Kaduna	25	11
9	General hospital Giwa	Giwa	Kaduna central	26	
10	General hospital Hunkuyi.	Kudan	Northern Kaduna	20	
11	General hospital Makarfi	Makarfi	Northern Kaduna	23	
12*	General hospital Ikara	Ikara	Northern Kaduna	19	9
13*	General hospital, Kauru	Kauru	Southern Kaduna	17	8
14	General hospital Pambegua.	kubau	Northern Kaduna	14	
15	General hospital Saminaka.	Lere	Northern Kaduna	49	
16*	General hospital Kafanchan.	Jama'a	Southern Kaduna	73	33
17	General hospital Zangon Kataf	Zangon-kataf	Southern Kaduna	17	
18	General hospital Gwantu.	Sanga	Southern Kaduna	24	
19*	General hospital Kachia	Kachia	Southern Kaduna	32	15
20	General hospital Kagarko	Kagarko	Southern Kaduna	--	
21*	Jibril Mai-Gwari Memorial Hospital.	Birnin-gwari	Kaduna central	35	16
	Total			**1081**	**300**

*Shows selected secondary healthcare institutions.

Therefore the Population of the study will be 1081.

3.4 SAMPLE SIZE AND SAMPLING TECHNIQUE

According to Yamane, (1967) the formula for calculating sample size is as follows;

$$n = \frac{N}{1 + N\,(e)^2}$$

Where;

n = sample size

N = population size

e = level of precision which is constant with a value of 0.05 or 5%

Therefore; $n = \frac{1081}{1+ 1081(0.05)^2}$

$$n = \frac{1081}{1 + 1081*0.0025}$$

$$n = \frac{1081}{1 + 2.7025}$$

$$n = \frac{1081}{3.7025}$$

= 291.9 approximately = 300.

Therefore the sample size of this study comprises of 300 nurses.

- A stratified sampling was employed, Nwabuokei (1986) stated that a stratified sampling is use in order that the sample be representative of the parent population. In this method, the entire population is divided into homogeneous groups called strata, then items were selected from each stratum. A stratified sampling divides the population into smaller subgroups prior to drawing the sample and then separate random samples are drawn from each of the strata. As such, the existing senatorial zones of Kaduna-state were stratified into northern, central and southern zones.

- Each stratum of the senatorial zone was clustered according to the present existing local government areas. Asika, (2001) stated that a cluster sampling is a method of composing a sample by randomly sampling from each of the identified existing geographical areas, naturally occurring events, or phenomena. It permits the study of subjects in their naturally occurring groups. Therefore, northern senatorial zone has the following local government areas as clusters (Zaria, Makarfi, Ikara,lere, Kudan, Kubau, Soba and Sabon-Gari). Central senatorial zone have the following local government areas as clusters (Giwa, Igabi, Kaduna-north, Kaduna-south, Chikun, Birnin gwari and Kajuru) while southern senatorial zone has the following local government areas as clusters (Jama'a, Sanga, Kachi'a, Jaba, Kagarko, Kaura, Kauru, and Zangon-kataf). The method was employed as precision and thoroughness is require to represent the three zones of the state.

- A purposive sampling was used to select nine (9) local government areas (Kaduna-South, Kaduna-North, Birnin-Gwari, Ikara, Zaria, Sabon-Gari, Kauru, Jama'a and Kachi'a) that have secondary healthcare institutions. Asika (2001), stated that in purposive sampling, a researcher can choose some elements which may be guided by

what he considers typical cases which are most likely to provide him with the requisite data or information. As such, the purposely selected secondary healthcare institutions which were (Barau Dikko specialist hospital, Yusuf Dantsoho memorial hospital, Jibril mai-gwari memorial hospital, General hospital Ikara, Gambo-Sawaba memorial hospital Zaria, Major Ibrahim memorial hospital Sabon-Gari, General hospital Kachia, General hospital Kauru and General hospital Kafanchan) served as the sampling frame from which the sample of 300 nurses was drawn.

- Proportionate sampling was used at the secondary healthcare institutions to distribute questionnaires to the health workers based on their number in each hospital. This was employed in other to ensure equal representation and to be able to generalize the findings. The health workers available were given copies of the questionnaire to fill at the selected secondary healthcare institutions, this was employ because the researcher can easily reach out to the respondents at their various work locations.

- In other to arrived at the proportion of health workers in each institution, the following steps were used :

  STEP1= Proportionate sampling = Sample size*Total number of health workers in a hospital/Total number of health workers in all the hospitals selected.

  STEP 2= Barau Dikko = 300 * 219/ 655 =100

  STEP 3= Yusuf Dantsoho = 300 * 179/ 655 = 82

  STEP 4= Birnin- Gwari = 300 * 35/ 655 = 16

  STEP 5 = Ikara = 300 * 19/ 655 = 9

STEP 6 = Zaria = 300 * 56/ 655 = 26

STEP 7 = Sabon- Gari = 300 * 25/ 655 = 11

STEP 8 = Kafanchan = 300 * 73/ 655 =33

STEP 9 = Kachia = 300 * 32 / 655 = 15

STEP 10 = Kauru = 300 * 17/ 655 = 8

Total = 300

3.5 INSTRUMENTATION

Questionnaire designed by the researcher was the instrument used for data collection. Forty five (45) questionnaire items (see appendix) were prepared which was organized into five (5) different sections as follows:

* Section A of the questionnaire sought for socio-demographic information of the respondents which constitutes five items.

* Section B aimed at assessing the awareness of VIA in cervical cancer screening by the health workers which constitutes ten items.

* Section C addressed issues regarding the present of qualified health workers in VIA screening which constitutes ten items.

* Section D focused on the availability of VIA requirement in the secondary healthcare institutions which constitutes ten items.

* Section E focused on the utilization of VIA by the health workers in cervical cancer screening which constitutes ten items.

The response to the items of the questionnaire was measured on a four point interval scale. The scale was patterned along Likert format of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1.

Asika (2001) stated that a likert scale measures the intensity or degree of agreement by the respondent to a statement that describes a situation, phenomenon, item or a treatment. With regards to analysis, the likert scale was chosen because when all the responses are added up, it is easy to draw a conclusion based on the total value.

3.6 VALIDATION OF THE INSTRUMENT

The drafted questionnaire, together with the objectives of the study were submitted to professional experts (4) from faculty of education and (1) from department of Nursing Science, Ahmadu Bello University Zaria, Nigeria. The experts looked at the face validity of the instrument and decided whether the questions can elicit the information required to answer the research questions and satisfy the objectives of the study. Suggested advises were incorporated into the final copy of the instrument.

3.7 ADMINISTRATION OF THE QUESTIONNAIRE

Copies of the questionnaire were administered to the respondents with the help of three (3) research assistants based on proportion of the health workers in each of the hospital selected. The research assistants were trained on the modalities and objectives of the study. The researcher went through every item in the questionnaire with them to ensure proper understanding with which they could guide the respondents in case of any misunderstanding.

The respondents were presents at the selected secondary healthcare institutions because it serve as their place of work which make it easier for the researcher to locate them. The researcher introduced self as well as the objectives of study, and informed the health workers that participation is voluntary and confidentiality will be maintain. The consented health workers were given the prepared questionnaire to fill. The respondents were allow to fill the questionnaire at their convenient time so that it will not interfere with their routine duty schedule.

The filled questionnaires were retrieved from the health workers at the various selected secondary healthcare institutions by the researcher/ assistant after two weeks of administration.

3.8 STATISTICAL TECHNIQUE

The data collected were analyzed using descriptive statistics of frequencies and percentage for the computation of the respondent demographic characteristics. For the analysis of variables relating to VIA by health workers, means and standard deviations were used. The used of mean and standard deviation is based on the interval measurement which quantified the data collected. In the test of hypotheses that was stated, one-way analysis of variance (ANOVA) and t- test at 0.05 level of significance was used. Ifah, (1996) stated that t- test is a statistical method for comparing the means of two variables while ANOVA, a parametric statistical technique is used for testing hypotheses about two or more means. They are the most powerful parametric technique for analyzing differences between sample means.

3.9 ETHICAL CONSIDERATION

Ethical consideration was necessary for this research work in the following areas;

1. An introductory letter was obtained from department of physical and health education ABU Zaria to Kaduna-state ministry of health in other to collect data.

2. Permission was obtained from the Hospital Matrons Of the various Secondary healthcare institutions before administering questionnaires to their staff.
3. The respondents were brief on the purpose of the study and confidentiality was assured.

CHAPTER FOUR

RESULT AND DISCUSSIONS

4.1 INTRODUCTION

The study of awareness, availability and utilization of VIA by health workers in Secondary healthcare institutions of Kaduna State was done on a modified four point likert scale. Three hundred (300) questionnaires were administered out of which two hundred and ninety seven (297) were retrieved. The demographic variables are presented in a single table of frequencies and percentages. On variables relating to awareness, availability and utilization of VIA by health workers, mean and standard deviation were used, conclusion on each of the item is based on the mid-score along the four points interval scale. The mid -point used in the study is 2.5. The value, (2.5) stand for the least level of agreement on the four point scale. While aggregate mean lower than 2.5 could thus be regarded as disagreement.

The research hypotheses involved in the study were determined and analyzed using one-way analysis of variance (ANOVA) and t-test at 0.05 level of significances. Discussion of the findings from the analyzed data was also presented.

