ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF CANCER PREVENTION STRATEGIES AMONG STAFF OF FEDERAL UNIVERSITIES IN NORTH-CENTRAL ZONE, NIGERIA

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ZARIA, NIGERIA

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A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY ZARIA, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DOCTOR OF PHILOSOPHY IN HEALTH EDUCATION

DEPARTMENT OF HUMAN KINETICS AND HEALTH EDUCATION

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AHMADU BELLO UNIVERSITY,

ZARIA, NIGERIA

APRIL, 2018

DECLARATION

I declare that this thesis entitled**''ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OFCANCER PREVENTION STRATEGIES AMONG STAFF OF FEDERAL UNIVERSITIES IN NORTH-CENTRAL ZONE, NIGERIA''** has been carried out in the Department of Human Kinetics and Health Education under the supervision of Prof. V. Dashe, Prof. M.A. SuleimanandDr. U. Musa. All sources of information have been appropriately acknowledged in the text and written in the list of references. No part of this thesis was previously presented for another Degree at any University.

…… ……

SeunNurudeenAKOREDEDate

CERTIFICATION

This thesisentitled, ‘’**ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OFCANCER PREVENTION STRATEGIES AMONG STAFF OF FEDERAL UNIVERSITIES IN NORTH-CENTRAL ZONE, NIGERIA’’** by SeunNurudeen AKOREDEmeets the regulations governing the award of Degree of Doctor of Philosophy in Health Education, Ahmadu Bello University, and is approved for its knowledge and literary presentation.

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DEDICATION

This research work is dedicated to Almighty God who hasbrought the researcher this far and made this research work possible.

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Abstract

This study was conducted to assess knowledge, attitude and practice of cancer prevention strategies among staff of Federal universities in North Central Zone,Nigeria. To achieve this purpose, ex-post facto research design was used. A total of 756 staff from seven federal universities in north central zone Nigeria with a population of twenty-five thousand three hundred and sixty-one 25,361 were selectedthrough multi-stage sampling procedures of simple random, stratified, proportionate and accidental. The instrument used for the study was pilot tested with the use of Spearman-Brown Split Half, Gutman Split Half and Cronbach Alpha and 0.839, 0.813 and 0.859 were obtained respectively. Out of the 756 copies of questionnaire distributed, 752 were valid for analyses. Inferential statistics of one sample t-test, Pearson Product Moment Correlation (PPMC), regression analysis and independent sample t-test were used to test the data collected. The results revealed that the staff of Federal Universitiesare knowledgeable about cancer prevention strategies, have good attitude towards cancer prevention strategies, however, are poor in practice with P-values of 0.021, 0.001, 0.11 respectively, demographic characteristics had influence on knowledge, attitude and practice of cancer prevention strategieswith p=0.000 and lastly there was no significant difference between male and female in their knowledge with p=0.11, attitude p=0.29 and practice p=0.31 towards cancer prevention strategies all at 0.05 level of significance. Based on the results, the following conclusions were drawn; Staff in Federal Universities of North-central Zone, Nigeria are knowledgeable about cancer prevention strategies, their attitude towards cancer prevention strategies is good, Cancer prevention strategies practiceis poor among staff in Federal Universities of North-central Zone.knowledgeof cancer prevention strategies translated into positive attitude towards cancer prevention strategies butknowledge of cancer prevention strategies do not influence practice of cancer prevention strategies among staff in Federal Universitiesof North-central Zone, Nigeria. Based on the conclusion, it was recommended that concerned Government and non-Governmental agencies and Ministry of Health should double efforts in ensuring that Federal University staff are provided adequate intervention programmes and Health Education on improved practice of cancer prevention strategiesand development of practices that will bridge the gap that exist between knowledge and practice on one hand and attitude and practice of cancer prevention strategies among Federal University staff in North-central Zone, Nigeria

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LIST OF ABBREVIATIONS

ACS	-	America Cancer Society
CRC	-	ColoRectal Cancer
WHO	-	World Health Organization
PSA	-	Prostate-Specific Antigen
HBM	-	Health Belief Model
HDI	-	Human Development Index
HPV	-	Human Papilloma Virus
N.C.I	-	National Cancer Institute
BMI	-	Body Mass Index

OPERATIONAL DEFINITION OF TERMS

For thepurpose of this study, the following terms are operationally defined:

Staff means academic and non-academic staff of Federal Universities in North central Zone, Nigeria

Cancer prevention strategies is avoidance of risk factors among staff of Federal Universities in North-central Zone, Nigeria.

Knowledge of Cancer prevention strategies is theunderstanding and know-how about avoidance of the risk factors of Cancer.

Attitude towards Cancer prevention strategiesare the believes held by staff of federal University in North central Zone, Nigeria and feelings towards avoidance of risk factors

Practice of Cancer prevention strategies the actual exhibition of the knowledge of risk factors and avoiding the risk factors by staff of federal University in North central Zone, Nigeria

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Cancer is a major public health concern affecting all categories of individuals worldwide. It is believed that cancer is the second most common cause of death in developed countries and among the three leading causes of death in developing countries including Nigeria. In the light of the above, Qalawa, Mohamed and Eltay(2013),asserted that cancer is now the second leading cause of death, after cardiovascular diseasesworldwide, approximately 10 million people are diagnosed with cancer annually and more than 6 million die of the disease every year.

It will be of interest to understand this health condition known as cancer, which according to America Cancer Society (2014), starts when cells in any part of the body begin to grow out of control, the word cancer is an umbrella term that refers to about 200 diseases that share two common characteristics which are; an uncontrolled growth of cells and the ability to invade and damage normal tissues either locally or at distant sites in the body.In addition, World Health Organisation (WHO) (2012), also described cancer as a generic term for a large group of diseases that affect any part of the body, hence, malignant tumour is often used to describe cancer. A defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs. This process is referred to as metastasis which is the major cause of death from cancer patient.

There are many types of cancer, but they all arethe uncontrollable growth of abnormal cells. WHO (2012), reported the commonest cancers in Africanmales are prostate (13.7% of all cancers), liver (11.5%), Kaposi's sarcoma (8.7%),oesophagus (6.2%) and Non-Hodgkin lymphoma (6.2%) cancer,whereas, in females the commonest cancers are cervix (23.8%), breast (21.3%), liver (4.7%) and Kaposi sarcoma (3.8%) cancers.WHO report (2012)revealedthat 24.6 million people live with cancer worldwide. Estimated cancer incidence in Africa is between 70-100/100,000 population. As at 2005, the commonest cancer in men is Kaposi sarcoma (15.5%) with cancer of the cervix representing 22.2% of all cancers among women. Most cases present at advanced stages when curative measures may be unsuccessful (Parkin, Whelan, Ferlay, Treppo, &Thomas 2015). WHO (2012) report shows that prostate cancer and liver cancer had taken the lead with 13.7% and 11.5% respectively whereas Kaposi sarcoma represent only 8.7% of all cancer cases, the incidence rate of cervical cancer in Nigeria is 25/100,000.

Quite a number of risk factors have beenmentioned byNnodu, Erinosho, Jamda, Olaniyi, Adelaiye and Lawson (2010) as modifiable factors such as use of tobacco, age, unhealthy diet, infectious agents like Human Papilloma Virus (HPV), hepatitis B virus, helicobacter bacterium, ultra violet radiation, physical inactivity, occupational exposures, food contaminants such as aflatoxin, ionizing radiation, and obesity. Non-modifiable risk factors include ageing, ethnicity, heredity, sex, immunosuppression andreproduction. This simply means that modifiable risk factors could be prevented.

The National Institute for Occupational Safety and Health has identified more than 130 substances as potential occupational carcinogens.Thousands of chemical substances are in use but have never been evaluated for possible carcinogenicity. Workplace hazards, working conditions, and personal risk factors may interact to

contribute to chronic diseases such as cancer among working adults. In addition, for potentially large numbers of workers, the workplace could be an effective place to use comprehensive strategies that protect and promote health for adults at midlife and at older ages. However, primary prevention strategies policies that reduce exposure to known carcinogens have been found to reduce cancer risk (e.g., eliminating exposure to asbestos to reduce lung cancer) (Loeppke, Schill&Chosewood, 2013).

According to a study in America on knowledge of cancer risk and survival conducted byBreslow, Sorkin, Frey and Kessler (2011) it wasrevealed that majority of respondents used for the study were unable to identify major cancer risk factors when exposed to a list of risk factors. Approximately two-thirds did not recognize that age increased the risk for breast and colon cancer, that diet increased the risk for colon cancer, or that multiple sex partners increased the risk for cervical cancer. In a related version, a study conducted in Nigeria by Nnodu,Erinosho, Jamda, Olaniyi, Adelaiye and Lawson (2010) on the Knowledge, Attitude and Practice of Cervical cancer, revealed that respondents were asked if they know of cervical cancer and human papilloma virus. The the outcomes indicate that very small proportions know about these diseases and overwhelming majority of the respondents said that cervical cancer and human papilloma virus could not be prevented. This revelation is an indication that the knowledge of cancer was low.

Attitudes are the beliefs held by people and feelings towards concept and body of knowledge, it is an important factor towards the prevention strategies of cancer as well as avoiding risk factors that could prone an individual to the deadly disease. In a study conducted in SouthAfrica byRamathuba, Ratshirumbi andMashamba(2013), the majority of the women who participated in the study (82.7%) reported that if they noticed any change in their breast, they would consult the medical doctor, while 14.0% said that they

would consult the traditional doctor and 3.3% would consult the prophet. The issue of religious and cultural belief might play a significant role in the health-seeking behaviour (attitude) of the staff in North Central-zone, Nigeria.

According to Azubuike and Okwuokei (2013),practice of primary prevention strategies of cancer has a very strong association with knowledge and practice of early detection strategies. The study showed that not all who knew about the preventive strategies practiced it, which also revealed that there is a very strong indication that practice increases as level of knowledge increases. Additionally, Azubuike and Okwuokei (2013), posited that there is an existing association between the knowledge of cancer risk factors and practice of preventive strategies. Suggesting that knowledge of the risk factors seems to be a motivation to practice. Furthermore, previous study by Haji-Mahmoodi, Montazeri, Jarvandi, Ebrahimi, Haghighat and Harirchi(2012) has also identified relationship between knowledge and practice of preventive procedures. However, the commonest reason reported for not practicing any of the preventive procedures was the feeling that one cannot get breast cancer, followed by lack of awareness and forgetfulness and then avoidance of fear and anxiety. Specifically,the feeling that one cannot get breast cancer' indicates disbelief and superstition. Disbelief and misconception about cancer has been reported as contributory factor to late reporting of signs and symptoms (Haji-Mahmoodi et al 2012). North-centralZone, Nigeria is one of the six geo-political zones of the country. The zone is the most unique region in the country consisting of seven (7) states including the Federal Capital Territory (FCT). The zone has combinations of several ethnic groups that can be referred to as a little representation of the entire country. North Central Nigeria zone consist of; Kwara (Yoruba),Kogi state (Igbira, Yoruba, &Igala), Abuja (Gbwari), Nasarawa state (Hausa), Niger state (Hausa, Nupe&Fulani), Plateau State(Beerom, Ganang, Afizere), Benue State

(Tiv&Idoma). This shows a fair distribution of ethnic groups in Nigeria. Thereby creating a research population that is capable of generalization.These facts necessitate a study on assessment of knowledge, attitude and practice of cancer prevention strategiesStrategies among staff of Federal Universities in North-central zone, Nigeria.

1.2 Statement of the Problem

The high rate of death in the world is worrisome, the trend as revealed in many literatures including W.H.O. (2012), shows that cancer accounts for 12.5% of all deaths in the world. Cancer rank highest in terms of economic loss of all the fifteen (15) leading causes of death in the world. In Africa, home for large percentage of developing countries is not left out of the scourge of cancer. Reports have shown that 650,000 indigenous Africans run the risk ofdying from cancer out of 965 million diagnosed.

The pathetic situation is that African women's diagnosis and deaths are higher than women in developed countries. This is evident in the report of Parkin, Sitas, Chinrenje, Stein, Abratt, et al. (2012) which revealed that 12.5% of all death cases in the world are caused by cancer and it is estimated that if the trend continues, additional 16 million diagnoses will occurby 2020.

The researcher observed through numerous literatures that substantial proportion of all cancers is attributable to carcinogenic exposures in the environment and the workplace, and is influenced by activities in all economic and social sectors. Many of these exposures are involuntary but can be controlled or eliminated through enacting and enforcing proactive strategies for prevention strategies. The prevention strategies of cancers of environmental and occupational origin reduces cancer incidence and mortality and is highly cost effective; in fact, it is not just socially beneficial because it reduces medical and other costs, but because it averts the suffering of many human

beings.Unfortunately,emphases are not on prevention strategies of cancer through avoidance of risk factors.

According to W.H.O. (2012),some years back, cancer was thought to be rare in Africa and cancer was seen as a disease of the developed country where cancer is only second to cardiovascular diseases in the causes of death. Based on researcher's observation, the alarming increase in the incidence of cancer is mainly due to infectious conditions including the HIV/AIDS pandemic, tobacco use, harmful use of alcohol, improper diet, physical inactivity, environmental pollution and a general increase in life expectancy predominantly among elites who aremostly found in the Ivory Tower.However, evidences have shown that knowledge of the above predisposing factors is poor. The increasing rate of cancer diagnosis in the country at large and the region in particular can be traced to the level of knowledge of cancer, attitude towards prevention strategies of cancer and practice of avoidance of the predisposing factors.

The high cases of cancer in North-Central Nigeria cannot be far away from the lack of knowledge of predisposing factors such as age, alcohol, sedentary lifestyle, Human Papiloma Virus, obesity, exposure to radiation and so on as stated by Nnodu, et al (2010) and a perceived low level of knowledge, poor attitude towards early reporting of signs and symptoms and poor practice of prevention strategies of cancer. Specifically, a study conducted in North-Central and South-West on knowledge and believes towards cervical cancer shows that; all of the women in the selected focused group had no knowledge of cervical cancer. Meanwhile, most of the participants in Abuja who are Muslim women had heard about cervical cancer, but no knowledge of risk factors. However, in Ondo state, none of the women in the group of a FGD had ever heard of cervical cancer. Based on the forgoing, it is believed that a gap of adequate knowledge, negative attitude and poor practice exist in the North central geo-political zone of

Nigeria. In light of the above,theresearcher assessed knowledge, attitude and practice of cancer prevention strategies among staff of Federal Universitiesin North Central Zone, Nigeria.

1.3 Purpose of the study

The purpose of this study was to assess and identify possible existing gaps in knowledge, attitude and practices of cancer prevention strategiesamong of staff of Federal Universitiesin North-central Zone, Nigeria

Specifically, the study intended to assess:

1. Knowledge of cancer prevention strategies among staff of Federal Universities in North-central Zone, Nigeria.
2. The attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
3. The practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria.
4. Whether knowledge of cancer prevention strategies influences attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
5. Whether knowledge of cancer prevention strategies influences practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
6. Whetherdemographic characteristic of respondents (religion, level of education and age) influence their knowledge, attitude and practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria

7. Whethergender differences exist among staff of Federal Universities in North-central Zone, Nigeria in their knowledge, attitude and practice ofcancer prevention strategies

1.4 Research Questions

The study was proposed to answer the following specific researchquestions:

1. What is the knowledge of cancer prevention strategies among staffof Federal Universitiesin North-central Zone, Nigeria?
2. What are the attitudes towards cancer prevention strategiesamong staff in Federal Universities of North-central Zone, Nigeria?
3. What are the practices of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?
4. Will knowledge of cancer prevention strategies influence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?
5. Will knowledge of cancer prevention strategies influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?
6. Will demographic characteristic of respondents (religion, level of education and age) influence knowledge, attitude and practice ofcancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?
7. Does gender differ in theirknowledge, attitude and cancer towards cancer prevention strategies in Federal Universities of North-central Zone, Nigeria?

1.5 Research Hypotheses

On the basis of the research questions, one major and seven (7) sub-hypotheses were formulatedto guide study.

1.5.1 Major Hypothesis

There is no significant knowledge, attitude and practices of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria

1.5.2 Sub-Hypotheses

1. Staff in Federal Universities of North-central Zone, Nigeria are not significantly knowledgeable about cancer prevention strategies
2. The attitude of staff in Federal Universities of North Central zone, Nigeria towards cancer prevention strategiesis not significant
3. Cancer prevention strategies practices by thestaff in Federal Universities of North-central Zone, Nigeria is not significant
4. There is no significant influence of knowledge of cancer on attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
5. There is no significant influence of knowledge of cancer on practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
6. There is no significant influence of demographic characteristics of respondents (level of education, religion and age) on knowledge, attitude and practice of cancer prevention strategiesin Federal Universities of North-central Zone, Nigeria

7. There is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge, attitude and practice of cancer prevention strategies

1.6 Significance of the Study

The results of this study are significant in the following ways: -

Adequate information on the level of knowledge for the prevention strategies of cancer among staff will help the public health professionals to bridge the gap of lack of adequate knowledge, through intervention programmes that will raise level of awareness, improve health of the staff of Federal Universities and prevent the manifestation of cancer.

The study would be useful to Health Educators to design mechanism that will mitigate the likely negative attitudes towards the prevention strategies of cancer among staff of Federal Universities inNorth Central Nigeria. The findings of the study should help Public Health Educators to collaborate with ministry of labour and productivity to encourage positive practices of cancer prevention strategies among staff ofFederal Universities North-central Nigeria.

The study would raise awareness on a number of preventive strategies that can help in reducing cases of cancer through effective health promotion methods among staff of Federal Universities in North Central Nigeria. The study will also reveal the distribution of cancer awareness along age range, gender,religious background, place of work and level of income. Through effective intervention programme, the result of this study will correct some wrong impressions and misconceptions of cancer prevention strategies among Staff ofFederal Universities North-central Nigeria.

1.7 Basic Assumptions

Based on research evidence, the following assumptions were made

1. The knowledge of cancer prevention strategies among Staffof Federal Universitiesin North-central Nigeria may aid the reduction in the prevalence of cancer in the region.
2. Knowledge of predisposing factors would improve the prevention strategies of cancer among Staffof Federal Universitiesin North-central Nigeria.
3. Right attitude towards predisposing factors could help cancer prevention strategies among Staffof Federal Universitiesin North-central Nigeria.
4. Practice of Immunization against Human Papilloma Virus (HPV) would help prevent cancer among Staffof Federal Universitiesin North-central Nigeria.
5. There would be a significant relationship between age and Knowledge, Attitude and Practice of Cancer Prevention strategies among Staffof Federal Universitiesin North-central Nigeria

1.8 Delimitations of the Study

This study was delimited to:

1. Only Federal University Staff of the seven North Central States of Nigeria.
2. Knowledge of Cancer prevention strategies among staff of Federal Universities in North-central Zone, Nigeria.
3. Attitude towards cancer prevention strategies among staff ofFederal Universities in North-central Zone, Nigeria.

4. Practice of cancer prevention strategies among staff of Federal Universities in North Central States of Nigeria
5. Demographic variables of Age, level of income, Educational qualification and gender (‘s) relationship with Knowledge, Attitude and Practice of Cancer Prevention strategies inFederal Universities of North-central Zone, Nigeria.
6. Gender differences in Knowledge, Attitude and Practice of Cancer Prevention strategies
7. Cancer prevention strategies is predicated on knowledge and avoidance of risk factors.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The study waas designed to assess the knowledge, attitude and practice of staff of Federal Universities in North-central Zone, Nigeria towards cancer prevention strategies. On the Bases of the foregoing, relevant research evidences and review of related literature was presented under the following heading:

2.2. Concept of Cancer

2.2.1. Prevalence of Cancer

2.2.2 Types of Cancer

2.2.3 Causes of Cancer

2.2.4 Cancer Prevention strategies

2.2.5 General Symptoms of Cancer

2.2.6 General Treatmentsof Cancer

2.2.7 Risk Factors for Cancer

2.3 Theoretical Framework

2.4 Knowledge of Cancer Prevention Strategies

2.5 Attitude of Cancer Prevention Strategies

2.6 Practice ofCancer Prevention Strategies

2.7 Empirical Study

2.7.1 Age and Cancer Prevention Strategies

2.7.2 Religion and Cancer Prevention Strategies

2.7.3 Gender and Cancer Prevention Strategies

2.7.4 Education and Cancer Prevention Strategies

2.8 Summary

2.2 Concept of Cancer

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body.Not all tumours are cancerous; benign tumours do not spread to other parts of the body.Possible signs and symptoms include a lump, abnormal bleeding, prolonged cough, unexplained weight loss and a change in bowel movements. While these symptoms may indicate cancer, they may have other causes.Over 100 cancers affect humans (World Health Organization, 2014).

Cancer is agroup of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by both external factors (tobacco, chemicals, radiation, and infectious organisms) and internal factors (inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). These causal factors may act together or in sequence to initiate or promote carcinogenesis. The development of most cancers requires multiple steps that occur over many years. Certain types of cancer can be prevented by eliminating exposure to tobacco and other factors that initiate or accelerate this process. Other potential malignancies can be detected before cells become cancerous or at an early stage, when the disease is most treatable. Cancer is treated with surgery, radiation, chemotherapy, hormones, and immunotherapy. Worldwide, one in eight deaths is due to cancer; cancer causes more deaths than AIDS, tuberculosis, and malaria combined. When countries are grouped according to economic development, cancer is the leading

cause of death in developed countries and the second leading cause of death in developing countries (following heart diseases) (WHO, 2010).

According to recent (WHO) projections, cancer will have replaced ischemic heart disease as the overall leading cause of death worldwide in 2010. According to estimates from the International Agency for Research on Cancer (IARC), there were 12.7 million new cancer cases in 2008 worldwide, of which 5.6 million occurred in economically developed countries and 7.1 million in economically developing countries. The corresponding estimates for total cancer deaths in 2008 were 7.6 million (about 21,000 cancer deaths a day), 2.8 million in economically developed countries and 4.8 million in economically developing countries.

The estimated future burden could be much larger than given above due to the adoption of western lifestyles, such as smoking, poor diet, physical inactivity, and reproductive factors, in economically developing countries. Cancers related to these factors, such as lung, breast, and colorectal cancers, are increasing in economically transitioning countries. Rates of cancers common in Western countries will continue to rise in developing countries if preventive measures are not widely applied.

It was reported thattobacco use is the cause of about 22% of cancer deaths, another 10% is due to obesity, poor diet, lack of physical activity and drinking alcohol. Other factors include certain infections, exposure to ionizing radiation and environmental pollutants.In the developing world nearly 20% of cancers are due to infections such as hepatitis B, hepatitis C and human papillomavirus (HPV). These factors act, at least partly, by changing the genes of a cell.Typically, many genetic changes are required before cancer develops.Approximately 5–10% of cancers are due to inherited genetic defects from a person's parents.Cancer can be detected by certain signs

and symptoms or screening tests. It is then typically further investigated by medical imaging and confirmed by biopsy (American Cancer Society, 2014).

Many cancers can be prevented by not smoking, maintaining a healthy weight, not drinking too much alcohol, eating plenty of vegetables, fruits and whole grains, vaccination against certain infectious diseases, not eating too much processed and red meat, and avoiding too much sunlight exposure *(*Kushi, Doyle & McCullough, 2012).Early detection through screening is useful for cervical and colorectal cancer. The benefits of screening in breast cancer are controversial.Cancer is often treated with some combination of radiation therapy, surgery, chemotherapy, and targeted therapy. Pain and symptom management are an important part of care. Palliative care is particularly important in people with advanced disease.The chance of survival depends on the type of cancer and extent of disease at the start of treatment. In children under 15 at diagnosis the five-year survival rate in the developed world is on average 80%. For cancer in the United States the average five-year survival rate is 66% (Gøtzsche&Jørgensen, 2013)

In 2012 about 14.1 million new cases of cancer occurred globally (not including skin cancer other than melanoma). It caused about 8.2 million deaths or 14.6% of human deaths.The most common types of cancer in males are lung cancer, prostate cancer, colorectal cancer and stomach cancer. In females, the most common types are breast cancer, colorectal cancer, lung cancer and cervical cancer.If skin cancer other than melanoma were included in total new cancers each year it would account for around 40% of cases.In children, acute lymphoblastic leukaemia and brain tumours are most common except in Africa where non-Hodgkin lymphoma occurs more often (Dubas&Ingraffea, 2013).

In 2012, about 165,000 children under 15 years of age were diagnosed with cancer. The risk of cancer increases significantly with age and many cancers occur more commonly in developed countries. Rates are increasing as more people live to an old age and as lifestyle changes occur in the developing world. The financial costs of cancer were estimated at $1.16 trillion US dollars per year as of 2010 (Jemal, Bray, Center, Ferlay, Ward & Forman, 2011)

2.2.1 Prevalence of cancer

Cancer Research UK (2013) revealed that in 2012, there were an estimated 8.2 million deaths as a result of cancer in the world: 4.7 million (57%) in males and 3.5 million (43%) in females, giving a male:female ratio of 10:8 The World age-standardised (AS) mortality rate shows that there are 126 cancer deaths for every 100,000 men in the world, and 83 for every 100,000 females.Worldwide cancer mortality was stated Ferlay, Soerjomataram, Ervik, et al, (2012) to be 8,201,030 cancer deaths per year. Cancer research UK stated that Cancer incidence and mortality statistics should be interpreted bearing in mind population size and age. Non-Melanoma Skin Cancer (NMSC) is excluded. Kaposi sarcoma is included for Sub-Saharan Africa only.

United Nations, Department of Economic and Social Affairs, Population Division (2013), opined that the World AS mortality rates in males vary more than two-fold across the different world regions, ranging from 173 per 100,000 in Central and Eastern Europe to 68 per 100,000 in Western Africa (2012). In females, rates vary more than three-fold, ranging from 119 per 100,000 in Melanesia to 65 per 100,000 in South-Central Asia (2012). Armenia has the highest cancer mortality rate in males (210 per 100,000), while Zimbabwe has the highest rate in females (146 per 100,000) (2012). Out

of 84 countries worldwide, the UK has the 56th highest cancer mortality rate for males and 36th highest for females as at 2012.

Mortality rates also vary by Human Development Index (HDI) value. In males, mortality rates are 51% higher in very high HDI countries (132 cases per 100,000) compared to low HDI countries (low/medium HDI) (87 cases per 100,000) (2012). In females, rates vary only slightly between very high HDI countries (85 cases per 100,000) and low HDI countries (87 cases per 100,000) (2012).

Oguntayo, Zayyan, Kolawole, Adewuyi, Ismail, and Koledade (2011) **c**arcinoma of the cervix still remains the leading cause of gynaecological cancers in Northern Nigeria, accounting for 65.7% of all gynaecological cancers. This high incidence was also observed in Ibadan and Maiduguri (Nigeria) with 62.7% and 72.6% respectively. The incidence of carcinoma of the cervix is estimated to be 8–10/100,000 per year. The incidence differs from one place to another with a significant gap between the developing and developed nations. The fact still remains that it is the commonest gynaecological cancer in the developing nations.

The reason for this high incidence is the lack of affordable and accessible screening facilities. Also illiteracy remains a major contributing factor limiting the reduction of this incidence as our poor health decision making can only be explained by lack of knowledge. We also need to address our health seeking behaviour, how can we justify medical practitioners who do not utilize available cancer screening facilities. A study carried out in Eastern Nigeria showed that the level of awareness of cervical screening is low and even worse is the level of uptake. The level of awareness was 52.8%, while only 7.1 % had ever done the test. At the present level of uptake no

significant impact will be made on the incidence of cervical cancer in developing countries (Oguntayo et al., 2011)

The commonest symptom at presentation was abnormal vaginal bleeding as seen in 82% of cases, though most of them had more than one symptom at presentation. The stage distribution of the disease in our center is not different from what is obtainable elsewhere i.e. 78% of the patient presenting late to the hospital. Stage III carcinoma of the cervix was the most common stage seen at our center accounting for 59.5% of cases. This figure is similar to the experience in Ghana. This to a large extent affects the management as well as the prognosis of the disease. It is surprising that in the study none of our patient presented with stage O or I, Squamous cell carcinoma was the commonest histological type encountered, accounting for 95% of cases seen. This finding is very similar to those of Ilorin who had 85.7% and Maiduguri with 92% (Oguntayo et al., 2011).

In Nigeria there is no available nationwide incidence rate, however, records from the University College Hospital (UCH) Ibadan cancer registry showed that from 1980 to 2007; 179 men and 5,006 women (ratio 1:28) constituting 2.6% were diagnosed to have breast cancer. Similarly, the University of Maiduguri Teaching Hospital Cancer Registry record showed that between 2001 and 2005, a total of 1,216 cases of cancer were registered within the period under review. Breast cancer accounted for 13.9% out of which eight occurred in men and 161 occurred in women (ratio1:20). The age range in this review was between 17 and 85 years with bimodal peak age group of 40-49 years and 60-69 years while Zaria has MBC incidence of 6.0% .More specifically, little is known about the knowledge of adult males on male breast cancer especially those working in the university environment, who are responsible for imparting knowledge

and disseminating evidence based information to the younger generation and the public at large (Arulogun& Peter-Kio,2013)

In Sudan, the largest and most diverse country in Africa is experiencing a growing cancer problem, but little is presently known on tumour patterns, cancer epidemiology and ethnic or environmental cancer risk factors (Awadelkarim,Mariani-Costantini&Elwali 2012).Cancer rates are rising among the South Asian population and, more specifically, among South Asian American women from India, Pakistan, and Sri Lanka. About 1 in 9 Pakistani women will suffer from breast cancer at some point in her life. Research shows many cancer deaths could be prevented if individuals at risk were properly screened. Studies show that being situated in two different cultures may have negative health implications that may lead to low screening levels (Jafri, 2011).

Leufkens,Van Duijnhoven, Boshuizen, Siersema, Kunst,Mouw et al., (2012) Colorectal cancer (CRC) accounts for about 1 million new cases per year worldwide and it is the fourth most commoncancer in men and third most common in women.World-wide, the incidence of CRC varies at least 25-fold, with thehighest occurrence in North-America, Australia/New Zealand, Western Europe, and, in men especially, Japan.

Finally, according to Afolayan, Olaoye, Adesina&Saidu (2012) in a study conducted In University of Ilorin teaching hospital' cancer registry, over a period of ten years, 1999-2008, 568 new cases of breast cancer were registered, with 7 men and 541 women giving Male :Female ration 1:77. The youngest patient in the study was 18-year old girl; the oldest was 93 years, while the peak age of occurrence was discovered to be the 5th decade (40-49 years) which accounted for more than 27.46% (156) of all the cases.

In the North-Western geopolitical zone of Nigeria, cancer of the breast was second to cancer of the cervix, while at University College Hospital (UCH),Ibadan (situated in the South-Western geopolitical zone of Nigeria) it was the leading

malignancy among women (Afolayan et al., 2012 &Ogunbiyi,Fabowale&Ladipo, 2010). At our Centre, located in the North central geopolitical zone, breast cancer constituted 22.41% of new cancer cases registered in 5 years and accounted for 35.41% of all cancers in women (Afolayan et al, 2012). In developing or low income countries, breast cancer was characterized by late clinical presentation andin advance stage of the disease, when only chemotherapy and palliative care could be offered, and therefore associated with high mortality (Anyanwu, 2016, Parkin et al, 2012). Unfortunately there is paucity of data andsparse literature review on the trends of breast cancer in Nigeria due to few existing cancer registries most of which are either hospital-based or pathology based instead of the preferred population-based cancer registries.

2.2.2 Types of cancer

Allen (2010)reported that the most common cancer in women is actually breast cancer (31%), followed by bowel (colorectal) cancer (12%), and lung cancer (11%). When respondents were asked, without prompting, to name the top three cancers in women the majority of respondents correctly identified breast cancer as the most common cancer type in women (84%), with the next most commonly mentioned being cervical cancer (8%)and lung cancer (2%).Cervical cancer is thought to be the second most common cancer in women (49%),with just 4% stating the correct answer bowel cancer. Cervical cancer is in fact a rare cancer (<1% of all cancers). The third most common cancer mentioned lacks the focus of the first and second, but the highest mentioned cancer type is lung cancer (16%),with 11% suggesting bowel cancer

However, there are more than 100 types of cancer which had been discovered over the past years. But emphasis, should be focused on the deadliest types and the

number of death it has caused in the past years worldwide according to NCI (2013) and Mayo Clinic (2015), in the United States of America and they are:

2.2.2.1 Lung and bronchial cancer: 792,495 lives

Lung and bronchial cancer is the top killer cancer in the United States. Smoking and use of tobacco products are the major causes of it, and it strikes most often between the ages of 55 and 65, according to the NCI. There are two major types: non-small cell lung cancer, which is the most common, and small cell lung cancer, which spreads more quickly. More than 157,000 people are expected to die of lung and bronchial cancer in 2010.

2.2.2.2.Colon and rectal cancer: 268,783 lives

Colon cancer grows in the tissues of the colon, whereas rectal cancer grows in the last few inches of the large intestine near the anus, according to the National Cancer Institute. Most cases begin as clumps of small, benign cells called polyps that over time become cancerous. Screening is recommended to find the polyps before they become cancerous. Colorectal cancer is expected to kill more than 51,000 people in 2010 (NCI, 2015)

2.2.2.3 Breast cancer: 206,983 lives

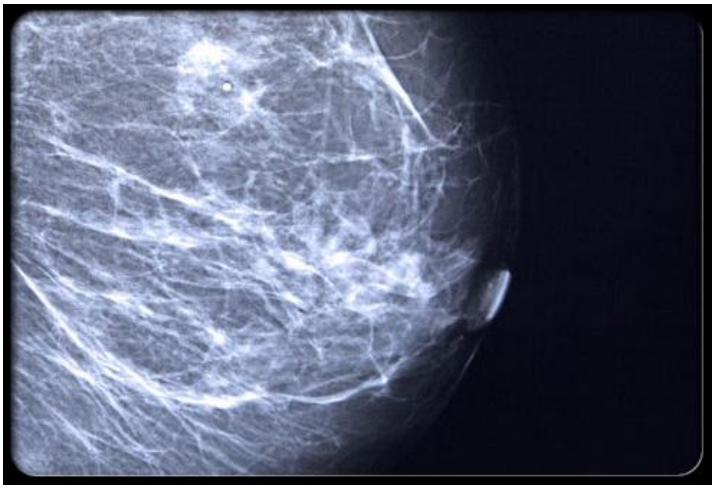


Fig. 1 Mammography image of the Breast cancer

Breast cancer is the second most common cancer in women in the United States, after skin cancer. It can also occur in men – there were nearly 2,000 male cases between 2003 and 2008. The cancer usually forms in the ducts that carry milk to the nipple or the glands that produce the milk in women. Nearly 40,000 people are expected to die from breast cancer in 2010. According to the National Cancer Institute. Breast cancer is most commonly diagnosed in women ages 55 to 64. The disease can also occur in men, but it is much less common: Male breast cancer accounts for less than one (1%)percent of all breast cancer cases, (NCI, 2013)

2.2.2.4Pancreatic cancer

Pancreatic cancer begins in the tissues of the pancreas, which aids digestion and metabolism regulation. Detection and early intervention are difficult because it often progressives stealthily and rapidly. Pancreatic cancer is expected to claim nearly 37,000 lives in 2010 (Mayo Clinic, 2016). There are two types of cancer that affect the pancreas: adenocarcinoma and endocrine cancer. Adeonocarcinomas grow in ducts where digestive juices are made. Most pancreatic cancers are of this type. Endocrine

cancers develop in pancreatic cells that release hormones, such as insulin.Symptoms of pancreatic cancer often remain absent until the disease has progressed to an advanced stage. At that time, individuals may notice a condition called jaundice in which the skin yellows (NCI, 2015)

2.2.2.5 Prostate cancer

This type of cancer is the second-leading cause of cancer deaths in men, after lung and bronchial cancer, according to the NCI. Prostate cancer usually starts to grow slowly in the prostate gland, which produces the seminal fluid to transport sperm. Some types remain confined to the gland, and are easier to treat, but others are more aggressive and spread quickly. Prostate cancer is expected to kill about 32,000 men in 2010. Only men have a prostate gland, which is just below the bladder, in front of the rectum. It is about the size of a walnut. The prostate grows from birth to adulthood. But in some men, it keeps growing. This can lead to an enlarged prostate, a non-cancerous condition called benign prostatic hyperplasia (BPH). This can cause problems passing urine (NCI, 2015)

2.2.2.6 Leukemia

There are many types of leukemia, but all affect the blood-forming tissues of the body, such as the bone marrow and the lymphatic system, and result in an overproduction of abnormal white blood cells. Leukemia types are classified by how fast they progress and which cells they affect; a type called acute myelogenousleukemia killed the most people – 41,714 – between 2003 and 2007. Nearly 22,000 people are expected to die from leukemia in 2010 (America Lung Cancer Association, 2010)

2.2.2.7 Non-Hodgkin lymphoma

This cancer affects the lymphocytes, a type of white blood cell, and is characterized by larger lymph nodes, fever and weight loss. There are several types of non-Hodgkin lymphoma, and they are categorized by whether the cancer is fast- or slow-growing and which type of lymphocytes are affected, according to the NCI. Non-Hodgkin lymphoma is deadlier than Hodgkin lymphoma, and is expected to kill more than 20,000 people in 2010.

2.2.2.8 Liver and intra-hepatic bile duct cancer

Liver cancer is one of the most common forms of cancer around the world, but is uncommon in the United States. However, its rates in America are rising. Most liver cancer that occurs in the U.S. begins elsewhere and then spreads to the liver. A closely related cancer is intra-hepatic bile duct cancer, which occurs in the duct that carries bile from the liver to the small intestine. Nearly 19,000 Americans are expected to die from liver and intra-hepatic bile duct cancer in 2010.

2.2.2.9 Ovarian cancer:

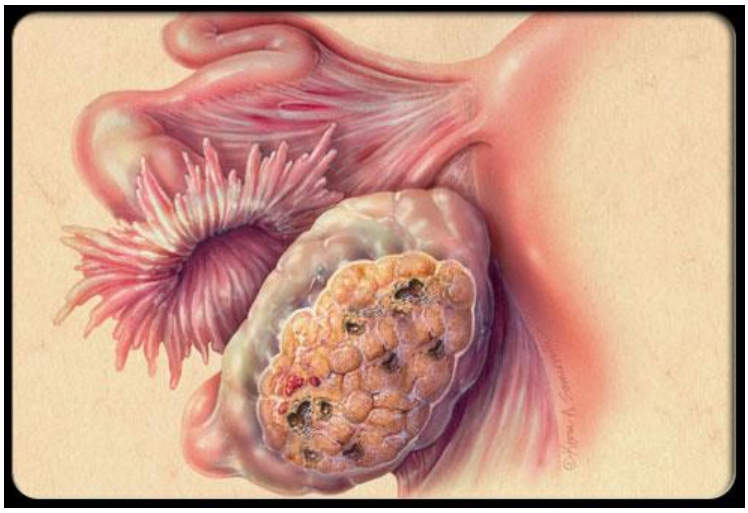


Fig. 2 Image of Ovarian Cancer

Ovarian cancer was the No. 4 cause of cancer death in women between 2003 and 2007, according to the NCI (2015), the median age of women diagnosed with it is 63. The cancer is easier to treat but harder to detect in its early stages, but recent research has brought light to early symptoms that may aid in diagnosis. Those symptoms include abdominal discomfort, urgency to urinate and pelvic pain. Nearly 14,000 women are expected to die of ovarian cancer in 2010.