4.2 RESULTS

1. DEMOGRAPHIC VARIABLES OF RESPONDENTS

The demographic variables of the respondents selected were; Age, Sex, Professional category, Years of working experience, and secondary healthcare institutions. This is presented in table 4.1.

Table 4.1 Distribution of respondent by demographic variables

Variables	Variable option	Frequency	Percentage (%)
Age	20-24 years	34	11.4
	25-29 years	65	21.9
	30-34 years	65	21.9
	35-39 years	70	23.6
	40 years and above	63	21.2
	Total	297	100.0
Sex	Male	65	21.9
	Female	232	78.1
	Total	297	100.0
Years of working experience	0-5 years	79	26.6
	6-10 years	96	32.3
	11-15 years	50	16.8
	16-20 years	29	9.8
	21 years and above	41	13.8
	Total	295	99.3
	No response	2	0.7
	Grand total	297	100.0
Secondary healthcare institution	i. Bara'u Dikko Specialist Hospital Kaduna	99	33.3
	ii. Yusuf Dantsoho Memorial Hospital Kaduna	80	26.9
	iii. Jibrin Mai-Gwari Memorial Hospital Birnin-Gwari	16	5.4

	iv. Hajia Gambo Sawaba Memorial Hospital Zaria	26	8.8
	v. Major Ibrahim B. Abdullahi Memorial Hospital Sabon-Gari	11	3.7
	vi. General Hospital Ikara	9	3.0
	vii. General Hospital Kafanchan	33	11.1
	viii. General Hospital Kauru	8	2.7
	ix. General Hospital Kachia	15	5.1
	Total	297	100.0
Professional category	Nurse	83	27.9
	Midwife	29	9.8
	Nurse-Midwife	180	60.6
	Total	292	98.3
	No response	5	1.7
	Total	297	100.0

Table 4.1 above reveals that 11.4% of the respondents fall within the age range of 20-24 years. 21.9% are within the range of 25-29 years. Another 21.9% falls within the age range of 30-34 years. Respondents with 35.39 years have a percentage of 23.6%, while those from 40 years and above accounted for 21.2%.

Among the respondents, male accounted for 21.9% while females accounted for 78.1%.

Subjects with (0-5 years) of working experience were 26.6%, followed by subject with (6-10 years) of working experience 32.3%.Those with (11-15 years) of working experience were 16.8% while those with (16-20 years) of working experience accounted for 9.8%. Subject with (21 years and above) working experience were 13.8, while those that did not respond to the question were 0.7%.

The above table indicated that 33.3% of the respondents were in Bara'u Dikko Specialist Hospital Kaduna, 26.9% were in Yusuf Dan tsoho Memorial Hospital Kaduna, 5.4% were in Jibril Mai-gwari Memorial Hospital, Birinin Gwari. Those in Hajia Gambo Sawaba Memorial Hospital Zaria were 8.8%, subjects in Major Ibrahim B. Abdullahi Memorial Hospital Saon-Gari were 3.7%, while those in General Hospital Ikara were 3.0%. The percentage score of those working in General Hospital Kafanchan were 11.1%, those in General Hospital Kauru were 2.7%, while those in General Hospital Kachia accounted for 5.1%.

Concerning the professional category of the respondents, the table revealed that 27.9% are registered Nurses, 9.8% are registered Midwife, while majority of the respondents have double qualification of Nurse-Midwife are 98.3%. 1.7% of the respondents did not respond.

ii. AWARENESS OF VIA AMONG HEALTH WORKERS IN SECONDARY HEALTHCARE INSTITUTIONS OF KADUNA STATE

One of the objectives of this study is to determine the awareness level of VIA by health workers in secondary healthcare institutions of Kaduna State. Towards the attainment of the objective, health workers were asked, the responses of the subjects were scored in means and standard deviations as presented in table 4.2 below.

Table 4.2 Mean Score of the subjects on their awareness of VIA

S/N	Awareness of VIA	Mean	Standard Deviation
1.	I head of VIA in my place of work	1.3939	0.82368

2.	I understand the concept of VIA	2.1954	0.88369
3.	VIA is a simple procedure that can be done by health worker in the hospital	2.3039	0.92993
4.	VIA can only be done in a specialist hospital	2.2226	0.88521
5.	VIA is an alternative method of cervical cancer screening	2.4735	0.96122
6.	VIA can be affordable by women in a rural society	2.1139	0.78457
7.	The VIA procedure is time consuming always	2.2239	0.76086
8.	One of the major requirement for VIA is acetic acid	2.4242	1.24736
9.	Positive VIA screening test means the presence of aceto white cells in the cervix	2.5091	0.78472
10.	Further management	2.6679	0.85950

becomes necessary in case of positive VIA screening		
Aggregate mean score	**2.2288**	**0.60749**

Table 4.2 above revealed the aggregate mean of 2.2288 which is less than 2.5 of the decisive mean. Thus it indicated lack of awareness of VIA among health workers in secondary health care institutions of Kaduna State.

v. AVAILABILITY OF QUALIFIED HEALTH WORKERS IN THE SECONDARY HEALTH CARE INSTITUTIONS OF KADUNA STATE

The availability of qualified health workers in secondary healthcare institutions is the issue of the second objective of the study. The responses of the subjects were scored in means and standard deviations in table 4.3.

Table 4.3: Mean score of subjects in availability of qualified health workers.

S/N	Availability of qualified health workers	Mean	Standard deviation
1.	There are sufficient health workers in the hospital	2.1944	0.94281
2.	The hospital have trained registered staff nurses	2.2391	1.16252
3.	I am a trained visual inspection with acetic acid (VIA) provider	1.7055	0.77634
4.	There are adequate female staff to attend to the women who need VIA screening in the hospital	2.0318	0.73106
5.	The staff are present in the hospital only	2.1176	0.69854
6.	The hospital management organizes workshop/seminars to health workers in order to update their knowledge	2.2474	0.87991

7.	The hospital management do send the health workers to other institution to be trained as VIA provider	2.0352	0.69233
8.	Only trained VIA providers do VIA screening in the hospital	2.3404	0.85062
9.	The health workers do provide post VIA management to clients	2.2042	0.72841
10.	Health workers from other hospitals come to do VIA screening to women in our hospitals	1.99645	0.69959
	Aggregate mean score	**2.1063**	**0.50244**

Table 4.3 above reveals on aggregate mean of 2.1063 which is less than the decisive mean of 2.5. This indicates inadequate qualified health workers in secondary healthcare institutions of the state to provide VIA screening for cervical cancer.

vi. AVAILABILITY OF VIA REQUIREMENT TO SCREEN FOR CERVICAL CANCER IN SECONDARY HEALTHCARE INSTITUTIONS OF KADUNA STATE

The availability of VIA requirements to screen for cervical cancer is the issue of the third objective of the study. The responses of the subjects were scored in means and standard deviations in table 4.4.

Table 4.4: Mean score of subjects on availability of VIA requirement to screen for cervical cancer

S/N	Availability of VIA requirements	Mean	Standard deviation
1.	VIA supplies are present in the hospitals to screen cervical cancer	2.1018	0.82660
2.	There is an efficient system to ensure that the hospitals do not run out of stock	2.0000	0.69201
3.	Cost can be s significant factor to availability of VIA requirement	2.3085	0.86892
4.	There is adequate means of transportation of available VIA requirements to the hospitals	1.9752	0.74706
5.	There is enough equipments for providing VIA screening in the hospitals	1.9857	0.77122
6.	Post-VIA management is available in the hospital	1.9856	0.72087

7.	There is good referral system in the hospitals for positive cases	2.2403	0.91415
8.	The government provides free VIA screening services in the hospitals	1.9431	0.70480
9.	VIA requirements are only present in same selected hospitals in the state	2.4912	0.91009
10.	The VIA requirements are presents in medical equipment stores in the state	2.3286	0.86794
	Aggregate mean score	**2.1458**	**0.52065**

Table 4.4 above, showed on aggregate mean of 2.1458. All the scores were within the range of disagreement. This means that VIA requirements are not available in secondary healthcare institution of the state to screen for cervical cancer.

vii. UTILIZATION OF VIA BY HEALTH WORKERS IN SECONDARY HEALTHCARE INSTITUTIONS OF KADUNA STATE

Utilization of VIA by health workers to screen for cervical cancer is the issue of the fourth objective of the study. The scores were presented in means and standard deviations in table 4.5.

Table 4.5: Mean score of subjects on utilization of VIA

S/N	Utilization of VIA	Mean	Standard Deviation
1.	The hospital management encourage the use of VIA in cervical cancer screening	2.1176	0.88585
2.	VIA screening to clients in need is available to all	1.9689	0.74237
3.	The VIA screening test is done to women as part of routine check-up whenever they visit the hospital	1.9758	0.78358
4.	Different categories of health workers (Nurses, Midwife, Nurse-Midwife) use VIA to screen cervical cancer in the hospitals	2.0759	0.79152
5.	The simple technology involves in VIA makes the staff to use it in cervical screening	2.1608	0.84314

6.	Length of time taken to do the screening is a contributing factors towards its usage	2.2324	0.87901
7.	VIA screening is done in the hospitals under strict aseptic technique	2.3531	0.95391
8.	The VIA is being used because it is effective in cervical screening	2.3519	0.89571
9.	The use of VIA in cervical cancer screening is done because most women patronize the general hospital	2.1503	0.84715
10.	VIA is done to women because it has less side effects	2.2927	0.83919
	Aggregate mean score	**2.1625**	**0.62640**

From the mean scores presented in table 4.5 above, an aggregate mean of 2.1625 was established which indicate the conclusion that health workers in secondary healthcare institutions of Kaduna state are not utilizing VIA in cervical cancer screening.

4.3 TEST OF HYPOTHESES

Major hypothesis

There is no significant difference among the healthcare workers demographic variables (age-group, sex, professional category, years of working experience and secondary healthcare

institution) in the awareness. availability and utilization of VIA in cervical cancer screening in Kaduna State.

Four (4) sub-hypothesis were drawn to test the major hypothesis.

Sub-hypothesis 1

There are no significant differences among the healthcare workers demographic variable of (Age-group, sex, professional category, years of working experience) in their awareness in Kaduna State.

Table 4.6a: Summary of ANOVA on age, professional category, years of working experience and secondary healthcare institutions in the awareness of VIA

Source	Sum of square	Df	Mean square	F-Value	Sig
Age					
Between groups	3.507	4	0.877	2.421	0.049
Within groups	105.732	292	0.362		
Total	109.239	296			
Professional category					
Between groups	1.374	4	0.344	1.367	0.024
Within groups	73.349	292	0.251		
Total	74.723	296			
Years of working experience					
Between groups	2.224	4	0.556	2.082	0.083
Within groups	75.303	282	0.267		
Total	77.527	286			
Secondary health care institution					

Between groups	4.289	4	1.072	2.800	0.023
Within groups	109.893	287	0.383		
Total	114.182	291			

(F- Critical = 2.37, $p < 0.05$)

(F- Critical = 2.37, $p< 0.05$)

(F- Critical= 2.37, $p> 0.05$)

(F- Critical = 2.37, $p< 0.05$)

The table above reveals an observed levels of significance (P) for the test is less than 0.05 ($P<0.05$), for age-group, professional category, and secondary health care institutions in the awareness of VIA while ($p >0.05$) in the years of working experience of the health workers. Thus the null hypothesis stating that there are no significance differences among the healthcare workers demographic variables of age-group professional category and secondary health care institutions in their awareness of VIA in cervical cancer screening in Kaduna State is rejected, but can be accepted for years of working experience of the respondents.

Table 4.6b Summary of post hoc test (Scheffe) of age-group, professional category, years of working experience and secondary healthcare institutions on awareness of VIA

Dependent variable	(1) Age	(1) Age	Mean difference (1-J)	Standard error	Sig.
		25-29 yrs	.21697	.12736	.575
		30-34 yrs	.10320	.12736	.956
	20-24 yrs	35-39 yrs	.24941	.125779	.417
		40 yrs above	-.01927*	.12805	0.000*
	25-29 yrs	20-24 yrs	-.21697	.12736	.575
		30-34 yrs	-.11377	.10555	.884
		35-39 yrs	.03244	.10365	.999
		40 yrs above	-.23624	.10639	.297
		20-24 yrs	-.10320	.12736	.956
		25-29 yrs	-11377	.10555	.884
	30-34 yrs	30-39 yrs	.14621	.10365	.738
		40 yrs above	-.12247	.10639	.857

		20-24 yrs	-.24941	.12579	.417
		25-29 yrs	-.03244	.10365	.999
		30-34 yrs	-.14621	.10365	.738
		40 yrs above	-.26868	.10450	.161
		20-24 yrs	.01927*	.12805	0.000*
		25-29 yrs	.23624	.10639	.297
		30-34 yrs	.12247	.10039	.857
		35-39 yrs	.26868	.10450	.161
Dependent variable	**(1) professional category**	**(J) professional category**	**Mean difference (I-J)**	**Standard error**	**Sig.**
		Midwife	.16147	.12518	.436
	Nurse	Nurse-Midwife	.40984*	.07699	.000*
	Midwife	Nurse	-.16147	.12518	.436
		Nurse-Midwife	.24837	.11612	.103

	Nurse-Midwife	Nurse	-.40984*	.07699	.000*
		Midwife	-.24837	.11612	.103

Dependent variable	**(I) years of working experience**	**(J) years of working experience**	**Mean difference (I-J)**	**Standard Error**	**Sig.**
		6-10 yrs	.27649	.09074	,057
	0-5 yrs	11-15 yrs	.23669	.10794	.310
		16-20 yrs	.11876	.12969	.933
		21 yrs above	.03519	.11497	0.999
		0-5 yrs	-.27649	.09074	.057

	6-10 yrs	11-15 yrs	-.03980	.10417	.997
		16-20 yrs	-.15774	.12657	.817
		21 yrs above	-.24130	.11144	.323
		0-5 yrs	-.23669	.10794	.310
	11-15 yrs	6-10 yrs	.03980	.10417	.997
		16-20 yrs	-.11794	.13942	.949
		21 yrs above	-.20150	.12585	.634
		0-5 yrs	-.11876	.12969	.933
	16-20 yrs	6-10 yrs	.15774	.12657	.817
		16-20 yrs	.11794	.13942	.949
		21 yrs above	-.20150	.12585	.988
		0-5 yrs	-.11876	.12969	.99

					9
		6-10 yrs	15774	.12657	.323
		11-15 yrs	.11794	.13942	.634
		21 yrs above	-.08356	.14493	.988
	21 yrs above	0-5 yrs	-.03519	.11497	.999
		6-10 yrs	.24130	.11144	.323
		11-15 yrs	.20150	.12585	.634
		16-20 yrs	.08356	.14493	.988

Dependent variable	**(I) name of organization**	**(J) name of organization**	**Mean difference (I-J)**	**Standard Error**	**Sig.**
		Dantsoho hospital	.13237	.08237	.957
		General hospital Birnin-	-.68551	.14763	.007*

		gwari			
		Gambo sawaba	-.50112*	.12074	.031*
	Barua Dikko	M.I.B.A	-.14848	.17414	.999
		General hospital ikara	-.35207	.19076	.905
		Kafancha n hospital	-.57149*	.11013	.001*
		General hospital kauru	-.29759	.20139	.974
		General hospital kachia	-.12068	.15181	1.000
		Barau Dikko	-.13237	.08237	.957
		Birnin-gwari	-.81789*	.15005	.000*
	Yusuf Dantsoho memorial hospital Kaduna	Gambo sawaba	-.63349*	12369	.001*
		M.I.B.A	-.28085	.17619	.959
		General hospital ikara	-.48444	.19263	.611
		Kafancha n hospital	-.70386*	.11336	.000*
		General hospital Kauru	-.42997	.20317	.810
		General hospital	-	.15416	.00

		kachia	.25305*		1*
		Barau Dikko	.68551*	.14763	.007*
		Dantsoho	.81789	.15005	.000
		Gambo sawaba	.18440	.17409	.997
	General hospital Birnin-gwari	M.I.B.A	.53704*	.21460	.008*
		General hospital ikara	.33345	.22829	.976
		Kafancha n hospital	.11402	.16691	1.000
		General hospital kauru	.38792	.23725	.952
		General hospital kachia	.56484*	.19692	.005*
		Barau Dikko	.50112*	.12074	.031*
	Hajia Gambo sawaba memorial hospital	Dantsoho	.63349	.12369	.001
		Birnin-gwari	-.18440	.17409	.997
		M.I.B.A	.35264*	.19707	.920
		General hospital ikara	.14905	.21190	1.000
		Kafancha	-	.14368	1.0

		n hospital	.07037*		00
		Genereal hospital kauru	.20353*	.22152	.009*

Dependent variable	(I) name of organization	(J) name of organization	Mean difference (I-J)	Standard Error	Sig.
		General hospital kachia	.38044	.17765	.800
		Barau Dikko	.14848	.17414	.999
		Dantsoho	.28085*	.17619	.009*
		Birnin-gwari	-.53704	.21460	.008*
	M.I.B.A	Gambo sawaba	-.32564	.19707	.920
		General hospital ikara	-.20359	.24627	.1.000
		Kafanchan	-.42302*	.19076	.005*
		Kauru	-.14942	.25459	.000

		hospital	*		*
		Kachia hospital	.02780	.21750	1.000
		Barau Dikko	.35207	.19076	.905
	Ikara	Dantsoho	.48444*	.19263	.011*
		Birnin-gwari	-.33345	.22829	.976
		Gambo sawaba	-.14905	.21190	1.000
		M.I.B.A	.20359*	.24627	0.000*
		Kafancha n	-.21942*	.24627	.997
		Kauru hospital	.05448	.26623	1.000
		Kachia hospital	.23139	.23102	.998
		Barau Dikko	.57149*	.11013	.001*
		Dantsoho	.70386	.11336	.000
	Kafancha n	Birnin-gwari	-.11402	.16691	1.000
		Gambo sawaba	.07037	.14368	1.000
		M.I.B.A	.42302*	.19076	.765
		Ikara hospital	.21942*	.20604	.007*
		Kauru hospital	.27390	.21592	.991
		Kachia hospital	.45082	.17062	.540

	Kauru	Barau Dikko	.29759*	.20139	.004*
		Dantsoho	.42997	.20317	.810
		Birnin-gwari	-.38792*	.23725	.002*
		Gambo sawaba	-.20353*	.22152	.009*
		M.I.B.A	.14912	.25459	1.000
		Ikara hospital	-.05448	.26623	1.000
		Kafanchan	-.27390*	.21592	.001*
		Kachia hospital	.17692	.23987	1.000
		Barau Dikko	.12068	.15181	1.000
	General hospital kachia	Dantsoho	.25305	.15416	.951
		Birni-gwari	-.56484*	.19692	.005*
		Gambo sawaba	-.38044*	.17765	.000*
		M.I.B.A	-.02780	.21750	1.000
		Ikara hospital	-.23139	.23102	.998
		Kafanchan	-.45082*	.17062	.000*

		Kauru hospital	-.17692	.23987	1.000

The mean difference is significant at 0.05 levels.