2.2.2.10Esophageal cancer

This cancer starts in the cells that line the esophagus (the tube that carries food from the throat to the stomach) and usually occurs in the lower part of the esophagus, according to the Mayo Clinic. More men than women died from esophageal cancer between 2003 and 2007, according to the NCI. It is expected to kill 14,500 people in 2010. One of the most common and general type of cancer for a male and female is Skin Cancer.

2.2.2.11 Skin Cancer

Skin cancer is one of the most common cancers in the world. Non-melanoma skin cancer refers to a group of cancers that slowly develop in the upper layers of the skin. The term 'non-melanoma' distinguishes these more common kinds of skin cancer from the less common skin cancer known as melanoma, which spreads faster in the body (Timothy, 2014)

The first sign of non-melanoma skin cancer is usually the appearance of a lump or patch on the skin that doesn't heal after a few weeks.



Fig. 3 Skin infected with Cancer

In most cases, cancerous lumps are red and firm, while cancerous patches are often flat and scaly.

2.2.3 Causes of cancer

It has been estimated by American Institute of Cancer Research (AICR) and World Cancer Research Fund (WCRF) that 30-40 percent cancers can be prevented by appropriate diets, physical activities, and maintenance of appropriate body weight (WCRF/AICR, 1997). It can be higher for some individual cancers. In last three decades research on carcinogenesis has yielded sound knowledge base on cancer.

Esophageal cancer: Alcohol consumption is a major risk factor for a particular type of esophageal cancer called esophageal squamous cell carcinoma (IARC, 2013). In addition, people who inherit a deficiency in an enzyme that metabolizes alcohol have been found to have substantially increased risks of alcohol-related esophageal squamous cell carcinoma.

Breast cancer: More than 100 epidemiologic studies have looked at the association between alcohol consumption and the risk of breast cancer in women. These studies have consistently found an increased risk of breast cancer associated with

increasing alcohol intake. A meta-analysis of 53 of these studies (which included a total of 58,000 women with breast cancer) showed that women who drank more than 45 grams of alcohol per day (approximately three drinks) had 1.5 times the risk of developing breast cancer as nondrinkers (a modestly increased risk) (Hamajima, 2002). The risk of breast cancer was higher across all levels of alcohol intake: for every 10 grams of alcohol consumed per day (slightly less than one drink), researchers observed a small (7 percent) increase in the risk of breast cancer. The Million Women Study in the United Kingdom (which included more than 28,000 women with breast cancer) provided a more recent, and slightly higher, estimate of breast cancer risk at low to moderate levels of alcohol consumption: every 10 grams of alcohol consumed per day was associated with a 12 percent increase in the risk of breast cancer (Allen, Beral, Casabonne, et al, 2009).

Colorectal cancer**:** Alcohol consumption is associated with a modestly increased risk of cancers of the colon and rectum. A meta-analysis of 57 cohort and case-control studies that examined the association between alcohol consumption and colorectal cancer risk showed that people who regularly drank 50 or more grams of alcohol per day (approximately 3.5 drinks) had 1.5 times the risk of developing colorectal cancer as nondrinkers or occasional drinkers (Fedirko , 2013). For every 10 grams of alcohol consumed per day, there was a small (7 percent) increase in the risk of colorectal cancer.

Research on alcohol consumption and other cancersare numerous, studies have examined the association between alcohol consumption and the risk of other cancers, including cancers of the pancreas, ovary, prostate, stomach, uterus, and bladder. For these cancers, either no association with alcohol use has been found or the evidence for an association is inconsistent. However, for two cancers renal cell (kidney) cancer and

non-Hodgkin lymphoma (NHL) multiple studies have shown that increased alcohol consumption is associated with a decreased risk of cancer (Bellocco, Pasquali, Rota, et al 2012 &Tramacere, Pelucchi, Bonifazi, et al.2012). A meta-analysis of the NHL studies (which included 18,759 people with NHL) found a 15 percent lower risk of NHL among alcohol drinkers compared with nondrinkers (Tramacere, 2012). The mechanisms by which alcohol consumption would decrease the risks of either renal cell cancer or NHL are not understood.

Other causes of caner are;

Smoking is the leading cause of lung cancer, according to the American Lung Association. Even being near those who smoke can be dangerous. "Second-hand tobacco smoke exposure has been linked to lung cancer, with the extent of exposure determining the associated risk," a naturally occurring radioactive gas that can cause lung cancer is the No. 1 cause of lung cancer, among non-smokers, (American Lung Association, 2010).

2.2.4 Cancer Prevention Strategies

Cancer prevention strategies s can be divided into two viz; primary prevention strategies and secondary prevention strategies;

Primary prevention strategiesencompasses the elimination or reduction of exposure to recognized risk factors in susceptible populations to prevent a disease. Evidence of effective primary prevention strategies measures in reducing cancer rates are, for example, the observed decrease in cases of male lung cancer from a fall in tobacco smoking or reduced bladder cancer among dye workers after the elimination of aromatic amines' exposures. Primary prevention strategies is an important means to

improve public health, and it is by far the most cost-effective and sustainable intervention for reducing the burden of cancer globally (Tempe, 2012)

At least one-third of cancer cases that occur annually throughout the world could be prevented. Cancer prevention strategies involves firstly identifying those factors associated with the development of the disease (risk factors) as demonstrated by epidemiological studies. The risk of developing cancer depends on many factors, including the mode of exposure to a known carcinogen, and the length and intensity of the exposure. Avoiding or reducing exposure to risk determinants will result in a decrease in cancer risk.

Although personal choices, such as tobacco use, dietary and physical activity patterns, play a major role in the development of cancer, environmental and occupational factors are involved in the causation of a large number of human cancers. Human beings are exposed to many carcinogenic agents through breathing, eating, drinking or skin contact and this is a major determinant of the incidence of the disease. Exposure tends to have a larger impact on the disadvantaged segments of the population (Michael, 2014).

WHO (2012) stress that important health benefits are likely to result from reducing exposure to environmental and occupational carcinogens, since they are common risk factors for the more important non-communicable diseases. Respiratory diseases, for instance, are tied to cancer risk factors such as smoking and air pollution. Therefore, primary prevention strategies can achieve a number of ends.

Secondary prevention strategiesinclude all the activities towards diagnosis and treatment of early cancer. It is proved that detection of breast cancer in an early stage has a potential value.Early detection could mean earlier diagnosis of symptomatic breast cancer, as well as the detection of occult breast cancer through the mammography

screening in some asymptomatic women. In 2002, the Global summit consensus Conferences, recommended a step wise process for building the foundation for achieving earlier detection. Their recommendations underlined the importance to promote the empowerment of women to seek and obtain health care; to create the infrastructure for diagnosis and treatment of breast cancer and to promote early detection through breast cancer education and awareness. Their report also recommended that if recourses become available, early detection effort should be expanded to include mammography screening.

However, programs for early detection have little value if the existing health care services cannot provide proper breast cancer treatment. Breast cancer treatment must be available, promptly accessible and affordable

Other ways of preventing cancer are through dietary management.

2.2.5 General Symptoms of Cancer

A.C.S. (2014) stressed that cancer is a group of diseases that can cause almost any sign or symptom. The signs and symptoms will depend on where the cancer is, how big it is, and how much it affects the organs or tissues. If a cancer has spread (metastasized), signs or symptoms may appear in different parts of the body. As a cancer grows, it can begin to push on nearby organs, blood vessels, and nerves. This pressure causes some of the signs and symptoms of cancer. If the cancer is in a critical area, such as certain parts of the brain, even the smallest tumour can cause symptoms. Sometimes cancer starts in places where it won't cause any signs or symptoms until it has grown quite large. Cancers of the pancreas, for example, usually don't cause symptoms until they grow large enough to press on nearby nerves or organs (this causes back or belly pain). Others may grow around the bile duct and block the flow of bile. This causes the

eyes and skin to look yellow (jaundice). By the time a pancreatic cancer causes signs or symptoms like these, it's usually in an advanced stage. This means it has grown and spread beyond the place it started the pancreas.

A cancer may also cause symptoms like fever, extreme tiredness, or weight loss. This may be because cancer cells use up much of the body's energy supply, or they may release substances that change the way the body makes energy from food. Cancer can also cause the immune system to react in ways that produce these signs and symptoms.Sometimes, cancer cells release substances into the bloodstream that cause symptoms that are not usually linked to cancer. For example, some cancers of the pancreas can release substances that cause blood clots in veins of the legs. Some lung cancers make hormone-like substances that raise blood calcium levels. This affects nerves and muscles, making the person feel weak and dizzy.

Other general signs and symptoms of cancer according to A.C.S. (2015) include;

- **Unexplained weight loss**

Most people with cancer will lose weight at some point. When you lose weight for no known reason, it's called an unexplained weight loss. An unexplained weight loss of 10 pounds or more may be the first sign of cancer. This happens most often with cancers of the pancreas, stomach, esophagus (swallowing tube), or lung.

- **Fever**

Fever is very common with cancer, but it more often happens after cancer has spread from where it started. Almost all people with cancer will have fever at some time, especially if the cancer or its treatment affects the immune system. (This can make it

harder for the body to fight infection.) Less often, fever may be an early sign of cancer, such as blood cancers like leukemia or lymphoma.

- **Fatigue**

Fatigue is extreme tiredness that doesn't get better with rest. It may be an important symptom as cancer grows. But it may happen early in some cancers, like leukemia. Some colon or stomach cancers can cause blood loss that's not obvious. This is another way cancer can cause fatigue.

- **Pain**

Pain may be an early symptom with some cancers like bone cancers or testicular cancer. A headache that does not go away or get better with treatment may be a symptom of a brain tumor. Back pain can be a symptom of cancer of the colon, rectum, or ovary. Most often, pain due to cancer means it has already spread (metastasized) from where it started.

- **Skin changes**

Along with skin cancers, some other cancers can cause skin changes that can be seen. These signs and symptoms include; Darker looking skin (hyperpigmentation), Yellowish skin and eyes (jaundice), Reddened skin (erythema), Itching (pruritis) and Excessive hair growth.Other signs and symptoms of certain cancers include;

- **Change in bowel habits or bladder function**

Long-term constipation, diarrhea, or a change in the size of the stool may be a sign of colon cancer. Pain when passing urine, blood in the urine, or a change in bladder

function (such as needing to pass urine more or less often than usual) could be related to bladder or prostate cancer. Report any changes in bladder or bowel function to a doctor.

- Sores that do not heal

Skin cancers may bleed and look like sores that don't heal. A long-lasting sore in the mouth could be an oral cancer. This should be dealt with right away, especially in people who smoke, chew tobacco, or often drink alcohol. Sores on the penis or vagina may either be signs of infection or an early cancer, and should be seen by a health professional.

- White patches inside the mouth or white spots on the tongue

White patches inside the mouth and white spots on the tongue may be leukoplakia. Leukoplakia is a pre-cancerous area that's caused by frequent irritation. It's often caused by smoking or other tobacco use. People who smoke pipes or use oral or spit tobacco are at high risk for leukoplakia. If it's not treated, leukoplakia can become mouth cancer. Any long-lasting mouth changes should be checked by a doctor or dentist right away.

- Unusual bleeding or discharge

Unusual bleeding can happen in early or advanced cancer. Coughing up blood may be a sign of lung cancer. Blood in the stool (which can look like very dark or black stool) could be a sign of colon or rectal cancer. Cancer of the cervix or the endometrium (lining of the uterus) can cause abnormal vaginal bleeding. Blood in the urine may be a sign of bladder or kidney cancer. A bloody discharge from the nipple may be a sign of breast cancer.

- Thickening or lump in the breast or other parts of the body

Many cancers can be felt through the skin. These cancers occur mostly in the breast, testicle, lymph nodes (glands), and the soft tissues of the body. A lump or thickening may be an early or late sign of cancer and should be reported to a doctor, especially if you've just found it or notice it has grown in size. Keep in mind that some breast cancers show up as red or thickened skin rather than a lump.

- Indigestion or trouble swallowing

Indigestion or swallowing problems that don't go away may be signs of cancer of the esophagus (the swallowing tube that goes to the stomach), stomach, or pharynx (throat). But like most symptoms on this list, they are most often caused by something other than cancer.

- Recent change in a wart or mole or any new skin change

Any wart, mole, or freckle that changes colour, size, or shape, or that loses its sharp border should be seen by a doctor right away. Any other skin changes should be reported, too. A skin change may be a melanoma which, if found early, can be treated successfully. See pictures of skin cancers and other skin conditions in our Skin Cancer Image Gallery.

- Nagging cough or hoarseness

A cough that does not go away may be a sign of lung cancer. Hoarseness can be a sign of cancer of the larynx (voice box) or thyroid gland (A.C.S., 2014).

2.2.6 PredisposingFactor for Cancer

- **Age**

Age has been described as a risk factor of cancer according to NCI (2015) advancing age is the most important risk factor for cancer overall, and for many

individual cancer types. According to the most recent statistical data from NCI's Surveillance, Epidemiology, and End Results program, the median age of a cancer diagnosis is 66 years. This means that half of cancer cases occur in people below this age and half in people above this age. One-quarter of new cancer cases are diagnosed in people aged 65 to 74. A similar pattern is seen for many common cancer types. For example, the median age at diagnosis is 61 years for breast cancer, 68 years for colorectal cancer, 70 years for lung cancer, and 66 years for prostate cancer. But the disease can occur at any age. For example, bone cancer is most frequently diagnosed among people under age 20, with more than one-fourth of cases occurring in this age group. And 10 percent of leukemias are diagnosed in children and adolescents under 20 years of age, whereas only 1 percent of cancer overall is diagnosed in that age group. Some types of cancer, such as neuroblastoma, are more common in children or adolescents than in adults. Some cancers, such as Wilmstumor, retinoblastoma, and neuroblastoma, occur almost exclusively in children. These cancers result from suppressor gene mutations that are either inherited or that occur during fetal development. However, most other cancers are more common in adults, particularly in older people. In the United States, more than 60% of cancers occur in people older than 65. The increased cancer rate is probably due to a combination of increased and prolonged exposure to carcinogens and weakening of the body's immune system. (Ali-Risasi, et al, 2014)

NCI (2015) Surveillance, Epidemiology, and End Results program's statistics have revealed thatage is the most important risk factor for cancer when compared with others. According to the most recent statistical data, the median age of a cancer diagnosis is 66 years. This means that half of cancer cases occur in people below this age and half in people above this age. One-quarter of new cancer cases are diagnosed in people aged 65

to 74. A similar pattern is seen for many common cancer types. For example, the median age for breast cancer diagnosis is 61 years, 68 years for colorectal cancer, 70 years for lung cancer, and 66 years for prostate cancer.

- **Family history and genetic factors**

Some families have a significantly higher risk of developing certain cancers. Sometimes the increased risk is due to a single gene and sometimes it is due to several genes interacting together. Environmental factors common to the family may alter this genetic interaction and cause cancer. An extra or abnormal chromosome may increase the risk of cancer. For example, people with Down syndrome, who have three instead of the usual two copies of chromosome 21, have a 12 to 20 times higher risk of developing acute leukemia, but paradoxically, a lower risk of developing carcinomas. Genes Cause Cancer, abnormalities (mutations) affecting critical genes are believed to contribute to the development of cancer. These genes produce proteins that regulate growth and alter cell division and other basic cell properties. Gene mutations causing cancer may result from the damaging effects of chemicals, sunlight, drugs, viruses, or other environmental agents. In some families, these abnormal cancer-causing genes are inherited (N.C.I. 2015)

There are two major categories of genes involved with cancer according to N.C.I. (2015) which are oncogenes and tumour suppressor genes.

i. Oncogenes are mutated or amplified forms of genes that in their normal state regulate cell growth. If they become overactive and signal cells to multiply in an uncontrolled manner, cancer may develop. The mutation of oncogenes is not entirely understood, but many factors may contribute to cancer in human which include; X-rays, Sunlight, Toxins at work, in the air, or in chemicals (for example, in tobacco smoke)

ii. Tumour suppressor genes normally suppress the development of cancers by coding for proteins that repair damaged DNA and suppress growth. Cancer is more likely when

DNA damage impairs tumour suppressor gene function, allowing affected cells to multiply continuously. Suppressor gene mutations, inherited from a parent, may underlie a certain percentage of cases of breast cancer, usually occurring at a young age and in multiple family members.

- **Environmental factors**

Numerous environmental factors increase the risk of developing cancer. Tobacco smoke contains carcinogens that substantially increase the risk of developing cancers of the lungs, mouth, throat, esophagus, kidneys, and bladder. Pollutants in the air or water, such as asbestos, industrial waste, or cigarette smoke, can increase the cancer risk. Many chemicals are known to cause cancer, and many others are suspected of doing so. For example, asbestos exposure may cause lung cancer and mesothelioma (cancer of the pleura). Exposure to pesticides is associated with a higher risk of some types of cancer (for example, leukemia and non-Hodgkin lymphoma). The time between exposure to the chemicals and development of the cancer may be many years (N.C.I. 2013).

Exposure to radiation is a risk factor for the development of cancer. Extended exposure to ultraviolet radiation, primarily from sunlight, causes skin cancer. Ionizing radiation is particularly carcinogenic. X-rays (including computed tomography [CT]) use ionizing radiation, and people who have many tests that use high doses of x-rays have an increased risk of cancer (see Overview of Imaging Tests : Risks of Radiation in Medical Imaging). Exposure to the radioactive gas radon, which is released from soil, increases the risk of lung cancer. Normally, radon disperses rapidly into the atmosphere and causes no harm. However, when a building is placed on soil with a high radon content, radon can accumulate within the building, sometimes causing levels in the air that are sufficiently high enough to cause harm. Radon is breathed into the lungs, where it may eventually cause lung cancer. In exposed people who also smoke, the risk of lung cancer

is further increased.Many other substances have been investigated as possible causes of cancer, but more study is needed to identify those chemicals that increase the risk of cancer (N.C.I. 2015).

In addition, estimations showed that at least one out of three of all cancer cases could be prevented based on current knowledge (Danaei et al. 2015). Although preventable risk factors such as tobacco use, alcohol consumption, unhealthy diet, and physical inactivity play a major role in the development of cancer, a range of environmental factors and occupational exposures also contribute significantly to the global cancer burden (Parkin et al., 2011& President's Cancer Panel, 2010). Exposures to occupational carcinogens are often preventable, the estimate above shows that a lot still need to be done on awareness creation, attitude modification and engaging in favourable health practices to ensure the world will stand any chance of fighting the deadly scourge called cancer.