From table 4.6b, a significant difference was observed within the mean score of ages 20-24yrs as well as 30-34yr, significant difference exist within Nurse-Midwife and Nurses. The table also reveals a significance difference in all the secondary healthcare institutions on the awareness of VIA.

Table 4.6c: Two sample t-test on awareness of VIA equal variances assumed

Sex	**N**	**Mean**	**Std. deviation**	**Std. error**	**t-value**	**Df**	**Sig**
Male	65	2.4911	0.53237	0.06603	4.038	295	0.000
Female	232	2.1554	0.60795	0.03991			

(t-critical = 1.645, <0.05)

The above table shows the observed t-value for the test (4.038) which is greater than the t - critical of (1.645) indicated at the bottom of the table. The observed significant level for the test is (0.000) ($P<0.05$). This means there is significance difference between male and female subjects in their awareness of VIA cancer screening in Kaduna State.

Sub-hypothesis 2

There are no significant differences among the health care workers demographic variables of (Age-group, sex, professional category, years of working experience and secondary healthcare institutions) in the qualification of health workers in VIA cervical cancer screening in Kaduna State.

Table 4.7a: Summary of ANOVA of age, professional category, year of working experience and secondary healthcare institutions in qualification of health workers on VIA

Source	Sum of square	Df	Mean square	F-value	Sig.
Age-group					
Between groups	9.912	2	4.956	14.717	0.000
Within group	97.322	289	0.337		
Total	107.234	291			
Professional category					
Between groups	5.341	2	2.671	11.538	0.000
Within groups	66.891	0.231			
Total	72.232	291			
Years of working experience					
Between groups	4.594	2	2.297	8.979	0.000
Within groups	71.890	281	0.256		
Total	76.484	283			

Secondary health care institutions					
Between groups	8.453	2	4.226	11.629	0.000
Within groups	103.579	285	0.363		
Total	112.032	287			

(F-Critical = 3.00, $p < 0.05$)

(F-Critical = 3.00, $p< 0.005$)

(F-Critical= 3.00, $p <0.05$)

(F-Critical= 3.00, < 0.05)

Table 4.7a, above reveals that the test reveals significance differences where ($p<0.05$) between the age-groups, professional category, years of working experience and secondary health care institutions of health workers and their qualifications. Therefore the null-hypothesis was rejected.

Table 4.7b: Summary of post-hoc test (scheffe) of age-group, professional category, years of working experience and secondary healthcare institution in the qualification of health personnel in VIA.

Dependent variable	(I) Age	(J) Age	Mean difference (I-J)	Standard Error	Sig.
	20-24 yrs	25-29 yrs	.13032	.10602	.825
		30-34 yrs	.03032	.10608	.999
		35-39 yrs	.19361	.10477	.492
		40 yrs above	.13322	.10666	.816
	25-29 yrs	20-24 yrs	-.13032	.10608	.825
		30-34 yrs	-.10000	.08792	.862
		35-39 yrs	.06330	.08633	.970

		40 yrs above	.00290*	.08861	.000*
	30-34 yrs	20-24 yrs	-.03032	.10608	.999
		25-29 yrs	.10000	.08792	.862
		30-39 yrs	.16330	.08633	.468
		40 yrs above	.10290	.08861	.853
		20-24 yrs	-.19361	.10477	.492
		25-29 yrs	-.06330	.08633	.970
	30-39 yrs	30-34 yrs	-.16330	.08633	.468
		40 yrs above	-.06040	.08704	.975
		20-24 yrs	-.13322	.10666	.816
	40 yrs above	25-29 yrs	-.00290*	.08861	.000*
		30-34 yrs	-.10290	.08861	.853
		35-39 yrs	.06040	.08704	.975
Dependent variable	**(I) Professional**	**(J) Professional**	**Mean difference (I-**	**Standard Error**	**Sig.**

	category	category	J)		
		Midwife	-.06466	.10378	.824
	Nurse	Nurse-Midwife	.25905*	.06383	.000*
		Nurse	.06466	.10378	.824
	Midwife	Nurse-Midwife	.32371*	.09627	.004*
		Nurse	-.25905*	.06383	.000*
	Nurse-Midwife	Midwife	-.32371*	*09627	.004*

Dependent variable	**(I) Years of working experience**	**(J) Years of working experience**	**Mean difference (I-J)**	**Standard Error**	**Sig.**
		0-5 yrs	-.03519	.11497	.999
		6-10 yrs	.24130	.11144	.323
		11-15 yrs	.20150	.12585	.634
		16-20 yrs	.08356	.14493	.988

	0-5 yrs	6-10 yrs	.27304*	.07450	.010*
		11-15 yrs	.19769	.08863	.292
		16-20 yrs	.25513	.10648	.222
		21 yrs above	.24220	.09440	.163
		0-5 yrs	-.27304*	..07450	.010*
		11-15 yrs	-.07534	.08553	.941
	6-10 yrs	16-20 yrs	-.01791	.10392	1.000
		21 yrs above	-.03083	.09150	.998
		0-5 yrs	-.19769	.08863	.292
	11-15 yrs	6-10 yrs	.07534	.08553	.941
		16-20 yrs	.05743	.11448	.993
		21 yrs above	.04451	.10333	.996
		0-5 yrs	-.25513	.10648	.222
		6-10 yrs	.01791	.10392	1.000

	16-20 yrs	11-15 yrs	-.05743	.11448	.993
		21 yrs above	-.01292	.11900	1.000
		0-5 yrs	-.24220	.09440	.163
		6-10 yrs	.03083	.09150	.998
	21 yrs above	11-15 yrs	-.04451	.10333	.996
		16-20 yrs	.01292	.11900	1.000

Dependent variable	**(I) Name of organization**	**(J) Name of organization**	**Mean difference (I-J)**	**Standard Error**	**Sig.**
		Dantsho	.16763*	.07167	.006*
		Birnin-gwari	-.03432*	12846	0.000*
	Barau Dikko	Gambo sawaba	-.10718	10506	.998

	hospital				
		M.I.B.A	-.07396	.15153	1.000
		Ikara	-.16302*	.16599.	0.008*
		Kafanchan	-.31684	.09583	.080
		Kauru	-.53293	.17524	.326
		Kachia	.03124	.03124	1.000
		Barau Dikko	-.16763*	.07167	.006*
	Dantsoho memorial hospital	Birnin-gwari	-.20194*	.13057	.006*
		Gambo sawaba	-.27481	.10763	.590
		M.I.B.A	-.24159	.15331	.962
		Ikara	-.33065*	.16762	.006*
		Kafanchan	-.52947	.09864	.001
		Kauru	-.70056*	.17679	.001*
		Kachia	-.13639*	.13414	.008*
		Barau Dikko	.03432	.12846	1.000
	Birnin-gwari	Dantsoho	.20194	.13057	.966
		Gambo	-	.15149	1.00

		sawaba	.07286*		0
		M.I.B.A	-.03965	.18674	1.000
		Ikara	-.12870	.19865	1.000
		Kafanchan	-.52947	.09864	.001
		Kauru	-.70056*	.17679	.001*
		Kachia	-.13639*	.13414	.008*
		Barau Dikko	.10718	.10506	.998
	Gambo sawaba	Dantsoho	.27481	.10763	.590
		Birnin-gwari	.07286*	.15149	1.000
		M.I.B.A	.03322	.17148	1.000
		Ikara	-.05584*	.18439	0.000*
		Kafanchan	-.25466*	.12502	.042*
		Kauru	-.42575	.19276	.769
		Kachia	.13842	.15458	.999

Dependent variable	(I) Name of organization	(J) Name of organization	Mean difference (I-J)	Standard Error	Sig.
		Barau Dikko	.07396*	.15153	0.000*
	M.I.B.A	Dantsoho	.24159	15331	.962
		Birnin-gwari	.03965	.18674	1.000
		Gambo sawaba	-.03322	.17148	1.000
		Ikara	-.08906*	.24129	0.000*
		Kafanchan	-.28788*	.16599	.033*
		Kauru	-.45896	.22153	.829
		Kachia	.10520	.18925	1.000
	Ikara	Barau Dikko	.16302*	.16599	.008*
		Dantsoho	.33065	.16762	.866
		Birnin-gwari	.03965	.18674	1.000
		Gambo sawaba	-.03322	.17148	1.000
		Ikara	-.08906	.21429	0.000*

			*		
		Kafanchan	-.28788*	.16599	.033*
		Kauru	-.45896	.22153	.829
		Kachia	.10520	.18925	1.000
	Ikara	Barau dikko	.16303*	.16599	.998
		Dantsoho	.33065	.16762	.866
		Birnin-gwari	.12870*	.19865	0.000*
		Gambo sawaba	.05584*	.18439	0.000*
		M.I.B.A	.08906	.21429	1.000
		Kafanchan	-.19882	.17929	.996
		Kauru	-.36991*	.23167	.009*
		Kachia	.19426	.20102	.999
	Kafanchan	Barau Dikko	.36184	.09583	.080
		Dantsoho	.52947	.09864	.001
		Birnin-gwari	.32753*	.14524	.008*
		Gambo sawaba	.25466*	.12502	.002*
		M.I.B.A	.28788	.16500	.933
		Ikara	.19882	.17929	.996
		Kauru	-.17109*	.18789	.009*

		Kachia	.39308	.14846	.537
	Kauru	Barau Dikko	.53293*	.17524	.006*
		Dantsoho	.70056*	.17679	.051*
		Birnin-gwari	.49861	.20644	.666
		Gambo sawaba	.42575	.19276	.769
		M.I.B.A	.45896*	.22153	.009*
		Ikara	.36991	.23167	.959
		Kafancha n	.17109	.18789	.999
		Kachia	.56417	20873	.506
		Barua dikko	-.03124*	.13210	0.000*
		Dantsoho	.13639*	.13414	.008*
	Kachia	Birnin gwari	-.06556	.17135	1.000
		Gambo sawaba	-.13842	.15458	.999
		M.I.B.A	-.10520	.18925	1.000
		Ikara	-.19426*	.20102	.009*
		Kafancha n	-.39308*	.14846	.007*
		Kauru	-.56417	.20873	.506
		Dantsoho	.06316	.07452	.999

		Birinin gwari	-.11637*	.13247	.009*

The mean difference is significant at 0.05 level

Table 4.7b above shows the significant differences observed is within the age-group of 25-29yrs and 40yrs above, also a significant difference was established within the professional categories of Nurses, Midwife and Nurse-Midwife on their qualification to use VIA for cervical cancer screening. A significant difference was observed within 6-10 years of working experience as well as 0-5 years of working experience as it regards the qualification of the health workers on VIA. A significant difference was observed in all the secondary healthcare institutions.

Table 4.7c: Two sample t-test on qualification of health workers on VIA

Sex	**N**	**Mean**	**S.D**	**S.E**	**t-value**	**Df**	**Sig.**
Male	65	2.2355	0.46545	0.5773	2.363	295	0.019
Female	232	2.0701	0.50739	0.331			

(t - critical = 1.645, < 0.05)

The above table shows the observed t-value for the test (2.363) which is greater than the t - critical of (1.645) indicated at the bottom of the table. The observed significance level for the test is (0.019) (p, 0.05). This means that there is a significant difference between male and female subjects in their qualification for VIA cervical cancer screening in Kaduna State.

Sub-hypothesis 3

There are no significant differences among the various secondary health care institutions in the provision of VIA requirements for cervical cancer screening in Kaduna State.

Table 4.8a: Summary of ANOVA of secondary healthcare institutions on the provision of VIA requirements

Source	Sum of square	Df	Mean square	F-value	Sig.
Secondary health care institutions					
Between groups	9.271	4	2.318	6.320	0.000
Within groups	104.892	286	0.367		
Total	114.163	290			

(F- Critical=2.37, p <0.05)

Table 4.8a shows a significant difference among the various secondary health care institutions on the provision of VIA requirements for cervical cancer screening in Kaduna State. The observed level of significance for the test is less than 0.05, ($p<0.05$) thus the null hypothesis was rejected.

Table 4.8b: Summary of post-hoc test (scheffe) of secondary healthcare institutions on the provision of VIA requirements

Dependent variable	(I) Name of organization	(J) Name of organization	Mean difference (I-J)	Standard Error	Sig.
		Gambo sawaba	-.40766	.11389	.124
	Barau Dikko	M.I.B.A	.29418	.16303	.916
		Ikara	.19296	.17102	.937
		Kafanchan	-.41533*	.10014	.031*
		Kauru	-.32332*	.18053	.020*
		Kachia	-.11439	.14035	1.000
		Barau Dikko	-.06316	.07452	.999
		Birnin-gwari	-.17954*	.13449	.007*
	Dantsoho	Gambo sawaba	-.47082	.11623	.041
		M.I.B.A	.23102*	.16466	.987
		Ikara	-.35612*	.17259	.032*
		Kafanchan	-.47849	.10280	.007
		Kauru	-.38648	.18202	.807
		Kachia	-.17755*	.14226	.001*
		Barau Dikko	.11637	.13247	.999
		Dantsoho	.17954	.13449	.987
	Birnin-gwari	Gambo sawaba	-.29129	.15971	.911
		M.I.B.A	.41056*	.19776	.007*
		Ikara	-.17659*	.20441	.009*
		Kafanchan	-.29896	.15021	.859

		Kauru	-.20694	.21243	.999
		Kachia	.00198*	.17954	0.000*
		Barau Dikko	.40766	.11389	.124
		Dantsoho	.47082*	.11623	.041*
	Gambo sawaba	Birnin-gwari	.29129*	.15971	.011*
		M.I.B.A	.70184	.18583	.080
		Ikara	.11470	.19289	1.000
		Kafanchan	-.00767*	.13411	0.000*
		Kauru	.08434	.20137	1.000
		Kachia	.29327	.16630	.926
		Barau Dikko	-.29418	.16302	.916
		Dantsoho	-.23102*	.16466	.002*
	M.I.B.A	Birnin-gwari	-.41056*	.19776	.007*
		Gambo sawaba	-.70184	.18583	.080
		Ikara	-.58714	.22541	.561
		Kafanchan	-.70951*	.17773	.047*
		Kauru	-.61750	.23270	.534
		Kachia	-.40857*	.20312	.002*
		Barau Dikko	.29296*	.17102	.007*
		Dantsoho	.35612	.17259	.832
	Ikara	Birnin-gwari	.17659	.20441	.999
		Gambo sawaba	-.11470*	.19289	0.000*

+		M.I.B.A	.58714	.22541	.561
		Kafanchan	-.12237	.18510	1.000
		Kauru	-.03036	.23838	1.000
		Kachia	.17857*	.20960	.009*
		Barau Dikko	.41533*	.10014	.031*
		Dantsoho	.27849	.10280	.007
	Kafanchan	Birnin-gwari	.29896	.15021	.859
		Gambo sawaba	.00767*	.13411	0.000*
		M.I.B.A	.70951	.17773	.047
		Ikara	.12237*	.18510	0.000*
		Kauru	.09201	.19392	0.000*
		Kachia	.30094	.15720	.885
		Barau Dikko	.32332	.18053	.920
		Dantsoho	.38648*	.18202	.007*
	Kauru	Birnin-gwari	.20694	.21243	.999
		Gambo sawaba	-.08434	.20137	1.000
		M.I.B.A	.61750	.23270	.534
		Ikara	.03036*	.23838	0.000*
		Kafanchan	-.09201*	.19392	0.000*
		Kachia	.20893	.21743	.999
		Barau Dikko	.11439	.14035	1.000
		Dantsoho	.17755*	.14226	.001*
	Kachia	Birnin-	-.00198	.17954	1.000

		gwari			
		Gambo sawaba	-.29327*	.16630	.006*
		M.I.B.A	.40857*	.20312	.002*
		Ikara	-.17857	.20960	.999
		Kafanchan	-.30094	.15720	.885
		Kauru	-.20893*	.21743	.009*
		Dantsoho	.19330	.08482	.736

The mean is significant at 0.05 level

Table 4.8b identified a difference in all the secondary healthcare institutions within the state in the provision of VIA to screen for cervical cancer.

Sub-hypothesis 4

There are no significance differences among the health workers demographic variables of (age-group, sex, professional category, years of working experience and secondary healthcare institutions) in the utilization of VIA in cervical cancer screening in Kaduna State.

Table 4.9a: Summary of ANOVA of age-group, professional category, years of working experience and secondary healthcare institutions on utilization of VIA

Source	Sum of square	Df	Mean square	F-value	Sig.
Age-group					
Between groups	22.781	8	2.848	9.486	0.000
Within group	86.458	288	0.300		
Total	109.239	294			
Professional category					
Between groups	9.260	8	1.157	5.092	0.000
Within groups	65.463	288	0.227		
Total	74.723	296			
Years of working experience					

Between groups	10.620	8	1.328	5.516	0.000
Within groups	66.907	278	0.24		
Total	77.527	286			
Secondary health care institutions					
Between groups	25.344	8	3.168	10.092	0.000
Within groups	88.839	283	0.314		
Total	114.182	291			

(F-Critical= 1.94, p< 0.05)

(F-Critical=1.94, p< 0.05)

(F-Critical=1.94, p< 0.05)

(F-Critical=1.94, p,< 0.05)

Table 4.9a, above shows a significant difference among the age-groups, professional category, years of working experience and secondary health care institutions in the utilization of VIA in cervical cancer screening in Kaduna state. The observed significance level (p) obtained in the test is lower than the fixed level of 0.05 ($p < 0.05$). Thus the null hypothesis was rejected.

Table 4.9b: Summary of post-hoc test (scheffe) of age-group, professional category, years of working experience and secondary healthcare institutions in the utilization of VIA.