The President's Cancer Panel (2010) identifies reduction of people's exposures to environmental carcinogens as way to prevent cancer and many known human carcinogens (e.g., asbestos, benzene, formaldehyde, radon, and ultraviolet radiation) are highly prevalent in the general environment, consumer products, or the workplace

- **Geography**

The risk of cancer varies according to where people live, although the reasons for the geographic differences are often complex and poorly understood. This geographic variation in cancer risk is probably multifactorial: a combination of genetics, diet, and environment. For example, the risk of colon and breast cancers is low in Japan, yet in Japanese people who immigrate to the United States, the risk increases and eventually equals that of the rest of the American population. In contrast, the Japanese have extremely high rates of stomach cancer. When these people immigrate to the United

States and eat a Western diet, the risk declines to that of the United States, although the decline may not be evident until the next generationNCI,2015)

- **Diet**

Substances consumed in the diet can increase the risk of cancer. For instance, a diet high in unsaturated fat, and obesity by itself, has been linked to an increased risk of colon, breast, and possibly prostate cancer. People who drink large amounts of alcohol are at much higher risk of developing head and neck and esophageal cancer. A diet high in smoked and pickled foods or in barbecued meats increases the risk of developing stomach cancer. People who are overweight or obese have a higher risk of cancer of the breast, lining of the uterus (endometrium), colon, kidneys, and esophagus (A.C.S., 2014).

- **Drugs and medical treatments**

Certain drugs and medical treatments may increase the risk of developing cancer. For example, estrogens in oral contraceptives may slightly increase the risk of breast cancer, but this risk decreases over time. The hormones estrogen and progestin that may be given to women during menopause (hormone replacement therapy) also increase the risk of breast cancer. Diethylstilbestrol (DES) increases the risk of breast cancer in women who took the drug and in daughters of these women who were exposed before birth. Tamoxifen, a drug used to treat breast cancer, increases the risk of endometrial cancer. Long-term use of testosterone or other male hormones (androgens) may slightly increase the risk of liver cancer. Treatment of cancer with certain chemotherapy drugs (alkylating agents) and with radiation therapy may increase the risk of people developing a second cancer years later (A.C.S., 2015).

- **Infections**

Several viruses are known to cause cancer in humans, and several others are suspected of causing cancer. The human papillomavirus (HPV, which causes genital warts) is a major cause of cervical cancer in women and penile and anal cancer in men. HPV also causes some cancers of the throat. Hepatitis B virus or hepatitis C virus can cause liver cancer. Some human retroviruses cause lymphomas and other cancers of the blood system. Some viruses cause types of cancer in certain countries but not in others. For instance, the Epstein-Barr virus causes Burkitt lymphoma (a type of cancer) in Africa and cancers of the nose and pharynx in China. Some bacteria also may cause cancer. Helicobacter pylori, which causes stomach ulcers, can increase the risk of stomach cancer and lymphomas. Some parasites can cause cancer. Schistosomahaematobium can cause chronic inflammation and scarring of the bladder, which may lead to cancer. Another type of parasite, Opisthorchissinensis, has been linked to cancer of the pancreas and bile ducts.

- **Inflammatory disorders**

Inflammatory disorders often increase the risk of cancer. Such disorders include ulcerative colitis and Crohn disease (which can result in colon cancer and bile duct cancers (Chabner& Thompson, 2013). Based on extensive reviews of research studies, International Agency for Research on Cancer in 2010 and 2012 there is a strong scientific consensus of an association between alcohol drinking and several types of cancer (NCI, 2015). In a report on Carcinogens, the National Toxicology Program of the US Department of Health and Human Services lists consumption of alcoholic beverages as a known human carcinogen. The research evidence indicates that the more alcohol a person drinks particularly the more alcohol a person drinks regularly over time the higher the risk of developing an alcohol-associated cancer. Based on data from 2009, an

estimated 3.5 percent of all cancer deaths in the United States (about 19,500 deaths) were alcohol related (Nelson, Jarman, Rehm, et al., 2013).

- **Infectious Agents**

Certain infectious agents, including viruses, bacteria, and parasites, can cause cancer in infected people or increase the risk that cancer will form. Some viruses can disrupt normal controls on cell growth and proliferation. They may also increase the chance that a person will be affected by other cancer risk factors, such as UV radiation or substances in tobacco smoke that cause cancer. Some viruses, bacteria, and parasites also cause chronic inflammation, which may lead to cancer Most of the viruses that are linked to an increased risk of cancer can be passed from one person to another through blood and/or other body fluids. One can lower your risk of infection by getting vaccinated, not having unprotected sex, and not sharing needles (N.C.I., 2015). Examples of infectious agents includes:

➢ Human Papillomaviruses (HPVs): Infection with high-risk types of HPV cause nearly all cervical cancers. They also cause most anal cancers and many, oropharyngeal, vaginal, vulvar, and penile cancers. In the United States, experts recommend that children ages 11 and 12 receive a vaccine that prevents infection with the types of HPV that cause most HPV-associated cancers. Children as young as age 9 and adults as old as 26 can also be vaccinated. HPV infections in the cervix can be found with specific tests. Although HPV infections themselves cannot be treated, the cervical cell changes these infections can cause over time can be treated (N.C.I., 2015).

- **Hepatitis B Virus and Hepatitis C Virus (HBV and HCV)**

Chronic infections with HBV or HCV can cause liver cancer. Since the 1980s, infants in the United States and most other countries have been routinely vaccinated against HBV infection. If you are an adult who has not been vaccinated against HBV and have an increased risk of HBV infection, experts recommend that you get vaccinated as soon as possible. Vaccination is especially important for healthcare workers and other professionals who come into contact with human blood. The U.S. Centers for Disease Control and Prevention strategies (CDC) also recommends that everyone in the United States born from 1945 through 1965 be tested for HCV, along with other populations at increased risk for HCV infection. If you think you may be at risk for HBV or HCV infection, ask your doctor about being tested. These infections do not always cause symptoms, but tests can show whether you have the virus. If so, your doctor may suggest treatment. Also, your doctor can tell you how to keep from infecting other people (N.C.I., 2015).

- Human Immunodeficiency Virus (HIV): HIV is the virus that causes AIDS. Infection with HIV weakens the immune system and makes the body less able to fight off other infectious agents that cause cancer. People infected with HIV have an increased risk of Kaposi sarcoma, lymphoma, and cancers of the cervix, liver, lung, and anus. HIV infection does not always cause symptoms. If you think you may be at risk for HIV, ask your doctor about being tested. If you test positive, your doctor may suggest treatment and can tell you how to keep from infecting other people. Epstein-Barr Virus (EBV) Infection with EBV, a type of herpes virus, has been linked to an increased risk of lymphoma and cancers of the stomach and nasopharynx. Human Herpesvirus 8 (HHV8) HHV8, also known as Kaposi sarcoma-associated herpes virus (KSHV), can cause Kaposi sarcoma. Merkel Cell Polyomavirus (MCPyV) MCPyV can cause Merkel cell carcinoma, which is a rare type of skin cancer (N.C.I., 2015)

➢ Helicobacter pylori (H. pylori)**:** H. pylori is a type of bacteria that can cause stomach cancer and a type of lymphoma in the stomach lining. It can also cause stomach ulcers. If you have stomach problems, see a doctor. Infection with H. pylori can be found and treated. Schistosomahematobium. This flatworm (fluke), which is found in Africa and the Middle East, can cause bladder cancer. Opisthorchisviverrini. This flatworm (fluke), which is found in Southeast Asia, can cause cholangiocarcinoma (cancer of the bile ducts in the liver) (N.C.I., 2015).

- **Obesity**

Obesity is a condition in which a person has an abnormally high and unhealthy proportion of body fat. To measure obesity, researchers commonly use a scale known as the Body Mass Index (BMI). BMI is calculated by dividing a person's weight (in kilograms) by their height (in meters) squared. BMI provides a more accurate measure of obesity or being overweight than weight alone. The known thing about the relationship between obesity and cancer is that,Obesity is associated with increased risks of the following cancer types, and possibly others as well: Esophagus, Pancreas, Colon and rectum, Breast (after menopause), Endometrium (lining of the uterus), Kidney, Thyroid, and Gallbladder (Tsugane, 2014)

A study NCI Surveillance Epidemiology, and End Results (SEER) data (2014), estimated that in 2007 in the United States, about 34,000 new cases of cancer in men (4 percent) and 50,500 in women (7 percent) were due to obesity. The percentage of cases attributed to obesity varied widely for different cancer types but was as high as 40 percent for some cancers, particularly endometrial cancer and esophageal adenocarcinoma. A projection of the future health and economic burden of obesity in 2030 estimated that continuation of existing trends in obesity will lead to about 500,000 additional cases of cancer in the United States by 2030. This analysis also found that if

every adult reduced their BMI by 1 percent, which would be equivalent to a weight loss of roughly 1 kg (or 2.2 lbs) for an adult of average weight, this would prevent the increase in the number of cancer cases and actually result in the avoidanceof about 100,000 new cases of cancer (N.C.I., 2015)

Several possible mechanisms have been suggested to explain the association of obesity with increased risk of certain cancers:

- Fat tissue produces excess amounts of estrogen, high levels of which have been associated with the risk of breast, endometrial, and some other cancers.
- Obese people often have increased levels of insulin and insulin-like growth factor-1 (IGF-1) in their blood (a condition known as hyperinsulinemia or insulin resistance), which may promote the development of certain tumors.
- Fat cells produce hormones, called adipokines, that may stimulate or inhibit cell growth. For example, leptin, which is more abundant in obese people, seems to promote cell proliferation, whereas adiponectin, which is less abundant in obese people, may have antiproliferative effects.
- Fat cells may also have direct and indirect effects on other tumor growth regulators, including mammalian target of rapamycin (mTOR) and AMP-activated protein kinase.
- Obese people often have chronic low-level, or "subacute," inflammation, which has been associated with increased cancer risk.

Other possible mechanisms include altered immune responses, effects on the nuclear factor kappa beta system, and oxidative stress.

Conceptual Framework

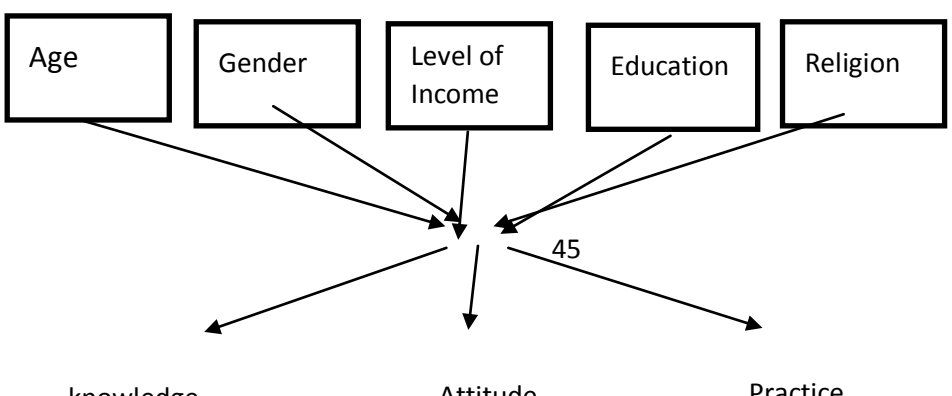


Figure 4 Researcher's Developed conceptual Framework

2.3 Theoretical Framework

KAP Theory

The **Critical Knowledge Theory** approaches knowledge as an ongoing dialogue. This theory suggests that an individual is ignorant or holds a belief about a health matter, the educator attempts to change or ascertain the individual's level of knowledge towards the health or concept through questioning the respondent. As the person answer the health question the person's knowledge and belief will begin to change, new question arise and the respondent ask the educator some questions, the educator respond to these question (Diagnam, 2012). This theory posits that people know about things and events around them through their senses and that knowledge can mean any of the following, to:

- Be aware of something,
- Be certain about it,
- Have understanding or gasp of the object of knowledge,
- Be familiar with something
- Be able to recognize or identify something
- Ability to distinguish between things,
- Have enough experience and training and to be intimate with something (Daignam, 2012)

Attitude Theory of Cognitive Dissonance posits that attitudes predict behaviour and that where attitude and behaviour are not related cognitive dissonance results. Cognitive dissonance refers to an individual's motivation to reduce the discomfort (dissonance) caused by two inconsistent thoughts. The attitude theory is based principally on observational learning. The theory explains how people acquire and maintain certain behavioral patterns.

Grizzel, (2013) stated that behaviour is affected by environmental influences, personal factors and attributes of the behaviour itself. The central tenet of theory being the concept of self-efficacy. This is to say that one must believe in his ability to perform behaviour, and he must see an incentive to doing so.

Practice Theory of Self-efficacy holds that, the belief that one has is able to control one's practice of a practice of a particular behaviour. Self-efficacy refers to one's belief that one can successfully execute a particular action. People are more likely to engage in certain practice when they believe that they are capable of executing those practices successfully. This mean that they will have high self-confidence towards action. In layman's terms, self-efficacy could be looked at as self-confidence towards action, in analyzing this, individuals tend to choose activities they will be successful in doing and they tend to put more effort to activity and behaviour they consider they could achieve successfully. Self-efficacy is so effective because of its influence on certain effective because of its influence on certain effective behaviour control (Banddurai, 1997).

Application of the theory to the study

Impact on disease due to poor knowledge, attitude and practice is a complex issue. The occurrence and severity of cancer related death in endemic areas is greatly enhanced by human behaviour with regards the practice of healthy lifestyle and avoidance of risk factors. Poor practice is a major problem in developing countries Nigeria including. Cancer is a huge burden in developing countries; causing many elites to lose their lives.

Knowledge, attitudes, and Practice are some of the measures which are thought to be on the causal pathway to behaviour. Poor knowledge and practice of, and attitudes to cancer have negative consequences on the health of the people and overall overall development.

Health Belief Model

The Health Belief Model (HBM) originated from psychosocial theory, designed by Lewin, which is based on a phenomenological orientation to positive and negative influences in the individual's subjective world as they affect behaviour. The model is a value expectancy model that examines an individual's behaviour, values, and judgment of how an action will provide a positive outcome. The HBM is generalizable in numerous settings, it is cost-conscious, and prompts hypotheses for testing, not to mention it is a proficient predictor of participation in prevention strategies screening programs (Poss, 2010).

The examination of the components associated with the HBM model will further justify its worthiness. A perceived benefit is the individual belief that a specific actionwill be beneficial in reducing the health threat. The lack of uniformity in testing themodel, especially in the way variables are operationalized that the measures andcomponents used in the HBM have not been refined or standardized (Poss, 2010).

HBM examines the effects of health beliefs and decisions methods in making behavioural changes. This model is appropriate for this study because it examines thepsycho-social factors associated with compliance to prostate cancer prevention strategies. Severity is a person's perception of the symptoms from contracting the illness. HBM examines difficulties in performing the specific behaviours of interest and the negative things that could happen from performing those behaviours, cues to action such as environmental events, bodily events, or stories in the media that trigger perceptions of susceptibility (Daddario, 2007).

Mcgriff, (2010) opined that HBM posits that illness knowledge factors, perceived susceptibility to a disease and perceived severity of the disease influence preventative

health behaviours. The effects of these factors are influenced by the benefits and efficacy of preventive action and perceived barriers to preventive activities. HBM focuses on the attitudes and beliefs of individuals. The HBM is based on individual participation in health-related action if that individual: (1) feels that a negative health condition can be avoided; (2) has a positive expectation that he/she will avoid a negative health condition by participation in prevention strategies measures; and (3) believes that he/she can successfully participate in the health-related action.

Health Belief Model attempts to reduce the health epidemic by incorporating prevention strategies components susceptibility, severity, benefits, barriers, actions, and self-efficacy. Health Belief Model examines dependably related variables for preventative health behaviour outcomes. Severity has been deemed as the least reliable among HBM variables. Action is the link between intention and implementation execution of the preventative measure. Self-efficacy is an individual's belief that they have the power to implement an action to prevent prostate cancer. The model reviews demographics and socio-psychological factors that are related to healthcare behaviour. Self-report that has commonly been used in empirical studies on the HBM conveys concern about recall or other biases associated with this reporting style. The HBM does not apply numeric coefficients to the concepts of susceptibility, severity, benefits, and barriers, nor does it delineate the specific nature of the relationships among the variables. Some researchers add variables and others delete variables from the original model. The HBM includes normative or cultural factors that may influence health-seeking behaviours (Poss, 2010).

Application of the theory

The HBM examines perceived barriers to seeking care, Factors that hinder people from engaging in health-seeking behaviours are analysed barriers as defined by the HBM

are the individual's perception about illness and disease. Poss (2010) study shows that African-American men's own perceptions may be a barrier to early prostate cancer detection. It is imperative that African-American males not feel they have overcome obstacles, perceived barriers, to obtain the benefits of cancerprevention strategies.

HBM is designed to precipitate the health-related behaviours of African Americans with cancer. It seeks an understanding of an individual's motivation to engage or not to engage in certain health prevention strategies programs and or measured to determine patterns of preventive health practices. Developed in the 1950's, the Health Belief Model (HBM) was designed to explain the failure of people to engage in preventative health behaviours and programs.

2.4 Knowledge and Cancer Prevention Strategies

A study on Knowledge, Attitudes, and Demographic Factors Influencing Cervical Cancer Screening Behaviour of Zimbabwean Women conducted by Sylvia, Carolyn, and Timothy (2011), revealed that of the 514 participants, 91% had never had cervical screening,and81%hadnopreviousknowledgeofthecervical screening tests. Despite never having had cervical screening and lacking prior knowledge of its purpose, 80% of the females expressed positive beliefs about cervical screening tests after an educational intervention. This shows low level of knowledge of cervical cancer

Sylvia et.al. (2011) further revealed the following:Females who had prior knowledge of cervical screening tests were 83% more likely to access cervical screening facilities compared to those who had no prior knowledge;Agewas asignificant factor,Women aged 45 years had a 90% less chance of accessing cervical screening compared with women between 25 and 34 years old. The participants' occupations were a significant factor; Females who worked as market vendors had 96% less chance of

accessing cervical screening compared with females who were peasant farmers;The village where the participant resided also was a significant factor. Females who lived in resettlement villages had an 86% less chance of accessing cervical screening compared with females who lived in traditional rural reserve. After controlling for institutional barriers and positive beliefs, the respondent's type of village was significantly associated with the likelihood of accessing cervical screening (p=0.00). The study further revealed that, females from resettlement villages had only about one-fifth the likelihood of accessing cervical screening compared with females in the traditional rural reserve villages. Females from the mining villages had a 4.47% chance of accessing cervical screening compared with females in the traditional rural reserve villages.

Shepherd and McInerney (2006) stressed that lack of basic knowledge and an effective information delivery system for breast cancer further threatens the life and well-being of women. Breast cancer is silent killer basically for women with no knowledge and are ignorant about breast cancer and breast diagnostic screening methods for early detection. Knowledge is a necessary component but it is insufficient unless the cultural relevance is assured by the health professional providing direct healthcare (Dow,Meneses&Yarbro 2007). Omotara, Yahya, Amodu and Bimba(2012) also reported lack of information regarding cancer to the rural and urban populace of Nigeria, saying that it is responsible for the negative perception of the curability of a cancer detected early and the efficacy of screening tests. Furthermore, as stated by Omotara*et. al* (2012), silence and lack of understanding of the concept of risk factors associated with cancer discourage people from seeking early intervention or even admitting that the symptoms that they are experiencing are cancer related. Level of awareness regarding how to perform simple life-saving diagnostic breast checks such as Breast Self-Examination (BSE) further compounds the problem of late detection. Empowerment of women with

information on BSE is of paramount importance, especially in countries without modern technologies for breast cancer screening (Shepherd &McInerney 2007).