Dependent	(I) Age	(J) Age	Mean differe	Standard	Sig.

variable			nce (I-J)	Error	
		25-29 yrs	.19484	.13097	.697
		30-34 yrs	.10360	.13168	.961
	20-24 yrs	35-39 yrs	.30429	.12966	.242
		40 yrs above	-.01635*	.13243	000*
		20-24 yrs	-.19484	.13097	.697
		30-34 yrs	-.09124	.10940	.952
	25-29 yrs	35-39 yrs	.10945	.10696	.902
		40 yrs above	-.21119	.11031	.455
		20-24 yrs	-.10360	.13168	.961
	30-34 yrs	25-29 yrs	.09124	.10940	.952
		30-39 yrs	.20069	.10783	.485
		40 yrs above	-.11995	.11115	.884
		20-24 yrs	-.30429	.12966	.242

		25-29 yrs	-.10945	.10696	.902
	35-39 yrs	30-34 yrs	-.20069	.10783	.485
		40 yrs above	-.32064	.10875	.072
		20-24 yrs	.01635	.13243	1.000
	40 yrs above	25-29 yrs	.21119	.11031	.455
		30-34 yrs	.11995	.11115	.884
		35-39 yrs	.32064	.10875	.072
Dependent variable	**(I) Professional category**	**(J) Professional category**	**Mean difference (I-J)**	**Standard Error**	**Sig.**
		Midwife	.11057	.13004	.996
	Nurse	Nurse-Midwife	.35436*	.08027	.000*
		Nurse	-.01157	.13004	.996
	Midwife	Nurse-Midwife	.34279*	.12082	.019
	Nurse-Midwife	Nurse	35436*	.08027	.000*
		Midwife	-	.12082	.01

			.34279*		9

Dependent variable	(I) Years of working experience	(J) Years of working experience	Mean difference (I-J)	Standard Error	Sig.
		6-10 yrs	.22889	.07901	.081
	0-5 yrs	11-15 yrs	.27398	.09515	.084
		16-20 yrs	.16963	.11199	.682
		21 yrs above	.08353	.10102	.953
		0-5 yrs	-.22889	.07901	.081
	6-10 yrs	11-15 yrs	.04509	.09183	.993
		16-20 yrs	-.05925	.10919	.990
		21 yrs above	-.14536	.09791	698
		0-5 yrs	-.27398	0.9515	.084

	11-15 yrs	6-10 yrs	-.04509	.09183	.993
		16-20 yrs	-.10435*	.12138	.008*
		21 years above	-.19045	.11134	.571
Dependent variable		0-5 yrs	.16963	.11199	.682
		6-10 yrs	.05925	.109191	.990
	16-20 yrs	11-15 yrs	.10435*	.12130	.006*
		21 years above	-.08610	.12604	.977
		0-5 yrs	-.08353	.10102	.953
		6-10 yrs	.14536	.09791	.698
	21 yrs above	11-15 yrs	.19045	.11134	.571
		16-20 yrs	.08610	.12604	.977

Dependent variable	(I) Years of working experience	(J) Years of working experience	Mean difference (I-J)	Standard Error	Sig.
		6-10 yrs	.38260	.09221	.002
	0-5 yrs	11-15 yrs	.26755	.11012	.210
		16-20 yrs	.38539	.13149	.075
		21 yrs above	-.01107	.11852	1.000
		0-5 yrs	-.38260	.09221	.002
	6-10 yrs	11-15 yrs	-.11504	.10651	.883
		16-20 yrs	.00279	.12848	1.000
		21 yrs above	-.39367	.11517	.022
		0-5 yrs	-.26755	.11012	.210
		6-10 yrs	.11504	.10651	.88

					3
	11-15 yrs	16-20 yrs	.11784	.14189	.952
		21 years above	-.27863	.12996	.334
		0-5 yrs	-.38539	.13149	.075
		6-10 yrs	-.00297	.12848	1.000
	16-20 yrs	11-15 yrs	-.11784	.14189	.952
		21 years above	-.39646	.14849	.132
		0-5 yrs	.01107	.11852	1.000
		6-10 yrs	.39367	.11517	.022
	21 yrs above	11-15 yrs	.27863	.12996	.334
		16-20 yrs	.39646	.14849	.132
Dependent variable	**(I) Name of organization**	**(J) Name of organization**	**Mean difference (I-J)**	**Standard Error**	**Sig.**
		Birnin-gwari	-.42743	.15129	.438
		Gambo sawaba	-.63205	.12580	.002

	Barau Dikko	M.I.B.A	.24119*	.17835	.005*
		Ikara	-.47951*	.19532	.004*
		Kafanchan	-.52034	.11306	.008
		Kauru	-.29201	.20618	.980
		Kachia	-.12634*	.16029	.000*
		Barau Dikko	-.19330	.08482	.736
	Dantsoho	Birnin-gwari	-.62073*	.16341	.041*
		Gambo sawaba	-.82535*	.12838	.000*

dependent variable	**(I) Name of organization**	**(J) Name of organization**	**Mean difference (I-J)**	**Standard Error**	**Sig.**
		M.I.B.A	.04789	.18017	1.000
		Ikara	-.67281	.19699	1.72
		Kafanchan	-.71364*	.11592	0.000*
		Kauru	-.48531	.20776	.707

		Kachi	.62073*	.15344	.867
	Birnin-gwari	Gambo sawaba	-.20462*	.17938	.005*
		M.I.B.A	.66862	.21945	.323
		Ikara	-.05208	.23345	1.000
		Kafanchan	-.09291	.17068	0.000*
		Kauru	.13542	.24261	1.000
		Kachia	.30109*	.20504	.975
		Barau Dikko	.63205*	.12580	.002*
		Dantsoho	.82535	.12838	.000*
	Gambo sawaba	Birnin-gwari	.20462	.17938	.995
		M.I.B.A	.87325*	20272	.020*
		Ikara	.15254	.21780	1.000
		Kafanchan	.11171	.14856	1.000
		Kauru	.34004	.22759	.972
		Kachia	.50571*	.18703	.005*
		Baraau Dikko	-.24119*	.17835	.005*
		Dantsoho	-.04789	.18017	1.000
	M.I.B.A	Birinin-	-.66862	.21945	.323

		gwari			
		Gambo sawaba	-.87325*	.20272	.020
		Ikara	-.72071	.25183	.418
		Kafanchan	-.76153*	.19507	.009
		Kauru	-.53321*	.26034	.008
		Kachia	-.36753	.22574	.954
		Barau Dikko	-.47951	.19532	.644
		Dantsoho	.67281*	.19699	.002
	Ikara	Birnin-gwari	.05208	.23345	1.000
		Gambo sawaba	-.15254	.21780	1.000
		M.I.B.A	.72071	.25182	.418
		Kafanchan	-.04082*	.21070	.000
		Kauru	.18750*	.27225	.000
		Kachia	.35317	.23938	.975
		Barau Dikko	.52034	.11306	.008
		Dantsoho	.71364*	.11592	.000
	Kafanchan	Birnin-gwari	.09291	.17068	1.000
		Gambo sawaba	-.11171	.14856	.000

			*		
		M.I.B.A	.76153*	.19507	.009*
		Ikara	.04082	.21070	1.000
		Kauru	.22832	.22080	.998
		Kachia	.39400*	.17870	.001*
		Barau Dikko	.29201	.20618	.980
		Dantsoho	.48531	.20776	.707
	Kauru	Birnin-gwari	-.13542	.24261	1.000
		Gambo sawaba	-.34004	.22759	.972*
		M.I.B.A	.53321*	.26034	.008*
		Ikara	-.18750	.27225	1.000
		Kafanchan	-.22832	.22080	.998
		Kachia	.16567*	.24832	0.000*
		Barau Dikko	.12634	.16029	1.000
		Dantsoho	.31964*	.16232	.007*
	Kachia	Birnin-gwari	-.30109*	.20504	.005*
		Gambo sawaba	-.50571	.18703	.505
		M.I.B.A	.36753	.22574	.954
		Ikara	-.35317	23938	.005

			*		*
		Kafanchan	-.39400	.17870	.771
		Kauru	-.16567	.24832	1.000
		Barau Dikko	.12634	.16029	1.000
		Dantsoho	.31964*	.16232	.007*

The mean is significant at 0.05 level

Table 4.9b above reveals a significant difference as observed in the mean scores of both nurses, midwives and nurse-midwives. It also reveals a significant difference as observed in the mean scores of all the secondary healthcare institutions on the utilization of VIA to screen for cervical cancer.

Table 4.9c: Two sample t-test on utilization of VIA among health workers

SEX	**N**	**Mean**	**S.D**	**S.E**	**T-Value**	**D.F**	**Sig**
Male	**65**	**2.3129**	**0.64433**	**0.07992**	**2.210**	**290**	**0.028**

Fe	**2**	**2.1**	**0.6**	**0.0**			
ma	**2**	**19**	**158**	**408**			
le	**7**	**4**	**7**	**8**			

(t-critical =1.645,< 0.05)

The mean scores for the male and female subjects in the table above showed there is significant difference. The observed t-value for the test (2.210) is greater than the t-critical of (1.645), indicated at the bottom of the table. The observed significant level for the test is (0028) ($p<0.05$). This means that there is significant difference between male and female subjects in the utilization of VIA in cervical cancer screening in kaduna-state.

4.4 DISCUSSION

The researcher examined the awareness, availability and utilization of visual inspection with acetic acid (VIA) among health workers in secondary healthcare institutions of Kaduna State

Table 4.1 revealed the demographic variables of the respondents. The table shows the ages of the subjects that cut across various age group with more concentration in 35-39 years age-range. The percentage score for the range (35-39 years) is 23.6% of the total number of subjects involved in the study. The remaining subjects could be said to be fairly distributed as indicated in the table. The fairly distribution of subjects that cut across the various age-group could be attributed to the fact that there is social awareness on the importance of people to join the medical services because of the increase demand of healthcare by the community members. There is a high discrepancy between the proportion of male and female subjects. The males accounts for only

(21.9%) while the female subjects accounts for (78.1%). This difference could be related to the fact that nursing is a profession dominated by females. On the years of working experience of the subjects, the table shows that those with 6-10 years of experience equivalent to (32.3%) have the highest percentage score among the respondents. This reflects the policy of the state government in some medical/nursing schools to absorbed the students into the general hospitals immediately they graduates from their respective schools. They usually worked in the general hospitals for a specified period of time.

Health workers who are working in Barau Dikko specialist hospital Kaduna have the highest percentage score of (33.3%) of the total respondents. The large number of subjects from this particular institution could be due to location of the hospital, as it is situated in Kaduna metropolis, created since during the northern region and it has now being converted to a teaching hospital.

The proportion of health workers in other secondary healthcare institutions were fairly distributed and could therefore be expected to give valid information about the activities in the centres, concerning the professional category of the respondents, (Nurse-Midwife) that is subjects that have double qualification of Nursing and Midwifery have the highest percentage score of (60.6%). By this distribution, all the categories of health workers in the secondary healthcare institutions, that is nurses and midwives could be said to be fairly distributed.

Table 4.2 reveals health workers awareness of VIA. The aggregate mean score of (2.2288) shows that the respondents are not aware of VIA in cervical cancer screening. On the contrary moon, Cordoso, Baptista, Moshin, Ster and Vermund (2012) reveals that clinic nurses and hospital physicians are aware of using VIA to screen for cervical cancer, as VIA procedure was taught to

clinic nurses and hospital physician with a regular clinical feed back for quality evaluation and retraining.

Most of the subjects as identified in the study have not heard of VIA in their places of work, that is the hospitals, as such, most of them did not understand the concept behind it. They were of the view that VIA can only be done in a specialist hospital and the subjects were not aware that it can be an alternative method of cervical cancer screening to cytology screening procedures. The findings of the study shows that the subjects are not aware that VIA is cheap and effective method of cervical cancer screening, and the time spent to do the procedure is less, thereby making it to be consumer friendly. To further reflect on the unawareness of VIA among the health workers, the subjects were not aware that acetic acid is the major requirement needed for VIA screening procedure. This findings supported the work of Mc Carey, Pirek, Tebeu, Boulvaln, Doh and Petigna (2011) who stated that health workers are not aware of the use of VIA to screen for cervical cancer. Many respondents with mean score of (2.1138) in the study believed that screening uptake in the general population is poor because it is too expensive, this further reflects the lack of awareness of the health workers in VIA in cervical cancer screening. The lack of awareness of VIA among health workers as identified in the study is not new, it is also identified by Kolawole (2011), in a survey carried out in Ahmadu Bello University Teaching Hospital Shika among female health workers. The study shows that only (26.0%) of the respondents are aware that visual inspection with the use of acetic acid can be done to screen for cervical cancers.

Furthermore, The World Health organization (2012) reveals that the level of awareness of visual inspection with acetic acid is low, therefore, the need to increase the awareness level is necessary.

The only areas where subjects reflect awareness of VIA is where they agree that positive VIA screening means the presence of aceto-white cells in the cervix. Another area that capture on awareness as it regards to VIA is the issue of further management incase of positive VIA screening, most of the subjects view the management as necessary.

Looking at the aggregate mean score (2.1063) of the respondents on availability of qualified health workers in the secondary healthcare institutions of the state as indicated in table 4.3, most of the subjects were of the view that the hospital do not have adequate qualified staff to offer VIA in cervical cancer screening. The findings of the study shows the mean score of (1.7055) of the subjects as trained VIA provider which is far less than the agreement state of 2.5. To further worsen the situation, the female staff who will be the one's to attend to the women who need VIA screening in the hospitals are not adequate despite the fact that the proportion of females in the profession is higher than that of the males. The subjects were of the view that the available staff are presents in the hospital, they do not come from other hospitals within or outside the state. As revealed in table 4.3, the subjects did not agree with the statement that the hospital management do organizes workshop/seminars to the health workers in order to update their knowledge and they do not send the staff to other institutions so as to be trained as VIA provider. This findings agree with Ebuehi and Campbell (2011) who stated that among the many challenges facing Nigerian health system is an acute shortage of competent healthcare provider. As a result of inadequate infrastructure locally and poor compensation package a sizeable number of physician, nurses and other health professionals migrate to developed countries in search of fulfilling and lucrative positions. Moreover, the IHRIS quality data (2012) reveal that there are around 136,000 qualified nurses and midwives registered with Nursing and Midwifery Council of Nigeria. But this number of nurses and midwives are far fewer available than

expected to provide much needed health services to Nigerians. The Nigerian Demographic Health Survey (2003) supported the fact by stating that many health institutions in Nigeria had trained staff but the number is insufficient to meet the needs of the entire population.

In the course of this study, it has been established that VIA requirements are not available for health workers in the secondary healthcare institutions for cervical cancer screening as indicated in table 4.4 with an aggregate mean score of (2.1458). one of such basic areas of inadequate VIA requirements in the secondary healthcare institutions were the subjects that agreed that there is no efficient system to ensure that the hospitals do not run out of stock.

Also there is poor referral system in the hospitals in case of positive cases identified during the screening procedure. To worsen the inadequacy of VIA requirements in the hospitals, the medical equipment stores do not possess the supplies as identified in the study. This could be attributed to lack of awareness of VIA by the health workers. This findings is supported by USAID (2010), which stated that cervical cancer screening services with acetic acid staining (VIA) are available only in research settings and/or referral centres of Rwanda, Nigeria and Cote d' Ivore but not available at multiple sites/levels of care throughout the country. Although the study shows that VIA requirements are not present in the hospitals to screen for cervical cancer, it contradicts the statements of Gaffikin, Mcgrath, Arbyn, Blumenthal (2007) whom stated that the pap smear remains the most common screening test for cervical cancer, many developing countries do not have adequate resources to implement cytology based prevention programme. An alternative, low-cost test, visual inspection using acetic acid (VIA), has emerged for use in developing countries, Nigerian inclusive where the resources are available. Even though the VIA requirement are not sufficient in the hospitals, it does not mean that the government cannot afford to provide it in the hospitals and the medicine stores within the state.

On the utilization of VIA to screen for cervical cancer in the secondary healthcare institutions within the state, the aggregate mean score of (2.1625) as indicated in table 4.5 shows that majority of the respondents do not utilized VIA to screen for cervical cancer. This finding is not a surprise because it has being established during the course of the study that there is lack of awareness of VIA by the health workers, majority of the respondents are not trained VIA providers, and the VIA requirements are not sufficient in the secondary health care institutions of the state. This findings is in line with (Evaluation of cervical in Nigeria, 2013) which stated that Nigeria has not had a great deal of success in implementing effective cervical cancer until date. The delivery of cervical cancer screening in Nigeria is usually conducted in an opportunistic manner, whereby screening depends on the initiative of the healthcare provider. This invariable leads to inappropriate screening utilization and inadequate follow-up of abnormal results. There is currently no mass screening program for the detection of cervical cancer in Nigeria, services are only available in teaching hospitals and are not adequate utilized.

In the test of the first sub-hypothesis of the study, a significant difference was established between age-group, professional category and secondary healthcare institutions in the awareness of VIA by the health workers. But no significant difference observed between years of working experience and awareness of VIA by the workers. To determine where the difference lies, the scheffe post-hoc test shows that nurse/midwife and nurses differ significantly, this contradicts the findings to sankaranarayanan et al, (2008) whom stated that nurses are equally trained to provide VIA services in developing countries. Also all the secondary healthcare institutions as used in the study differ significantly in their awareness of VIA. On the issue of sex of the respondents and awareness of VIA, the t-test reveals a significant difference between male and female subject in their awareness of VIA.

In the test of the second sub-hypothesis of the study, the subjects differ significantly in the age-group, sex, professional category, years of working experience and secondary healthcare institutions in the provision of qualified health workers to screen for cervical cancer using VIA. The health workforce has been identified as the key to effective health services. However, workforce shortages are the most commonly reported staff related problem in healthcare, especially in resource – constrained countries. The IHRIS quality data (2012) reveal that there are around 136,000 qualified nurses and midwives with the Nursing and Midwifery Council of Nigeria. But this number of nurses and midwives are far fewer available than expected to provide much needed services to Nigerians.

In the test of the third sub-hypothesis, a significant difference was observed among the secondary healthcare institution in the provision of available VIA requirement for cervical cancer screening, thus the null hypothesis was rejected. USAID (2010) stated that the choice of screening test usually depends on the resources available. Furthermore, many developing countries are now using the single visit approach which combines detection of lesions using visual inspection with acetic acid followed by immediate treatment if necessary.

In the test of the fourth sub-hypothesis which stated that there is no significant difference among the health workers demographic variables of (age-group, sex, professional category, years of working experience and secondary healthcare institutions) in the utilization of VIA in cervical cancer screening in Kaduna State, the null hypothesis was rejected because a significant difference was observed during the course of the study among all the variables.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter, the summary, conclusion and recommendations in the awareness, availability and utilization of VIA among health workers in secondary health care institutions of Kaduna State is presented.

5.2 SUMMARY

This study examined the awareness, availability and utilization of VIA by health workers in secondary health care institutions of Kaduna State. The research design used in the study was ex-post facto design. It involves study of variables under study to generate data which is used to answer the research questions outlined. The population of this study comprises of different categories of nurses working in secondary health care institutions of Kaduna State.