Ali-Risasi,Mulumba, Verdonck, Broeck and Praet (2014) The women were first asked which diseases of the female genital organs they knew. The diseases that were most frequently were infections (mentioned by 83.6% of the women), myoma (mentioned by 47.9%), dysmenorrhea (43.1%) and cysts of the ovaries (37.2%). Cervical cancer came on the seventh place of this list; it was mentioned spontaneously by 64 women (12.2%). When the interviewer then specifically enquired about cervical cancer, the majority of the women (81.9%) told that they had heard about it, mostly through conversations with other people (73.4%) and less frequently through the media (30.3%). Only 3.7% got the information from a physician, a medical centre or a hospital. A minority of women (15.1%) knew a person in their neighbourhood who became victim to the disease. Fifteen percent of the women considered that having multiple sexual partners is an underlying cause of cervical cancer. Only 16.8% had ever heard of cervical smears.

Electronic media and TV were noted as the most important sources of getting information on breastcancer in Iran, while health care providers were ranked last. Relatives andfriends also were the most common sources for getting information among less educated women (Hatefnia,Niknami, Bazargan et al, 2010). Regardless of low knowledge of breast cancer in Asian countries, only a few studies evaluated on the methods for increasing awareness by health care providers and local awareness campaigns (Moshfeghi&Mohammadbeigi, 2010).Asadzadeh, Broeders, Kiemeney, and Verbeek, (2011). Affirmed that women's knowledge regarding the breast cancer symptoms and screening behaviours is a significant factor to detection of less advanced stageand intensify women's participation in cancer preventive behaviours.

Women's awareness concerning breast self-examination and physical examination must be taken into account in screening protocols in younger women to further promote breast cancer screening. As breast cancer is a widespread disease in Asian countries, recommendations on breast cancer screening, and its intervals must be made clear to women, and this is a primer role among healthcare professionals. The Ministry of Health, health care organizations, national cancer councils, cancer programming and research institutes, and advocates in Asian countries would allocate funds to carry out cancer research in identified priority areas to help reduce the breast cancer disease (Ahmadian&Samah 2012).

Ahmed (2012)stated that the level of cancer awareness is low amongst Sudanese northern state inhabitants even after delivering an educational program. More than 30% of cancer cases could be prevented by modifying lifestyle or avoiding key risk factors. Helicobacter pylori, hepatitis B and C viruses, and HPV were responsible for 1.9 million cases, mainly gastric, liver, and cervix uteri cancers. Around 30% of infection-attributable cases occur in people younger than 50 years.

Kamau(2011)stated that Cancer fatalism has continued to increase among especially young women, this is the belief that women have had that diagnosis of cancer directly translates to inevitable death therefore they find it better to avoid going for screening and are with no knowledge whatsoever on their health status.

A study of Loo, Woo, Chin , Yam, Ang, and Yim(2013)conducted in Malaysia on 965 students (36.0% males and 64.0% females) and founded that the majority of the students were from private universities (73.1%) while 26.9% were from public universities. Majority of the students had low awareness (94.4%) and knowledge (64.9%) scores but have high attitude scores (76.9%). Awareness, knowledge and attitude scores were significantly higher among female students and science faculty

students. Only knowledge score was significantly higher among students from Chinese ethnicity. Emotional and practical barriers were determined as the main barrier in seeking medical advice among the participants.

Rashwan, Lubis and Ni (2011)mentioned that the students had poor knowledge level of cervical cancer, its prevention strategies and HPV vaccination acceptance. More efforts should be made to improve cervical cancer knowledge and awareness of the public especially secondary school students in Sarawak. This in turn will enhance the practice of prevention strategies against cervical cancer among students.

On the other hands, a majority of participants knew that sun exposure increases the risk for skin cancer; however, only 29% correctly identified behaviours that reduce this risk. Mean attitude score was 5.26 ± 2.73 (11 questions). Sixty-nine percent agreed that all people should take precautions against skin cancer; however, only 51% believed they themselves should practice sun safe behaviours. Mean behaviour score was 1.29 ± 1.22 (9 possible). Only 3.1% reported avoiding the sun during peak hours, and only 5.1% regularly use sunscreen when exposed to the sun (SpradlinBass, Hyma&Keathley ,2010).

In contrast, Livingston, White, Ugoni and Borland (2010)found that Over 80% of adolescents at both time periods knew about the issues related to skin cancer prevention strategies, frequency of burning and burning on cloudy days. When the confounding variables were adjusted for, the risk of adolescents knowing that skin cancer is easily cured if detected early, decreased by 3% over time. However, the risk of adolescents knowing that one can get sun burnt on cloudy days was 4% greater over time. There was no change in the proportion of adolescent students who knew that one could get skin cancer without getting burnt often.

Gigerenzer, Mata and Frank(2010)conducted a study on "Public knowledge of benefits of breast and prostate cancer screening in Europe" which says that making informed decisions about breast and prostate cancer screening requires knowledge of its benefits. However, country-specific information on public knowledge of the benefits of screening is lacking. Face-to-face computer-assisted personal interviews were conducted with 10,228 persons selected by a representative quota method in nine European countries (Austria, France, Germany, Italy, the Netherlands, Poland, Russia, Spain, and the United Kingdom) to assess perceptions of cancer-specific mortality reduction associated with mammography and prostate-specific antigen (PSA) screening.

Participants in the study of Gigerenzer et al., (2010) were also queried on the extent to which they consulted 14 different sources of health information. Correlation coefficients between frequency of use of particular sources and the accuracy of estimates of screening benefit were calculated. Ninety-two percent of women overestimated the mortality reduction from mammography screening by at least one order of magnitude or reported that they did not know. Eighty-nine percent of men overestimated the benefits of PSA screening by a similar extent or did not know. Women and men aged 50-69 years, and thus targeted by screening programs, were not substantially better informed about the benefits of mammography and PSA screening, respectively, than men and women overall. Frequent consulting of physicians (r = .07, 95% confidence interval [CI] = 0.05 to 0.09) and health pamphlets (r = .06, 95% CI = 0.04 to 0.08) tended to increase rather than reduce overestimation. The vast majority of citizens in nine European countries systematically overestimate the benefits of mammography and PSA screening. In the countries investigated, physicians and other information sources appear to have little impact on improving citizens' perceptions of these benefits (Gigerenzer et al., 2010).

Oladimeji and Bidemi (2010) conducted a study on ” Prostate cancer awareness, knowledge, and screening practices among older men in Oyo State, Nigeria” which says that prostate cancer is the leading cause of cancer among Nigerian men. This study assessed the knowledge, awareness, and screening practices among older men regarding prostate cancer in Oyo State, Nigeria. A cross-sectional study used a multi-stage sampling technique to select 561 adult males. A semi-structured questionnaire was used. Respondents' median age is 60.0 years. Prostate cancer awareness was high [449 (80.0%)].

The overall mean knowledge of prostate cancer causation, treatment, and prevention strategies was 5.8 (± 3.0) out of a maximum of 16. Only 109 (19.4%) perceived themselves at risk of developing prostate cancer, but only 4.5% have ever been screened. Though knowledge and risk perception of prostate cancer were low, a majority of respondents (81.5%) were willing to be screened for the disease. Community-based prostate cancer educational interventions and provision of screening centers are needed for this group (Oladimeji& Bidemi, 2010)

Steele and Miller (2010) conducted a study on “Knowledge, attitudes, and screening practices among older men regarding prostate cancer” in which the study determined population-based rates of reported prostate cancer screening and assessed prostate cancer-related knowledge, attitudes, and screening practices among men in New York aged 50 years and older. Two telephone surveys were conducted.

Steele and Miller (2010) one was included in the 1994 and 1995 state-wide Behavioural Risk Factor Surveillance System interviews, and the other was a community-level survey that targeted Black men (African-American Men Survey). Prevalence estimates were computed for each survey, and prostate cancer screening practices were assessed with logistic regression models. Overall, fewer than 10% of the

men in each survey perceived their prostate cancer risk to be high; almost 20% perceived no risk of developing the disease.

Approximately 60% of the men in each survey reported ever having had a prostate-specific antigen (PSA) test. In both surveys, physician advice was significantly associated with screening with a PSA test or a digital rectal examination. Also, race was significantly associated with screening in the statewide survey. Many New York men appear to be unaware of risk factors for prostate cancer. However, a substantial percentage reported having been screened for the disease; physician advice may have been a major determining factor in their decision to be tested (Steele & Miller, 2010)

2.5 Attitude and Cancer Prevention Strategies

The participants' attitudes toward treatment and early detection might be influenced by knowledge of breast diagnostic methods and by the participants' choices on when to seek medical help. It has been discovered by Ramathuba, RatshirumbiandMashamba(2013) that Religion, education, occupation and culture might influence the attitudes of the participants regarding who should examine their breast during Cancer Breast Examination.

The majority of the women (82.7%) reported that if they noticed any change in their breast, they would consult the medical doctor, whilst 14.0% said that they would consult the traditional doctor and 3.3% would consult the prophet. The issue of religious and cultural belief might play a significant role in the health-seeking behaviour of the participants in this study. McMullinet al. (2008) reported that native Hawaiians were often offended and resisted participating in research because of the primacy given to the scientific medical model as opposed to lay knowledge and cultural protocols. This denigration took the form of classifying lay knowledge as myths and misconceptions

instead of learning the cultural meaning of cancer in populations. Ethnicity, cultural factors, enabling factors such as having a regular physician to visit, health insurance covering the screening, family and social/family support factors are attributed to health-seeking behaviour. Culture plays a pivotal role in cancer screening; amongst black women it can be a barrier as most may not engage in screening programmes because of fear, anxiety and worry as compared to white women, which would prevent them from disclosing the illness or seeking therapy. Social support is important in increasing health-seeking behaviours because having a family or friend can increase the likelihood of being screened.

Ramathuba et al (2013) study shows that One hundred and forty-two (94.7%) of the women said that they had never performed breast cancer diagnostic checks before. The results showed no breast cancer screening programme campaigns had ever been conducted in Makwarani Community and participants did not even know how often screening be done. Similar findings were reported by Ojikutu and Adefila (2009), who indicated that the majority (93.3%) of study participants preferred reporting at the hospital or any other health facility within their neighbourhood, whilst only 5.9% preferred to seek the intervention of traditional medical services. This is supported by Mugivhi, Maree and Wright (2009), who asserted that most women prefer biomedical treatment. Religious beliefs are particularly dominant amongst black women with a passionate confidence in God, but their mindsets are somehow stuck in attitudes and beliefs such as fatalism, magic, witchcraft and demons. Although Christianity and Islam have replaced traditional religions, the thoughts of the people about life and their attitude to it are still shaped by the old worldview (Akhigbe&Akhigbe,2012).

Cultural norms and beliefs can act as a barrier to breast cancer treatment. It is therefore important to incorporate culture into interventions designed to increase cancer screening. If we are to develop materials for educational intervention, they should be culturally sensitive as the goal of such a drive would be to increase breast cancer knowledge, decrease cancer fatalism and improve participation in breast cancer screening amongst women.

Attitude is significantly associated with factors on multivariable analysis were the place of residence and religion. Although the women from Mont Ngafula scored well on knowledge, this was not reflected in their attitude scores. They were less likely to get a sufficient score than the women from the city centre, illustrating the poor correlation between knowledge and attitude. In this study, adherents to the Catholic Church scored better than the category 'other religions'. The category 'other' included a multitude of small and diverse churches which were difficult to classify in one well-defined group. Most of the women in this group adhered to the "*églises de réveil*" and the Kibanguist church. Religion, however, was not associated with a better practice. (Ali-Risasi, Mulumba, Verdonck, Broeck&Praet2014).

Within Iranian context, cultural and social characteristics are very important factors forparticipation in mammography. A focus group by Ahmadian, Samah, Emby&Redzuan(2011) in Iran showed that religiousboundary and modesty prohibit the performance of breast cancer screening among women. Moreover, from the view point of Muslim, destiny is a strong reason for any disease such as breast cancer. Death is viewed as God's will by most Iranian women, especially among the traditional ones and this negatively affects their attitude. Attitudes toward mammography are also developed by women's beliefs about the expected outcomes resulting from the screening

performance.The antecedent of attitude is about personal belief concerning the perception of what they should doregarding breast cancer which eventually prescribed their action to seek treatment or early detection.Consequently, this is portrayed in the difference between adherent women to mammography and nonadherent one might contribute to a sense of fatalism.

Mostafa, Rabah, &Iman, (2012) reavealed that Participants had a negative attitude towards "effectiveness of DRE and its importance" where the percent agreement was less than 50%, in the same context; their beliefs about the importance and effectiveness of PSA as an important diagnostic tool ranged from 30-58%.

High reported figures of prostate cancer examination and screening practice was mainly attributed to poor knowledge and attitude among participants of a research carried out by Ravichandran, Al-Hamdan and Mohamed (2011) towards PC examination in addition to lack of physicians' advise where doctors plays a crucial role in the diagnosis of this problem. Earlier studies identified that the main reason given for not attending screening services for cancer patients was that it was not suggested by the doctor (Ravichandran et al., 2011).

Ajape, Babata and Abiola(2010) conducted a study on "Knowledge of prostate cancer screening among native African urban population in Nigeria" which says that Cancer of the prostate a worldwide public health concern. It is the most commonly diagnosed cancer in men and ranked second as the cause of cancer-related deaths, to evaluate the awareness and attitude of the populace to screening for cancer of the prostate. It is a cross-sectional study involving 156 respondents. A structured questionnaire detailing the biodata, the knowledge of cancer of prostate, the practice of screening by Prostate Specific Antigen (PSA) estimation and the readiness to undergo

screening by the respondent was used to obtain the set-out objectives. A total of 156 respondents completed the questionnaire and forms the basis of further analysis.

According to Ajape et al (2010) the mean age of the respondents is 44.15 (+/- 11.9) years. Majority of the respondents were civil servant (51.9%) followed closely by politicians. About 23.1% of them have no formal education while 53.8% have acquired tertiary education. The result shows that 78.8% have never heard any information on cancer of the prostate and only 5.8% have heard about PSA. None of the respondents have ever had PSA test done, even once. Eighty four per cent of the respondents are ready to pay for prostate cancer screening test by PSA assay. The research concludes that there was remarkable lack of awareness of prostate cancer among the Nigerian native African urban populace. Prostate cancer screening and serum PSA test for screening is globally unknown among them.

A study by Abiodun,Olu-Abiodun, Sotunsa andOluwole (2014) onImpact of health education intervention on knowledge and perception of cervical cancer and cervical screening uptake among adult women in rural communities in Nigeria showed a statistically significant improvement in the uptake of cervical screening among the intervention group, while the control group remained essentially the same. Some studies have shown that knowledge concerning HPV, cervical cancer and cervical cancer screening was statistically improved after educational intervention, but the concern about getting cervical cancer was not allayed. Media led campaigns are also quite successful at improving health awareness but may or may not increase the uptake of services.

However, other studies of Baba et al. (2009); Jenkins et al. (1999); and Sauaia (2007)have shown the opposite. Screening information conveyed by promoteras (lay health educators) successfully prompted Hispanic women to obtain mammography and

Papanicolaou smears. A media-led education intervention succeeded in increasing recognition of and intention to undertake screening tests more than receipt of the tests, though it improved the receipt of the test. For example a randomized controlled trial compared a photo-comic on cervical cancer screening with a placebo comic. One month after the comics were distributed, a radio-drama paralleling the photo-comic was broadcast on the community radio station and a retrospective evaluation was carried out. The study concluded that the photo-comic was ineffective in increasing cervical screening uptake in this population but that the radio-drama may have had more impact, though only a minority of women recalled being exposed to it (Abiodun et al., 2014).

2.6 Practice ofCancer Prevention Strategies

Ali-Risasiet al (2014) research on practice of cancer in Democratic Republic of Congo,shows that, 67.9% of the participants had undergone a gynaecological examination during the last two years. The majority (71.0%) declared not to use plants or chemicals for their intimate care, and not to smoke (96.8%). Most women (87.0%) declared to have had sexual contacts with maximum one partner during the last year, and 37.2% were convinced that their partner had no other sexual contacts. Only 8.6% had already had a Pap test.

Al-Risasi et al's study shows the bivariate analysis, four socio-demographic factors were significantly associated with a sufficient score on practice: place of residence, marital status, occupation and parity. The women who lived in the eastern and northern part of the city scored worse than those from the centre (OR east: 0.48; 95% CI: 0.28-0.82; OR north: 0.57; 95% CI: 0.33-0.96). In addition, single women were less likely to obtain a sufficient score than married women (OR: 0.31; 95% CI: 0.21-0.46).

Finally, the women who had given birth to three or more children scored better than the nulliparous women (OR: 2.59; 95% CI: 1.57-4.28).

The associations with place of residence and marital status remained significant on multivariable analysis. The women living in the east of the city were less likely than those from the centre to obtain a sufficient score on practice (adjusted OR 0.39; 95% CI 0.22-0.70). There was also a negative association between being single (adjusted OR: 0.24; 95% CI: 0.13-0.41) or being widow (adjusted OR 0.22; 95% CI: 0.06–0.86) and obtaining a sufficient practice score.

Ahmadian and Samah (2012) affirmed that, in order to improve women's participation in breast cancer prevention strategies programs/ screenings, especially among the at-risk subgroup, the intervention strategies should tailor to their knowledge and socio-demographic factors. The strategies adopted should also take into account the women psychological and cultural matters in order to encourage lifelong mammography screening practice for Asian population which is based on theoretical interventions.

Based on the socio-psychological theories and models, the interventions are able to change individuals and communities' attitudes towards health. On the same note, healthcare

Professionals working with Asian women should carefully address the misconceptions such as worryabout mammogram devices and fatalism. Active recruitment strategies and educational materials also have an important effect on women's adherence to breast cancer screening behaviour (Ahmadian&Samah 2012)

On the other hand, Holman (2011) mentioned that Diet is thought to play an important role in cancer risk. A large discrepancy exists between expert recommendations about diet and cancer and actual dietary practices among young people

and points to the need for more research to better promote the translation of science into practice. Future research should focus on developing and evaluating policies and interventions at the community, state and national levels for aligning the diets of youth with the evolving scientific evidence regarding cancer prevention strategies.

The percentage of participants who practiced Prostrate Cancer PC examination and regular checkup within the last year in the current study ranged from 8-30% in the three samples. An interesting finding was that Egypt had the least practice activities despite the highest attitude percentage of their participants towards screening and examination of PC. Physicians' advice was not the main motive for such regular checkup. On the other hand, for those who have not been engaged in a regular checkup, the main reason was absence of urological complaints followed by lack of physicians' advice and fear and anxiety in the three countries (Mostafa et al., 2012).

In Turkey, Nutritional status and healthy lifestyle are important factors not only in cancer etiology but also for prevention strategies efforts. A good nutritional status contributes to a healthy life with high economic, social and cultural level. Unhealthy eating habits are part of risky behaviour seen from adolescence. Eating habits and the level of cancer prevention strategies knowledge were similar for both genders, except for the exercise issue. Although they have some information, the adolescents surveyed did not have preventive skills relative to their practical life. In general, in order to ensure cancer prevention strategies and a healthy life style social, cultural and sportive activities should be encouraged and educational programmes supporting these goals should be designed and applied for all stages of life, starting in early childhood (Holman, 2011)

The motives for men refusing or attending prostate cancer screening are largely unknown. Studies of the public's knowledge, perceptions, or screening practices relative to prostate cancer are lacking in our Arabic region, where the prevalence of prostate

cancer in our developing countries is much different than that in United States and European countries, besides there is no national program adopted for screening of such cancer in Arabic countries. More insight into the motives for refusing or attending, also in relation to background characteristics is needed to tailor the invitation and screening procedure (Mostafa, Rabah, &Iman, 2012)

The association of knowledge about prostate cancer screening with getting prostate cancer screening is not clear due to the inconsistency in the literature. The study of the impact of undergoing prostate carcinoma screening on knowledge done in USA showed that men who chose not to get screened had less knowledge about prostate cancer and a less positive attitude toward screening than men who chose to get screened (Hoffman, 2011).

Participants in Egypt had a positive attitude towards significance and importance of early detection and diagnosis of ProstrateCancer according Mostafa, Rabah, &Iman, (2012). While their negative impression was mainly directed towards Digital Rectal Examination (DRE), and laboratory diagnostic tests that might incur irritability, fear and anxiety. Respondents in Jordan had the least mean total attitude score (17.96±5.3), they had a favourable attitude towards only three statement i.e. importance of early detection of Postrate Cancer and their commitment to stick to physician's advice and to do regular PC examination (Mostafa, Rabah, &Iman, 2012)

Acccording to Mostafaet al. (2012) Quite percentage of the participants don't prefer doing PC examination tests as they believe it is expensive (41.4%) or might increase their anxiety and worries (489%). Over fifty percent (51.3%) to nearly 64% confirmed that they are committed to do the required diagnostic procedures and committed to the physician's advices.

Sothilingamand Sundram(2012) conducted a study on "Prostate cancer screening perspective, Malaysia" which says that the incidence of prostate cancer in Malaysia is still low compared to the west. This may be due to a true low incidence or lower detection rates. Prostate Awareness Campaigns are held on a yearly basis to educate and encourage males over the age of 50 years to have their prostate examined.

Prostate Awareness Campaigns was organized in 2005 at the national level involving 12 district hospitals. A total of 2770 participants attended the campaign. 38.7% had no urinary symptoms and attended out of curiosity. Among the symptomatic adult males, nocturia was the most bothersome in the majority. 84.6% of the participants also had some degree of erectile dysfunction based on the IIEF questionnaire. 10.4% of participants had a PSA > 4 ng/mL. Malay participants had the highest mean PSA level (2.32 ng/mL) and Indian participants the lowest (1.30 ng/mL). 408 participants were called back for biopsy but only 183 agreed to the biopsy. 30 cancers were detected. At present Malaysia will benefit most by continuing to conduct these awareness programmes to educate the public on prostate disease and hopefully in future adult males will be less reluctant to have prostate biopsies taken when indicated (Sothilingam&Sundram, 2012).

2.7 Age and Cancer Prevention Strategies

Cancer development is a complex process that occurs over a span of many years. A life course approach is particularly well suited to understanding the contributions of various cancer risk factors over a person's life span. As Rondo (2013) observed, the biologic processes of aging are mysterious and highly variable. Aging is influenced by genetically determined processes but also can be modified by environmental influences. For example, cigarette smoke is thought to accelerate the aging process.

White, Holman, Boehm, Peipins, Grossman, and Henley (2015) in a study of Age and Cancer Risk A Potentially Modifiable Relationship, When applied to cancer research, the life course approach has been used to examine the influence of prenatal and early life events on cancer development in adulthood. A recent federal, interagency report on breast cancer research, for example, highlighted evidence that exposures that cause molecular and cellular changes in mammary tissue during puberty or earlier can influence breast cancer development many years later.

The finding that breast cancer incidence rates fell after the decline in the use of hormone replacement therapy at menopause suggests that critical periods for breast cancer development also exist later in life. In addition, opportunities may exist to intervene at midlife to alter or reverse disease processes that were initiated at earlier life stages. As a marker of time, age captures the duration of exposures and the accumulation of cancer risk. Nine hallmarks of aging have been proposed, including genomic instability and epigenetic alteration, which are also the hallmarks of cancer (White et al., 2015)

Whether the relationship between age and cancer risk is due primarily to the time-dependent accumulation of genetic and epigenetic mutations or to an increased susceptibility of older adults to oncogenic mutations is not fully understood. The multifactorial process of transformation from normal cells to cancer includes the accumulation of DNA damage and mutations over time coupled with disruptions of the DNA repair and cell growth regulation system (White et al., 2015).

Breast cancer arises in the younger age group of Asian women, 40 to 49 years-old compared to theother Western counterparts, where the peak prevalence is realized between 50 to 59 years. Arab women in Palestine more than half of new cases of breast

cancer were diagnosed in women below the age of 50 years and in advanced stages III or IV (Ahmadian&Samah 2012).

The study of Oguntayo et al., (2011) revealed that the peak age incidence for this study is 45 years, which confirms that the cancer is a disease of women of child-bearing age. The risk of developing cancer of the cervix was highest among grand multiparous women (parity of 6 and above) which constitutes 63% of the study population. In fact, other studies carried out in Africa have demonstrated an association between high number of deliveries and incidence of cervical cancer, this could be associated with the increased risk of exposure to the HPV virus in this group of women (Oguntayo et al., 2011)

Cervical cancer was the most frequently diagnosed cancer (31,500) and the leading cause of cancer death (21,600) in women in Eastern Africa in 2008, accounting for about 25% of the total new cancer cases and deaths. Notably, some countries in this region, such as Zambia, Malawi, Mozambique, and Tanzania, show the highest cervical cancer rates (50 cases per 100,000) worldwide. This is due to a high prevalence of human papillomavirus (HPV) infection, which causes cervical cancer, coupled with a lack of screening services (Pap test) for prevention strategies and early detection of the disease. It is noteworthy that in 1947-48, before the wide dissemination of Pap testing in the 1960s in the United States, cervical cancer incidence rates (per 100,000 females) in 10 select metropolitan areas were 40.1 in whites and 73.1 in non-whites,[10] higher than the highest rates found today in Eastern Africa (American Cancer Society, 2011)

In contrast to Eastern Africa, breast cancer was the most commonly diagnosed cancer and the leading cause of cancer death among women in Southern Africa (9,000 cases, 4,500 deaths) and Northern Africa (28,000 cases, 14,600 deaths) in 2008. In fact, Southern African women have the highest breast cancer incidence rates of all African

regions, in part because of the high proportion of whites in the population who are more affluent and have a higher prevalence of reproductive risk factors for breast cancer, such as early menarche and late child bearing. For example, the female breast cancer incidence rate in Harare (Zimbabwe) in 1990-1992 was six times higher in whites (127.7) than in blacks (20.4)(American Cancer Society, 2011).

In a research of Mostafa, Rabah, &Iman, (2012) postrate cancer screening is useful for men above 45 years to do regular checkup for prostate cancer". Other statements like "early detection of cancer is accompanied by reduced complications and increased odds of cure" in addition to the importance of prostate cancer screening for relatives of PC patients have got an agreement between 63% and 67%.

Arnold-Reed and Hince(2010) conducted a study on "Knowledge and attitudes of men about prostate cancer" with an objective to ascertain the current level of understanding among older men about prostate cancer, including treatment options and their potential side effects. Questionnaires administered by general practitioners in five general practices in the Perth metropolitan and regional areas of Western Australia. Convenience sample of 503 men aged 40-80 years, with or without prostate cancer, presenting for routine consultations between January and August 2006.

Arnold-Reed and Hince(2010) states that knowledge and attitudes of men about prostate cancer, and predictors of knowledge. Eighty per cent of men did not know the function of the prostate, and 48% failed to identify prostate cancer as the most common internal cancer in men. Thirty-five per cent had no knowledge of the treatments for prostate cancer and 53% had no knowledge of the side effects of treatments. Asked how they would arrive at a decision about treatment, 70% said they would ask the GP or specialist for information on all their options and then decide themselves. Which conclude that there is a deficit in knowledge about prostate cancer among men in the at-

risk age group, encompassing areas that could delay diagnosis and treatment. Overall, the men preferred some GP or specialist involvement in treatment decision making.

White et al. (2015) the life expectancy and the percentage of the U.S. population that is surviving at older ages has increased dramatically over the last century. In 1900, the average life expectancy from birth was 47 years; in 2011, life expectancy from birth was about 76 years for men and 81 years for women. Just since 1960, life expectancy at age 65 years has increased by 5 years.

Life expectancy also shifts upward as people survive to older ages. For example, in 2011, men aged 65 years were expected to live another 18 years (total life expectancy of 83 years), whereas women aged 65 years were expected to live another 20 years (total life expectancy of 85 years). More than half of the adults aged 85 years in 2011 can expect to live at least another 6 years. During 2010–2050, the number of adults aged 85 years and older in the U.S. is projected to grow from 5.5 million to 19 million (White et al., 2015).

The risk of receiving a diagnosis of different types of cancer varies throughout a person's life span. The cumulative risk for all cancers combined increases with age, up to age 70 years then decreases slightly. For the total U.S. population, the lifetime risk of ever being diagnosed with cancer is approximately 41%. However, a substantial proportion of older adults will reach the end of their life span without clinically detected cancer (excluding indolent tumours). After age 90 years, cancer is uncommon as a cause of disease or death White et al (2015).

2.8Religion and Cancer Prevention Strategies

Ahmadian and Samah (2012) With regard to Muslim women, pointed out that Muslim meninappropriately use Islam to justify their authority and dominance over their spouses which creates another barrier for breast cancer screening. Usually, an expectation of obedience to spouse who exerts control over family health decisions is in conflict with the expectation of remaining healthy in order to serve the needs of the family. Further many studies have reported the positive influence of social support on women's psychological well-being through every stage of breast cancer Emotional support is offered by family members in the form of trust, concern, and listening and examples of instrumental support such as money, time, labour, and transportation. Peers provide appraisal support that increases the individual's self-esteem.

2.9Gender and Cancer Prevention Strategies

The burden of breast cancer continues to increase in Asian countries according to Yoo (2010), although some strategies for breast cancer prevention strategies and treatment are in place. Two systematic literature reviews on cancer prevention strategies and breast cancer screening barriers, have shown wide disparity among breast cancer incidences in Asian countries (Yoo, 2010). Breast cancer incidence rates increased significantly until the end of the 1990's in Asian women. It was reported that, the percent of increase in breast cancer mortality for middle-aged women from the mid-80s to the mid-90s was the highest in Korea, followed by China, and Japan (Bray, 2014).

Ahmadian and Samah (2012), reported that in Asian countries, breast cancer is also the most frequently diagnosed cancer among women, the crude incidence rate of breast cancer varied from 21.3 per 100,000 population in Jordan, 21.4 in Iran, 24.1 in Turkey, 34.86 in Malaysia, 48 in Japan to 54 per 100,000 population in Singapore. Breast cancer arises in the younger age group of Asian women, 40 to 49 years-old

compared to the other Western counterparts, where the peak prevalence is realized between 50 to 59 years (Ahmadian&Samah, 2012).

2.10 Level of Education and Cancer

Pokhrel, Martikainen, Pukkala, Rautalahti, Seppä and Hakulinen(2010) high education has been found to help the patient in navigating within the health care and in its systems that may appear complicated. Among those with highest education level, the highest survival proportions were observed in the health-conscious group, which, e.g., exercises more than the others. Other life-style factors such as smoking and consumption of alcohol may also lay behind the relatively low survival proportions in those with the shortest education.

The risk of encountering cancer has a clear relationship with social class and occupation but the risk is not always highest in the lowest socio-economic strata. The new study of Pokhrel et al (2010) shows now that the most educated had systematically higher cancer-specific survival proportions in the 27 cancer types in the study. The patients were divided into three groups (basic, medium and high education). A particular health-conscious group (physicians, nurses, teachers etc.) was studied separately and had even higher survival proportions than those with high education.

A high education may also help the patient in navigating within the health care and in its systems that may appear complicated. Among those with highest education level, the highest survival proportions were observed in the health-conscious group, which, e.g., exercises more than the others. Other life-style factors such as smoking and

consumption of alcohol may also lay behind the relatively low survival proportions in those with the shortest education.If more educated men and women (Pokhrel et al., 2010)

An educated individual has more resources to devote to preventive and curative health care, prefer longerand healthier lives, are abler to detect cancer early, and are better informed on howto seek and respond to the cancer treatments, we should see reduced cancer risks(and higher survival rates) among more educated men and women. Along similarlines, Cutler and Lleras-Muney (2010) argue that differencesin resources, references and knowledge may explain why more educated men andwomen face lower health risks.

The findings of Meghir, Palme, and Simeonova. (2012) lie somewhere inbetween. Their estimates indicate that more educated men and women experiencereduced mortality up to the age of fifty, but that these life gains are offset by increasedmortality later on in life. Meghir et al. (2012) also consider cancer mortality as someof their health outcomes, which makes their study most closely related to our work.

Meghir et al. found no impact of the Swedish compulsory school reform on cancer mortalityat all cancer sites (but the lung). But they do find that more educated men andwomen face lower mortality rates in preventable diseases (which they define as lungcancer and cirrhosis of the liver). While their results on cancer mortality are verysimilar to the results we obtain in our work, which is reassuring in a literature assparse as this, we should stress that our work is also very different because of itsexplicit cancer focus; that is, we estimate the causal link between education, cancerrisk and cancer mortality, where we look at all cancer sites together as well as themost common cancer sites in isolation.

Leufkens,Van Duijnhoven, Boshuizen, Siersema, Kunst,Mouw et al., (2012) Colorectal cancer (CRC) accounts for about 1 million new cases per year worldwide and it is the

fourth most commoncancer in men and third most common in women.World-wide, the incidence of CRC varies at least 25-fold, with thehighest occurrence in North-America, Australia/New Zealand, Western Europe, and, in men especially, Japan.

Thevariation in incidence throughout the world and theincreased incidence of CRC over the last 40 years suggests aninfluence of lifestyle and environment over genetic factors.Several studies have been performed to examine the relationship between socio-economic status (SES) and CRC incidence. A British cohort studyfound no association betweenlow SES, social deprivation, and risk of CRC. Another Britishstudy performed in 2003 also observed no significant impactof socio-economic deprivation on CRC incidence (Leufkens et al., 2012).

A large Italian multicenter case-control study from 1999including 3,533 cases observed however that a higher educational level and a higher social class increased the risk of cancer in the colon, but not the rectum.This was thought to bedue to known risk factors for CRC, including lower occupational physical activity and dietary factors such as a higherintake of meat and eggs in the higher social class (Leufkens et al., 2012).

Similarresults were found in a Dutch cohort-nested case-controlstudy performed in 1995,in which a positive associationwas found for cancer in the colon in the highest educationlevels. A large cohort study conducted in Finland reportedhigher standardized incidence ratios for cancer in both thecolon and rectum in higher social classes.In contrast, according to a large cohort studyincludingparticipants from the United States (US), low SES was associated with an increased risk of CRC, which was only partiallycaused by smoking. Another cohort study conducted in theUS and Canada reported a higher CRC risk in participantswith lower income.Similarly, a systematic review from2005,which included a total of 46 studies with data fromparticipants living in the US, reported an increased CRC riskin participants with a low SES. These results

were confirmedin a recent systematic review,which reported an increasedCRC incidence among participants with a low SES in the US.In addition, US data have reported a higher CRC incidenceand presentation at a later disease stage in the black population.Higher mortality rates in this group are almost completely explained by lower SES in this population.Lowerhealth care utilization seems to be an important factor inthese observations, since studies conducted within the Veteran's administration, where access to care can be expected tobe similar to all veterans, showed no racial differences intreatment and survival (Leufkens et al., 2012).

2.11 Summary

The related literature reviewed in this study discussed several aspects of cancer as summarized below.

A brief history of cancer shows that the origin can be traced to the Greek physician Hippocrates (460-370 BC), who is considered the "Father of Medicine and the Roman physician, Celsus (28-50 BC), later translated the Greek term into cancer, which is the Latin word for crab. Galen (130-200 AD), another Greek physician, used the word oncos a Greek for swelling to describe tumours.

Cancer cells by definition are the result of multiple genetic defects of cells resulting from exposure to environment, dietary and infectious agents. A study of 2012 shows that there were an estimated 8.2 million deaths as a result of cancer in the world; 4.7 million (57%) in males and 3.5 million (43%) in females, giving a male:female ratio of 10:8 The World age-standardised (AS) mortality rate shows that there are 126 cancer deaths for every 100,000 men in the world, and 83 for every 100,000 females. A different literature corroborated the foregoing and shows that worldwide cancer mortality in 2012 was 8,201,030 cancer deaths per year.

Prevention strategies of Cancer could be primary prevention strategiesand secondary prevention strategies. Primary prevention strategies however is aimed at eliminating or modifying established risk factors for developing cancer. Some of these risk factors are genetically, environmental and behavioural. It is really impossible or difficult to alter or modify genetically and environmental risk factors like age, positive family history, race or ethnicity. But there are some behavioural risk factors like using HRT and consumption of alcohol that can be altered. Primary prevention strategies encompasses the elimination or reduction of exposure to recognized risk factors in susceptible populations to prevent a disease.

Secondary prevention strategies on the other handincludes all the activities towards diagnosis and treatment of early cancer. It is proved that detection of breast cancer in an early stage has a potential value.Early detection could mean earlier diagnosis of symptomatic breast cancer, as well as the detection of occult breast cancer through the mammography screening in an asymptomatic woman. In 2002, the Global summit consensus Conferences, recommended a step wise process for building the foundation for achieving earlier detection.

There are several types of cancer, causes and the number of lives a specific type of cancer have claimed over the years. Notable among them are; lung cancer, head and neck cancer, colon cancer and leukaemia, with very high mortality as a result of its manifestation. The general knowledge of cancer is poor prevention strategies of cancer, the attitude towards prevention strategies is not adequate for the cancer prevention strategies and poor practice of avoiding risk factors. The risk factors according to the literatures reviewed include age, diet, lifestyle, HPV, infections

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The purpose of this study was to assess the knowledge, attitude and practices of staff of Federal Universitiesin North-central Zone, Nigeria towards cancer prevention strategies. To achieve this purpose, this chapter describes the research design, population, sample and sampling procedure, instrumentation, validity of the instrument, reliability of instrument,procedure for data collection and procedure for data analysis used for the study

3.2 Research Design

For the purpose of this study, ex-post facto research design was used. Expost facto means after the fact, design. In ex-post facto, experimentation is not feasible, the researcher identifies extent that already occur or conditions that already were present and then collects data to investigate possible relationship between factors and subsequent characteristics of behaviour (Salkind, 2010). Furthermore, ex-post facto research design is ideal for conducting a social research when it is not possible or acceptable to manipulate the characteristics of human participants. The design studies the fact that already existed (Simon & Goes, 2013). This makes the design best for the study since the researcher's only intention was to assess the knowledge, attitude and practice of human subjects (Federal University staff in North central zone Nigeria) on the variable of interest (cancer prevention strategies). The researcher cannot manipulate the independent variables of knowledge, attitude and practice as this already existed with the respondents prior to the research.

3.3 Population of the Study

The population of the study comprised of 25,361 academic and non-academic staff of the seven Federal Universities in the North-central Zone, Nigeria. All the seven Federal Universities are; University of Ilorin (4,232), University of Jos (4,140), University of Agriculture Makurdi (3,912), Federal University of Technology Minna (3,122), University of Abuja (4,510), Federal University,Lokoja (2,504), and Federal University, Lafia (2,940).