The sample size used in the study consist of 300 health workers that work at the various secondary health care institutions within the state, however only 297 were used for data analysis. To have a good representation, stratified sampling technique was used. The state was divided into strata using the existing senatorial districts. Therefore, according to the three senatorial districts, each local government area served as a clustered. A purposive sampling was used to select nine Local Government that have secondary health care institutions, three from each senatorial zone. A proportionate sampling was further used at the selected secondary health care institutions to distribute questionnaire to health workers available during the course of administration. Questionnaire design by the researcher was the instrument used to gather data for the study. It was structured to give room for the chance to acquire and get information from the subjects regarding the purpose of the study. The questionnaire had five sections. Section A was

concerned with the demographic variables of the respondents, section B is concerned with the awareness of VIA, section C focused on availability of qualified health workers, section D is concerned with the provision of VIA requirement while section E focused on utilization of VIA by the health workers. The questionnaire were distributed in each of the (9) secondary health care institutions within Kaduna State. Out of the three hundred questionnaires distributed, two hundred and ninety seven were successfully filled and retrieved. They were analyzed along the course of the study. The analysis involves the use of descriptive statistical tools, mean and standard deviation. The hypotheses were tested using analysis of variance (ANOVA) and two-sample t-test.

The results from the analysis of the data and test of the hypotheses revealed that there is negative awareness of VIA by the health workers in Kaduna State.

Summary of findings

The findings of this study are as follows:

1. Health workers in secondary health care institutions of Kaduna-state are not aware of using VIA in cervical cancer screening.
2. VIA providers are not available among the qualified health workers in the secondary health care institutions of Kaduna-state.
3. The number of qualified health workers in the secondary health care institutions of Kaduna- state is not sufficient to meet the need of consumers of the health services.
4. VIA requirement are not available in the various secondary health care institutions of Kaduna- state.
5. Health workers in secondary health care institutions of Kaduna- state are not utilizing VIA to screen for cervical cancer.

6. Significant differences exist among the health care workers demographic variables of (age-group, sex, professional category, years of working experience and secondary health care institutions) in the awareness, availability, and utilization of VIA in cervical cancer screening.

5.3 CONCLUSION

Based on the findings of the study, it can be concluded that;

1. Health workers in secondary health care institutions of Kaduna State are not aware of using VIA in cervical cancer screening. This adversely lead to poor uptake of the screening service among women of child bearing age as the incidence of Human Papilloma Virus is more prominent among the age-group.
2. There are no VIA providers among the qualified health workers in the secondary health care institutions within the state. This may be attributed to the negative awareness of VIA by the health workers which makes them to be redundant in finding out what the concept of VIA is all about.
3. VIA requirement are not available in the various secondary health care institutions of the state, as such health workers in secondary health care institutions of Kaduna- state are not utilizing VIA to screen for cervical cancer, this makes the incidence of the disease to be high among women.

5.4 RECOMMENDATIONS

Based on the findings from this study, the researcher would want to recommend as follows;

1. The state hospitals management board in collaboration with the Nursing and Midwifery council of Nigeria should mount awareness campaign for health workers through seminars and workshops due to their negative awareness of VIA.
2. More qualified health workers with VIA training experience should be employed by the state government into the secondary health care institutions so as to provide effective VIA screening services to consumers, also the hospitals management should encourage and support the health workers to go to other institutions within and outside the state so that they can be train VIA providers.
3. The hospital management should make provision of VIA requirements so that they can be available in the hospitals.
4. Specialist VIA units should be created in the hospitals specifically for VIA screening services, this will go along way in utilizing the VIA to screen for cervical cancer by the health workers thereby reducing the high incidence of the disease.

5.5 SUGGESTION FOR FURTHER STUDIES

1. Studies should be carried out among women of child bearing age on the up-take of VIA cervical cancer screening services.
2. An investigation into the level of utilization of VIA in primary health care centre's in the state should be carried out.

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APPENDIX I

QUESTIONNAIRE

DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION

FACULTY OF EDUCATION

AHMADU BELLO UNIVERSITY, ZARIA

QUESTIONNAIRE

Dear Respondents,

INTRODUCTION

This research intends to investigate on "**awareness, availability and utilization of visual inspection with acetic acid (VIAA) in cervical cancer screening by health workers in secondary health care institutions of Kaduna state''**. The information obtained from the questionnaire will be kept strictly confidential and be used only for research purposes. Your participation in the study is completely voluntary.

Thank you.

INSTRUCTIONS:

Please tick (√) the column that is most appropriate to you.

SECTION A: SOCIO-DEMORGRAPHIC DATA.

1. Age

   (a) 20 – 24 years [ ]

   (b) 25 – 29 " [ ]

   (c) 30 – 34 " [ ]

   (d) 35 – 39 " [ ]

   (e) 40 years and above [ ]

2. Sex

   Male [ ]

   Female [ ]

3. Professional category

   Nurse [ ]

   Midwife [ ]

   Nurse-Midwife [ ]

4. Years of working experience

   a. 0 – 5 years [ ]

   b. 6 – 10 " [ ]

   c. 11 – 15 " [ ]

   d. 16 – 20 " [ ]

   e. 21 years and above [ ]

5. Name of organization (hospital) you are working:

a. Barau Dikko specialist hospital Kaduna [ ]

b. Yusuf Dantsoho Memorial hospital Kaduna [ ]

c. General Hospital Birnin-Gwari [ ]

d. Hajia Gambo Sawaba Memorial Hospital Zaria [ ]

e. Major Ibrahim B. Abdullahi Memorial Hospital Sabon-Gari [ ]

f. General Hospital Ikara [ ]

g. General Hospital Kafanchan [ ]

h. General hospital Kauru [ ]

I. General hospital kachia [ ]

PLEASE TICK (√) THE COLUMN THAT IS MOST APPROPRIATE TO YOU

KEY

S.A = Strongly Agree

A = Agree

D = Disagree

S.D = Strongly Disagree

SECTION B: AWARENESS OF VISUAL INSPECTION WITH ACETIC ACID (VIAA) IN CERVICAL CANCER SCREENING

S/No	ITEMS	S.A	A	D	S.D
1	I heard of (VIAA) at my place of work.				
2	I understand the concept of VIAA				
3	VIAA is a simple procedure that can be done by a health worker in the hospital				
4	VIAA can only be done in a specialist hospital				
5	VIAA is an alternative method of cervical cancer screening				
6	VIAA can be affordable by women in rural society				
7	The VIAA procedure is time consuming always				
8	One of the medical supplies needed for VIAA is acetic acid				
9	Positive VIAA screening test means the presence of aceto white cells in the cervix				
10	Further management becomes necessary in case of positive VIAA screening				

SECTION C: AVAILABILITY OF QUALIFIED HEALTH WORKERS IN THE HOSPITALS

S/NO	ITEMS	S.A	A	D	S.D
1	There are sufficient health workers in the hospital.				
2	The hospitals have trained registered staff, who nurses.				
3	I am a trained visual inspection with acetic acid (VIAA) provider.				
4	There are adequate female staff to attend to the women who need VIAA screening in the hospitals				
5	The staff are present in the hospitals only.				
6	The hospital management organizes workshop/seminars to health workers in order to update their knowledge.				
7	The hospital management do send the health workers to other institutions to be trained as VIAA providers.				
8	Only trained VIAA providers do VIAA screening in the hospital.				
9	The health workers do provide post-VIAA management to clients.				
10	Health workers from other hospitals come to do VIAA screening to women in our hospitals				

SECTION D: AVAILABILITY OF VIA REQUIREMENT TO SCREEN FOR CERVICAL CANCER

S/NO	ITEMS	S.A	A	D	S.D
1	VIAA supplies are present in the hospitals to screen cervical cancer				
2	There is an efficient system to ensure that the hospitals do not run out of stock				
3	Cost can be a significant factor to availability of VIAA requirement.				
4	There is adequate means of transportation of available VIAA requirement to the hospitals.				
5	There are enough equipment for providing VIAA screening in the hospitals.				
6	Post-VIAA management is available in the hospitals.				
7	There is good referral system in the hospitals for positive cases.				
8	The government provides free VIAA screening services in the hospitals.				
9	VIAA requirements are only present in some selected hospitals in the state.				
10	The VIAA requirement is present in medical equipment stores in the state.				

SECTION E: UTILIZATION OF VIA BY HEALTH WORKERS

S/NO	ITEMS	S.A	A	D	S.D
1	The hospital management encourage the use of VIAA in cervical cancer screening				
2	VIAA screening to clients in need is available to all.				
3	The VIAA screening test is done to women as part of routine checkup whenever they visit the hospitals.				
4	Different categories of health workers (Nurses, Midwife, and Nurse-midwife) use VIAA to screen cervical cancer in the hospitals.				
5	The simple technology involves in VIAA makes the staff to use it in cervical cancer screening.				
6	Length of time taken to do the screening is a contributing factor towards its usage.				
7	VIAA screening is done in the hospitals under strict aseptic technique.				
8	The VIAA is being used because it is effective in cervical cancer screening.				
9	The use of VIAA in cervical cancer screening is done because most women patronize the general hospitals.				
10	VIAA is done to women because it has less side effects.				

By filling this questionnaire, you will be granting your consent to participate in the study. Thank you.