Table 1: Population Distribution of Academic and Non-Academic staff

S/N	Name of Institution	Non-Academics	Academics	Total
1.	Federal University, Lafia	2,310	630	2,940
2.	Federal University, Lokoja	1,764	740	2,504
3.	Federal University of Technology Minna	2,420	703	3,122
4.	University of Agriculture Makurdi	2,770	1,142	3,912
5.	University of Abuja	3,381	1,129	4,510
6.	University of Ilorin	2,812	1,420	4,232
7.	University of Jos	2,844	1,296	4,140
		18,301	**7,060**	**25,361**

Source: Establishment and Human Resources Dept. of the Universities/ Bursary Department, 2016

3.4 Sample and Sampling Techniques

The sample size for the study was**756**respondents representing **4%** of the target population. In order to achieve 756 from the population of 25,361which was consideredadequate because theResearch Advisor(2006),stressed that for a population of 25,361, 378respondents are adequate.However, the researcher doubled the figure to have a wider coverage of respondents. In order to draw the desired sample, multi-stage sampling procedure wasemployed for the study.Multi-stage sampling procedure involves more than two sampling procedures and for this study the following procedures were used:

Stage I: Simple random sampling procedure was used to select five (5) Federal Universitiesin North central zone, Nigeria from the existing seven (7) One in each of the seven states that made up the geo political zone. The researcher wrote the names of all Federal Institutions of the zone on pieces of papers, the pieces of paperwere folded and placed in a container and shaken so that all Universities will have equal chance of selection. The researcher further requested another research assistant to pick from the seven pieces of paper. This process was continued until the required five institutions were selected.

Stage II: Stratified sampling procedure is used to group the population into the alreadyexistingmajor strata in all higher institutions as follows: Stratum (A) academic staff and stratum (B) non-academic staff. This means that the researcher grouped all academic staff on one side, while non-academic staff were on the other side. Two groups of sample emanated from this stage group.

Stage III: From the resulting grouping in stage II, proportionate sampling procedure wasused to select 4% as determined under sampling and sampling techniques, from each of the stratum in staff in the two strata in all the selected Universities sampled in North centralzone of Nigeria. The choice of proportionate sampling procedure was to enable randomization of the respondents so as to give equal opportunity to all staff in the two strata the Universities sampled based on the available population. In addition, all population of the study had equal chance of selection for participation in the study.

Stage IV: The allocated number of respondentsfor each university was achieved through accidental sampling procedure. In this case, the researcher administered a copy of the questionnaire to any academic and non-academic staff present in the premises of the university until the required copies of the questionnaire had been distributed.

Table 2: Sampled Number of Respondents from Selected Federal Universities in North-central Nigeria

S/N	Name of Institution	Academics (a)	Sample Size Selected	Non-Academics (b)	Sample Size Selected	Total Sample Size Selected
1.	Federal University of Technology Minna	703	30	2,420	96	126
2.	University of Agriculture Makurdi	1,142	46	2,770	110	156
3.	University of Abuja	1,129	48	3,381	136	184
4.	Federal University Lafia	630	28	2,812	94	122
5.	University of Jos	1,296	52	2,844	116	168
		5,690		**12725**		**756**

3.5 Research Instrument

The instrument for this study wasa researcher-developed close-ended questionnairetitled“Assessment of Knowledge, Attitude and Practice ofCancer Prevention strategiesamong Staff of Federal Universities in North-central Zone Nigeria”. The questionnaire consisted of four sections. Section A consistedof five (5) items on demographic characteristics ofthe respondents, Section Bconsisted of ten (15) items on knowledge of cancer prevention strategies among staff in North central zone Nigeria, Section Ccontained of fifteen(15) items on attitude towards cancer prevention strategies among civil servants in North central zone Nigeria, Section Dconsisted offifteen(15) items on practice of cancer prevention strategies among staff of Federal Universities in North-central ZoneNigeria.

In sections B and C a four (4) point Likert scale was used as follows:

Strongly agree (SA) - 4,

Agree (A) - 3,

Disagree (D) – 2 and

Strongly disagree (SD) – 1 for sections B and**C**to rate the Knowledge and Attitude of the respondents towards cancer prevention strategies.

Furthermore,

A modified four point Likert scale of: Most often (MO), Often (O), Less often (LO), and Not at All (NA) was used as follows:

Most often (MO) – 4,

Often (O) - 3,

Less often (LO) - 2, and

Not at All (NA). – 1 for section D to rate the practice ofthe respondents towards cancer prevention strategies. Any mean score of 2.5 and above is acceptable or positive and any mean score that was below 2.5 was not acceptable or negative

3.6 Validation

To ensure the face and content validity of the research instrument, the researcher-developed questionnaire was validated by five (5) jurors in the Departments of Human Kinetics and Health Education, Nursing Science and Veterinary Public Health of Ahmadu Bello University, Zaria. The suggestions made by the jurors were fully adheredto and a final draft of the questionnairewas printed and used for pilot testing.

3.7 Pilot Study

For the purpose of pilot testing of the instrument, the University of Ilorin was selected using simple random sampling technique. The selected University was similar to sampled Universities. A total of thirty (30)respondents, thus, fifteen (15) academic and fifteen (15) non-academic staff were purposivelyselected. Also, copies of the questionnaire wereadministered onthe respondents in their variousoffices until the required number of sample size was obtained. Thecopies of questionnaire were retrievedon the spot andprocessed for reliability through a split half method, thus, the copies questionnaires were divided into two. The two halves were correlated to

determine the level of reliability of the instrument with the use of Cronbach Alpha, Spearman Brown Rank Order (SBRO) and Guttman split-half.

The results revealed that Spearman-Brown Split Half, Gutman Split Half and Cronbach Alpha reliability on knowledge, attitude and practice of cancer prevention strategies are 0.839, 0.813 and .859 respectively. This was a confirmation of test of reliability which according to Spiegel (1992), revealedthat,the instrument is considered reliable if it's reliability coefficient lies between 0 and 1, and that the closer the calculated reliability coefficient is to zero, the less reliable is the instrument, and the closer the calculated reliability co-efficient is to 1, the more reliable is the instrument. This therefore, showed that the instrumentto be used for this study was highly reliable.

3.8 Procedure for Data Collection

In order to achieve the purpose of the study, a letter of introduction was obtained from the Department of Human Kinetics and Health Education. The letter was used by the researcher as a tool for obtaining permission for data collection in the institutions. Five (5) research assistantswere instructed by the researcher on procedures for data collection. The focus of the research was also discussed with the research assistants so as to be able to explain clearly to the respondents how they are to fill the questionnaire. The procedure for data collection took eight (8) weeks as against the expected five (5) weeks due to ASUU strike.The data was however. collected with the help of the5 trained research assistants in the following order; week one, the researcher and research assistants proceeded to Federal University of Technology Minna,the researcher's teamembarked on office to office visitation to identify and determine whether such individual whose office was visited wasan academic or non-academic staff. The researcher and his assistants requested for consent or willingness to fill the questionnaire

forms. Upon consentingby such staff, the researcher administered the questionnaire. This procedurewas continueduntil the copies of questionnairemeant for that particular university had been administered. The described procedure was used by the researcher and the research assistants until all the sampled Universities have been visited and copies of the questionnaire for respondents per sampled University have been distributed using purposive sampling procedure as described in 3.3 on page 75.All copies of questionnaire distributed were retrieved, however, of all the 756 administered questionnaire, only 752 copies of the questionnaire were valid forAnalyses.

3.9 Procedure for Data Analyses

To test the formulated hypotheses, the following statistical procedures wereadopted: -

Descriptive statistics of frequency distribution, percentages, mean and standard deviation were used to describe the demographic information of the respondents and to answer the research questions on knowledge, attitude and practice of cancer prevention strategiesamong staff in selected Federal Universitiesin North-central Zone Nigeria respectively.

Inferential statistics of one sample t-test was used to test for null hypotheses on significant knowledge, attitude and practice of cancer prevention strategies among staffof Federal Universitiesin North-central Zone Nigeria. Also, Pearson Product Moment Correlation (PPMC) was used to testthe null hypotheses of significant influence of knowledge on practice, and attitude on cancer prevention strategies.

Furthermore, Regression Analysis was used for null hypotheses oninfluence of demographic characteristics (age, level of education, religion) on knowledge, attitude and practice of cancer prevention strategies among staff of Federal Universities in North-central Zone, Nigeria. This becomes necessary because the variables of demographic

characteristics to be measured are many whose influence are to be determine on the knowledge, attitude and practice of cancer prevention strategies.

Independent sample t-test was used to test null hypothesis on differences between gender (male and female), in their knowledge attitude and practice of cancer prevention strategies. The independent sample t-test is best to establish differences between two variables.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The purpose of this study was to assess the knowledge, attitude and practice of cancer prevention strategies among staff of Federal Universities in North Central Nigeria. To achieve this purpose, out of seven hundred and fifty-six (756) copies of questionnaire administered, seven hundred and fifty-two (752) 99.5%were valid for the analysis. The statistical package SPSS Version 22 was used to analyze the data obtained from the respondents. The demographic characteristics of respondents were computed using frequencies and simple percentage. The research questions were answered using descriptive statistics of mean and standard deviation. To analyze the formulated sub-hypotheses for this study, inferential statistics of one sample t- test, independent sample t – test, Analysis of Variance (ANOVA) and Pearson Product Moment Correlation (PPMC) were used. All the formulated sub-hypotheses were tested at 0.05 alpha level of significance and the results are presented and discussed in this chapter.

4.2 Results

Before the results are presented and discussed based in the formulated hypotheses, the demographic characteristics of respondents are presented in Table:3

Table 3: **Demographic Characteristics of the Respondents**

	Variable	Frequency	Percentage
Gender	Male	438	58.2
	Female	314	41.8
	Total	752	100.0
Age Range in years	18 – 29 years	58	7.7
	30 – 39 years	150	19.9
	40 – 49 years	442	58.8
	50 years and above	102	13.6
	Total	752	100.0
Highest level of Education	SSCE	14	1.9
	NCE	82	10.9
	B.Sc	288	38.3
	M.Sc	316	42.0
	PhD	52	6.9
	Total	752	100.0
Religion Affiliation	Islam	416	55.3
	Christianity	284	39.1
	Traditional	52	5.6
	Total	752	100.0
Level of Income per month	Below ₦ 100,000	254	34.3
	₦ 150,000 – ₦ 249,000	174	35.6
	₦ 250,000 – ₦ 349,000	252	20.2
	₦ 350,000 and above	74	9.8
	Total	752	100.0

Looking at Table 3 above, the demographic characteristics of the respondents shows that most of the staff who responded were male 438 (58.2%) of the respondents while 314 (41.8%) of the respondents were female. The majority of those who responded were (442; 58.8%) in the age group of 40-49 years. Furthermore, table 3 shows that majority of the respondents (316; 42%) were M.Sc holders and those holding theB.Sc degree were (288; 38.3%) while the NCE holders were (82; 10.9%).

Furthermore, Table 3 reveals that most of the participants were either Moslems (416;55.3%) or Christians (284;39.1%). Further observation of table 3 reveals that most of the respondents (252; 20.2%) received income of ₦ 250,000 – ₦ 349,000 per month, others earn ₦ 150,000 – ₦ 249,000 as their highest level of income per month, 252 (20.2%) of the respondents earn as their highest level of income per month while 74 (9.8%) of the respondents earn the level income of ₦ 350,000 and above per month.

The study however reveals that more than half of the population of the Universities system are between age 40-49. An indication that the most active and productive age group dominates the University system in North Central Zone. In addition, the percentage of PhD holders in University system is still very low with only 6.9% of the participants are in that category.

4.2.1 Answering the Research Questions

Research Question One: What is the knowledge of cancer prevention strategies among staff of Federal Universities in North-central Zone, Nigeria?

Table 4: **Mean scores of responses on the knowledge of Cancer Prevention strategiesamong Staff of Federal Universitiesin North-central Zone, Nigeria**.

S/N	Item	Mean	Standard Deviation
1	Maintaining healthy weight can reduce cancer risk	3.4894	.57957
2	Work place hazard such as radiation can be a risk factor of cancer	3.1713	.90132
3	Age of an individual can predispose one to cancer	3.4815	.53648
4	Tobacco smoking increases risk of cancer	2.9907	.97334
5	Family history [heredity] could be a determinant to cancer risk	3.1204	.99970
6	Early presentation of cases could safe severity of cancer condition	3.3519	.89770
7	Infectious agents such as human papilloma virus (HPV) can lead to cancer	2.8333	.94991
8	Packaged foods such as beef diet and saturated fat contains carcinogenic substances that can cause cancer	3.2593	.83382
9	Early cancer detection allows for effective treatment	3.5815	1.58638
10	Prolonged exposure to air pollution by pesticide, dust, chemicals increases risk for cancer	2.6991	1.05089
11	Prolonged exposure to water pollution due to chemical agents increase risk for cancer	2.6898	.57957
12	Chemo preventive properties of drugs can help reduce cancer risk occurrence	3.1991	.62089
13	Prolonged exposure to radiations such as X-ray increase cancer risk	3.4112	.1957
14	Screening of blood before transfusion prevent cancer	3.1033	.90132
15	Education about cancer through intervention programmes can eliminate cancer	3.0115	.53648
	Aggregate Mean	**3.1862**	

A careful observation of Table 4 shows the mean scores of the responses on the knowledge of cancer prevention strategies among staff of Federal Universities. The responses for each item were computed anditem 9 hadthe highest mean scoreof 3.5815 indicating that the majority of the respondents know that early detection of cancer lead to effective treatment. Furthermore, the table shows that all the items from the responses shows awareness among respondents even though mean scores were not as high. The aggregate mean score of 3.1862 was obtained. The isgreater than the benchmark score of 2.5. This implies that staff of Federal Universities have knowledge of how cancer can be prevented.

Research Question Two: What are the attitudes towards cancer prevention strategies of staff in Federal Universities of North-central Zone, Nigeria?

Table 5: **Mean score of responses on the Attitude towards cancer prevention strategies among staff in Federal Universitiesin North-central Zone, Nigeria.**

S/N	Item	Mean	Standard Deviation
1	I prefer to maintain healthy body weight in order to prevent cancer risk	3.4894	.61914
2	I prefer to have a job at workplace free of radiations that predispose me to cancer	2.1713	.33112
3	I will like to take preventive actions against cancer to minimize its occurrence as I age	3.3015	.51614
4	I feel it is not healthy to smoke tobacco as it increases risk of cancer	2.1107	.97334
5	Once I feel cancer in my family history [heredity] I will avoid risk factors	2.1244	.51972
6	I feel early presentation of cases could safe severity of cancer condition	3.4011	.52170
7	I feel infectious agents such as human papilloma virus (HPV) that can lead to cervical cancer	2.5218	.34191
8	I refuse packaged foods such as beef and saturated fat that contain carcinogenic substances that can cause cancer	3.7513	.33382
9	I feel early cancer detection allows for effective treatment	3.5151	.30038
10	I feel prolong exposure to air pollution by pesticide, dust, chemicals increases risk for cancer	2.3163	.35089
11	I feel prolong exposure to water pollution increase risk for cancer	2.6898	.57957
12	I feel Chemo preventive properties of drugs can help reduce cancer risk occurrence	3.6171	.51089
13	I feel Prolong exposure to radiations such as X-ray increase cancer risk	3.4112	.51907
14	I feel Screening of blood before transfusion prevent cancer	3.3114	.41132
15	I feel education about cancer through intervention programmes can eliminate cancer	3.7015	.71248
	Aggregate Mean	3.0289	

A look at Table 5 generally, reveals that the respondents have positive attitudes towards cancer prevention strategies. A critical observation of Table 5 shows the mean score of the responses on the attitude of staff in Federal Universities towards cancer prevention strategies. The responses for each item were computed and item 8 had the highest mean score of 3.75 indicating that the majority of the respondents have positive attitude towards cancer prevention by avoiding packaged foods such as beef and saturated fat that contains carcinogenic substances that can cause cancer.The table shows that all the items from the responses were significant positive attitude.The aggregate mean score of the items is 3.0289 which was found to be greater than benchmark score of 2.5. This implies thatamong staff of Federal Universities, attitude towards prevention of cancer is positive.

Research Question Three: What are the practices towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?

Table 6: Mean Score of responses on practices towards cancer prevention strategies

S/N	Item	Mean	Standard Deviation
1	I stopped tobacco smoking in order to prevent risk of cancer	2.5911	.31004
2	I eat healthy food with moderation	2.3117	.30092
3	I participate in physical activities to maintain healthy weight	3.3015	.41441
4	As a family we engage in colonoscopy every ten years	1.5125	.97334
5	As a family, we have open dialogue with the family doctor in support of important cancer preventive measures	2.0044	.36183
6	My participation in cancer screening is in accordance with medically recommended guidelines	2.1082	.30332
7	I feel infectious agents such as human papilloma virus (HPV) can lead to cervical cancer	2.5027	.32171
8	I avoid packaged foods such as beef and saturated fat that contain carcinogenic substances which can cause cancer	2.0713	.30152
9	I engage in medical test to ensure early cancer detection of cancer	2.1050	.30124
10	I avoid prolonged exposure to air pollution by pesticide, dust, chemicals that increase risk of cancer	2.3163	.31031
11	I avoid prolonged exposure to water pollution due to chemical agents that increases risk of cancer	2.6898	.31217
12	I use prescribed drugs with chemo preventive properties that can help reduce cancer risk occurrence	2.3211	.30381
13	I avoid prolonged exposure to radiations such as X-ray that increases cancer risk	2.4713	.31401
14	I ensure screening of blood before transfusion to prevent cancer	3.1115	.46232
15	I engage in educational intervention programmes on cancer so as to broaden my knowledge of risk factors	2.3011	.30128
	Aggregate mean	2.3818	

among staff in Federal Universitiesof North-central Zone, Nigeria

A holistic examination of Table 6 shows that the mean scores for item 11on responses the aspect ofpractices towards cancer prevention strategiesare less than 2.5 while the aggregate mean was 2.38 which is still less than 2.5 mean benchmark. Therefore, Practices of cancer prevention strategies among the Federal University staff was not positive. This implies that staff in Federal Universities do not practice of cancer prevention strategies.

Research Question Four: Will knowledge of cancer prevention strategies influence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?

Table 7:Mean Score of responses on the influence of Knowledge on Attitude of Cancer Prevention strategies among Staff of Federal Universities in North-central Zone.

Variables	M	SD	Mean Difference
Knowledge	47.7933	11.5431	
			2.3594
Attitude	45.4339	7.5414	

A critical look into Table 7 showsmean score aimed at finding influence of knowledge of cancer prevention strategieson attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria. Knowledge has a mean of 47.7933 and standard deviation of 11.5433 while attitude has a mean of 45.4339 and standard deviation of 7.5414 with a mean difference of 2.3594. The results revealed that knowledge of cancer prevention strategiesinfluence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria.

Research Question Five: Will knowledge of cancer prevention strategies influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?

Table 8:Mean score ofresponses influence of Knowledge on Practice of Cancer Prevention strategies among Staff of Federal Universities in North-central Zone.

Variables	M	SD	Mean difference
Knowledge	47.7933	11.5431	
			12.0738
Practice	35.7195	7.5414	

Table 8 is a mean score aimed at findingknowledge of cancer prevention strategiesdo not influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria. Knowledge has a mean of 47.7933 and standard deviation of 11.5431 while standard deviation has a mean of 35.7195 and standard deviation of 7.5414 with mean difference of 12.0738. The results revealed that influence do not exist between knowledge and practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria.

Research Question Six: Will demographic characteristic of respondents (religion, level of education and age) influence knowledge, attitude and practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria?

Research Question Six (a): What is the influence of level of education on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria

Table 9: Mean scoreof responseson the Influence of Level of Education on Knowledge, Attitude and Practice of Cancer Prevention strategies

	Mean	SD	Mean Difference
Level of Education (Constant)	33.636	14.129	
Knowledge	47.793	11.543	14.157
Attitude	45.434	7.541	11.798
Practice	35.720	5.592	2.084

Table 9the mean score on the influence of level of education on knowledge, attitude and practice of cancer prevention strategies with a mean of 33.636, 47.793, 45.434 and 35.720 and mean difference of 14.157, 11.798and 2.084. Based on this outcome, there isinfluence of level of education on knowledge, attitude and practice of cancer prevention strategies.

Research Questions (b): What is the influence of religious on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria?

Table 10: Mean score of responses on the Influence of religious on Knowledge, Attitude and Practice of Cancer Prevention strategies

	Mean	SD	Mean Difference
Religious(Constant)	31.911	11.319	
Knowledge	47.793	9.543	16.019
Attitude	45.434	7.541	13.523
Practice	35.720	5.592	3.809

Table 10 the mean score on the influence of level of education on knowledge, attitude and practice of cancer prevention strategies with a mean of 31.911, 47.793, 45.434 and 35.720 and mean difference of 16.019, 13.523 and 3.809. Based on this outcome, there is influence of level of education on knowledge, attitude and practice of cancer prevention strategies.

Research Questions Six (c): What is the influence of age on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria?

Table 11: Mean scoreof responseson the Influence of religious on Knowledge, Attitude and Practice of Cancer Prevention strategies

	Mean	SD	Mean Difference
Age (Constant)	39.702	11.319	
Knowledge	47.793	9.543	8.019
Attitude	45.434	7.541	5.732
Practice	35.720	5.592	3.982

Table 11 the mean score on the influence of age on knowledge, attitude and practice of cancer prevention strategies with a mean of 31.911, 47.793, 45.434 and

35.720 and mean difference of 8.019, 5.732 and 3.982. Based on this outcome, there is influence of age on knowledge, attitude and practice of cancer prevention strategies.

Research Question Seven: What are the gender differences among respondents in their knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria?

Research Question Seven (a): What is difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge towards cancer prevention strategies?

Table 12: Mean score of responses on difference between Male and Female Staff of Federal Universities in Their Knowledge towards Cancer Prevention strategies

	Gender	N	Mean	SD	Mean Difference
Knowledge of cancer prevention strategies	Male	438	10.1072	4.3566	0.1899
	Female	314	9.9173	3.9871	

Results of the mean difference between male and female. This showed that gender of the staffdoes not determine of knowledge of cancer prevention strategies among staff. Male has a mean of 10.1072 and standard deviation of 4.3566 while female has a mean of 9.9173 and standard deviation of 3.9871 with a mean difference of 0.1899. Therefore, there is no difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge towards cancer prevention strategies, thus was retained.

Research Question Seven (b): What is the difference between male and female staff of Federal Universities of North-central zone, Nigeria in their attitude towards cancer prevention strategies?

Table 13: Mean score of responseson Difference between Male and Female Staff of Federal Universities of North-central Zone, Nigeria in their Attitude towards Cancer Prevention strategies

	Gender	N	Mean	SD	Mean difference
Attitude of cancer prevention	Male	438	9.1139	4.8374	1.2984
	Female	314	7.8155	4.8191	

Results of the mean difference between male and female. This showed that gender of the staffdoes not determine of attitude of cancer prevention strategies among staff. Male has a mean of 9.1139 and standard deviation of 4.8374 while female has a mean of 7.8155 and standard deviation of 4.8191 with a mean difference of 1.2984. Therefore, there is no difference between male and female staff of Federal Universities of North-central zone, Nigeria in their attitude towards cancer prevention strategies, thus was retained.

Research Question Seven (c): What is the difference between male and female staff of Federal Universities of North-central zone, Nigeria in their practice of cancer prevention strategies?

Table 14: Result of Independent t-test Statistics on Difference between Male and Female Staff of Federal Universities of North-central Zone, Nigeria in their Attitude towards Cancer Prevention strategies

	Gender	N	Mean	SD	Mean difference
Practice of cancer prevention	Male	438	8.1005	3.0211	0.2231
	Female	314	7.8774	2.8901	

Results of the mean difference between male and female. This showed that gender of the staffdoes not determine of practice of cancer prevention strategies among staff. Male has a mean of 8.1005 and standard deviation of 3.0211 while female has a mean of 7.8774 and standard deviation of 2.8901 with a mean difference of 0.2231. Therefore, there is no difference between male and female staff of Federal Universities of North-central zone, Nigeria in their practice of cancer prevention strategies, thus was retained.

4.2.2 Hypotheses Testing

Since the purpose of this study was to assess the Knowledge, Attitude and Practice of Cancer Prevention strategies among Staff of Federal Universities in North-central zone, Nigeria, it became essential to assess the kind of Knowledge, attitude and level of Practice the staff of Federal Universities had. For this purpose, sub-hypotheses one to seven were generated. The results are presented below:

Hypothesis One: Staff in Federal Universities of North-central Zone, Nigeria are not significantly knowledgeable about cancer prevention strategies

Table 15: **One sample t test on Knowledge of Staff in Federal Universities of North-central Zone about Cancer Prevention strategies**

	Mean	Std. Deviation	t-value	df	P-value
Aggregate mean	3.1862	0.7695	4.207	751	0.021
Constant mean	2.50	0.00			

t (751) = 1.972, P < 0.05

A careful observation of Table 15 reveals that the respondents were knowledgeable about cancer prevention strategies.This is because the one-sample t-test calculated value is 4.207 greater than the t-critical is 1.972 at degree of freedom 751 with probability value 0.021 is less than 0.05 level of significance. Thus, this result did not support the sub-hypothesis (null) which states that “Staff of Federal Universities in North-central Zone, Nigeria are not significantly knowledgeable about cancer prevention strategies”.The hypothesisis therefore rejected.

Hypothesis Two: The attitude of staff in Federal Universities of North Central zone, Nigeria towards cancer prevention strategies is not significant

Table 16: **One sample t test on Attitude of Staff in Federal Universities of North-central Zone, Nigeria towards Cancer prevention strategies**

	Mean	**Std. Deviation**	**t-value**	**df**	**P-value**
Aggregate mean	3.0289	0.5028	3.512	751	0.001
Constant mean	2.50	0.00			

t (751) = 1.972, P < 0.05

A careful observation of Table 16 reveals that the respondents'attitude towardscancer prevention strategiesis significant. This is because the one-sample t-test calculated t valueis 3.512 greater than the t-critical is 1.972 at degree of freedom 751 with probability value (p= 0.001) is less than 0.05 level of significance. Thus, this result did not support the sub-hypothesis (null) which states that "Staff of Federal Universities in North-central Zone, Nigeria are not significantly knowledgeable about cancer prevention strategies". The hypothesis is therefore rejected.

Hypothesis Three: Cancer prevention strategies practices by the staff in Federal Universities of North-central Zone, Nigeria is not significant.

Table 17: **One Sample t-test on Cancer Prevention Strategies Practices among Staff of Federal Universitiesof North-central Zone**

	Mean	**Std. Deviation**	**t-value**	**df**	**P-value**
Aggregate mean	2.3813	0.3728	1.611	751	0.11
Constant mean	2.50	0.00			

t (751) = 1.972, P > 0.05

A careful observation of Table 17 reveals that the respondents' practiceof cancer prevention strategies is significant. This is because the one-sample t-test calculated t-value is 1.611 greater than the t-critical is 1.972 at degree of freedom 751 with probability value (p= 0.11) and is greater than 0.05 level of significance. Thus, this result indeed supports the sub-hypothesis (null) which states that "Cancer prevention strategies practices by the staff in Federal Universities of North-central Zone, Nigeria is not significant".The hypothesis is therefore retained.

Hypothesis Four: Knowledge of cancer prevention strategies will not significantly influence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria

Table 18:Pearson Product Moment Correlation coefficientinfluence of Knowledge on Attitude of Cancer Prevention strategies among Staff of Federal Universities in North-central Zone.

Variables	M	SD	r	df	p
Knowledge	47.7933	11.5431			
			0.838	7510.0012	
Attitude	45.4339	7.5414			

Correlation is significant at the 0.05 level (2-tailed) r = 0.838 p=0.0012

A critical look into Table 18shows Pearson product moment correlation analysis aimed at finding influence of knowledge of cancer prevention strategieson attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria. The results revealed that significant influence exist between knowledge and attitude. This is because the calculated p value of 0.0012 was found to be lower than the 0.05 alpha level of significance at a correlation index value of 0.838. Therefore, the null hypothesis which stated that knowledge of cancer prevention strategies will not significantly influence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria, is hereby rejected.

Hypothesis Five: Knowledge of cancer prevention strategies will not significantly influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria

Table 19:Pearson Product Moment Correlation coefficient influence of Knowledge on Practice of Cancer Prevention strategies among Staff of Federal Universities in North-central Zone.

Variables	M	SD	r	df	p
Knowledge	47.7933	11.5431			
			0.071	751	0.2
Practice	35.7195	7.5414			

Correlation is significant at the 0.071 level (2-tailed) r = 0.071 p=0.2

Table 19is a Pearson product moment correlation analysis aimed at findingif knowledge of cancer prevention strategies will not significantly influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria. The results revealed that significant influence exist between knowledge and practice. This is because the calculated p value of 0.2 was found to be higher than the 0.05 alpha level of significance at a correlation index value of 0.071. Therefore, the null hypothesis which stated that knowledge of cancer prevention strategies will not significantly influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria, is hereby retained.

Hypothesis Six: There is no significant influence of demographic characteristics of respondents (level of education, religion and age) on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria

Hypothesis Six (a): There is no significant influence of level of education on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria

Table 20: Multiple Regression Analysis on Influence of Level of Education on Knowledge, Attitude and Practice of Cancer Prevention strategies.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.458[a]	.610	.061	3.09368	2.458

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	6.008	4	2.003	15.016	.000[b]
	Residual	133.492	371	1.196		
	Total	139.500	751			

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	33.636	1.090		30.867	.000		
Knowledge	.512	.056	.436	9.161	.000	.078	1.139
Attitude	.691	.061	.558	6.117	.001	.060	1.311
Practice	.712	.068	.764	4.344	.003	.041	1.245

Table 20 shows outcome of multiple regression analysis on influence of level of education on knowledge, attitude and practice of cancer prevention strategies. Result indicates level of education significantly aid the knowledge, attitude and practice of cancer prevention strategies, critical $F = 3.09$ at (2, 379) = 15.016, $p = 0.000$, and together account for 61% with a correlation index of .736, $t = 30.867$, $p = .000$. Based on this outcome, the null hypothesis seven is rejected as significant influence of level of education on knowledge, attitude and practice of cancer prevention strategies was found

Hypothesis Six (b): There is no significant influence of religion on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria

Table 21: Multiple Regression Analysis on Influence of Religion on Knowledge, Attitude and Practice of Cancer Prevention strategies.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.481[a]	.610	.044	2.81	1.958

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	6.008	3	2.003	11.490	.000[b]
	Residual	133.492	372	1.196		
	Total	139.500	751			

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	13.030	1.090		16.177	.000		
Knowledge	.492	.086	.411	2.711	.001	.078	1.139
Attitude	.607	.051	.553	4.117	.009	.060	1.311
Practice	.641	.078	.429	2.004	.000	.041	1.245

Observation of Table 21 indicates thatreligion significantly aid the knowledge, attitude and practice of cancer prevention strategies, critical $F = 3.09$ *at* (3, 372) = 11.490, $p = 0.000$, and together account for 44% with a correlation index of .481, $t = 16.177$, $p = .000$. Based on this outcome, the null hypothesis seven was rejected as significant influence of religion on knowledge, attitude and practice of cancer prevention strategies was found

Hypothesis Six (c): There is no significant influence of age on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria

Table 22: Multiple regression analysis on influence of age on knowledge, attitude and practice of cancer prevention strategies.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.452[a]	.617	.091	1.51	3.014

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	6.108	3	1.103	11.106	.001[b]
	Residual	91.112	372	2.011		
	Total	97.220	751			

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	13.612	1.091		7.517	.000		
Knowledge	.672	.053	.410	7.521	.002	.072	1.100
Attitude	.411	.060	.551	3.147	.000	.060	1.311
Practice	.342	.061	.714	4.141	.003	.041	0.725

A careful observation of Table 22 shows outcome of multiple regression analysis on influence of age on knowledge, attitude and practice of cancer prevention strategies. Result indicates age significantly aid the knowledge, attitude and practice of cancer prevention strategies, critical $F = 3.09$ *at* (3, 372) = 11.106, p = 0.000, and together account for 45% with a correlation index of .736, t = 7.521, p = .000. Based on this outcome, the null hypothesis seven is rejected as significant influence of age on knowledge, attitude and practice of cancer prevention strategies was found

Hypothesis Seven: There is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge, attitude and practice of cancer prevention strategies

Hypothesis Seven (a): There is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge of cancer prevention strategies

Table 23: Result of Independent t-test Statistics on Difference between Male and Female Staff of Federal Universities in Their Knowledge of Cancer Prevention strategies

	Gender	N	Mean	SD	df	T	Sig(p)
Knowledge of cancer prevention	Male	438	10.1072	4.3566	751	1.099	0.11
	Female	314	9.9173	3.9871			

t (751) = 1.972, P value < 0.05

Results of the independent t-test statistic showed that there is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge of cancer prevention strategies. This was because the calculated p value of 0.11 is higher than the 0.05 alpha level of significance, while the calculated t value of 1.099 is lower than the 1.972 t critical at df 751. This showed that gender of the staffdoes not determine knowledge of cancer prevention strategies among staff. Therefore, the null hypothesis which states that there is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge towards cancer prevention strategies, was retained.

Hypothesis Seven (b): There is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their attitude towards cancer prevention strategies.

Table 24: Result of Independent t-test Statistics on Difference between Male and Female Staff of Federal Universitiesof North-central Zone, Nigeria in their Attitude towards Cancer Prevention strategies

	Gender	N	Mean	SD	Df	t	Sig(p)
Attitude of cancer prevention	Male	438	9.1139	4.8374	751	1.210	0.29
	Female	314	7.8155	4.8191			

t (751) = 1.972, P value < 0.05

Results of the independent t-test statistic showed that there is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their attitude towards cancer prevention strategies. This was because the calculated p value of 0.29 is higher than the 0.05 alpha level of significance, while the calculated t value of 1.210 is lower than the 1.972 t critical at df 751. This showed that gender of the staffdoes not determine the attitude towards cancer prevention strategies among staff. Therefore, the null hypothesis which states that there is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their attitude towards cancer prevention strategies, thus was retained

Hypothesis Seven (c): There is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their practice of cancer prevention strategies.

Table 25: Result of Independent t-test Statistics on Difference between Male and Female Staff of Federal Universities of North-central Zone, Nigeria in their

	Gender	N	Mean	SD	df	t	Sig(p)
Practice of cancer prevention	Male	438	8.1005	3.0211	751	0.997	0.31
	Female	314	7.8774	2.8901			

Practice of Cancer Prevention strategies

t (751) = 1.972, P value < 0.05

Results of the independent t-test statistic showed that there is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their practiceof cancer prevention strategies. This was because the calculated p value of 0.31 is higher than the 0.05 alpha level of significance, while the calculated t value of 0.997 is lower than the 1.972 t critical at df 751. This showed that gender of the staffdoes not determine the practice of cancer prevention strategies among staff. Therefore, the null hypothesis which states that there is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their practice of cancer prevention strategies was retained

4.3 Discussion

The purpose of this study was to assess the Knowledge, Attitude and Practice of Cancer Prevention strategies among Staff of Federal Universities in North-central zone, Nigeria, to achieve this purpose, the data on Knowledge Attitude and Practice of Cancer Prevention strategies was computed and results discussed. Seven hypotheses were formulated and tested for this study.

Concerning the knowledge of cancer prevention strategies, the result of the study revealed that staff in Federal Universities of North-central Zone, Nigeria are knowledgeable about cancer prevention strategies with t value of 4.207, t-critcal of 1.972 and $P<0.05$ clearly revealing that the hypothesis which states that there is no significant knowledge of cancer prevention strategies among staff of Federal Universities in north central zone Nigeria is rejected. This means that the staff of Federal Universities in north central have significant knowledge of cancer prevention strategies. The finding of this study is in line with the study of Mukama, Ndejjo, Musabyimana, Halage and Musoke (2011) who found that most participant were knowledgeable about cervical cancer symptoms, prevention strategies measures and risk-factors. However, Kivistik, Lang, Baili, Anttila and Veerus (2017) study on the other hand revealed that there is a strong need to improve women's knowledge about cervical cancer risk factors. The study revealed that participants do not know enough about the main cancer risk factors, and are particularly low is knowledge about the impact of smoking.

The findings of Meghir, Palme, and Simeonova. (2012) lie somewhere in between. Their findings indicated that more educated men and women experience reduced mortality up to the age of fifty, but that these life gains are offset by increased

mortality later on in life. Along similar lines, Cutler and Lleras-Muney (2010)concludedin theirstudy that an educated individual has more resources to devote to preventive and curative health care, prefer longer and healthier lives, are abler to detect cancer early, and are better informed on how to seek and respond to the cancer treatments, we should see reduced cancer risks (and higher survival rates) among more educated men and women. Azubuike and Okwuokei's (2013) study suggest that people with higher education tend to have better knowledge of breast cancer prevention strategies. Adelekan and Edoni's (2012) study also showed that majority of women with family history of breast cancer were not aware of a painless breast lump as a common presentation of breast cancer and only 13.8% were aware of mammography as a screening tool for breast cancer. The use of screening methods was very low among our study respondents. Uche (2009) noted that only 32% of the respondents knew that a breast lump was a warning sign for breast cancer, 58.5% were unaware of most warning signs and only 9.8% knew of methods of detecting breast cancer. Odusanya and Tayo (2010) found that only 27% of nurses in a tertiary health institution in Lagos, Nigeria could identify up to 3–4 risk factors for breast cancer. In addition, 51% of these nurses wrongly identified the use of fingertips in performing BSE. Adelekan and Edoni's (2012) study also showed that majority and some of the respondents did not know that mammography and breast self-examination are ways of diagnosing breast cancer.

The result of hypothesis two revealed that attitude of staff in Federal Universities of North Central zone, Nigeria towards cancer prevention strategies is good with t-value of 3.512was found to be greater than the t-critical of 1.972 at degree of freedom 751 with $P< 0.05$. This shows that the hypothesis which states that attitude of staff in Federal Universities of North Central zone, Nigeria towards cancerprevention strategies is not significant was rejected. The findings of this study is not in line with Ramathuba et al.,

(2015) study which shows that One hundred and forty-two (94.7%) of the women said that they had never performed breast cancer diagnostic checks before. The results showed no breast cancer screening programme campaigns had ever been conducted in Makwarani Community and participants did not even know how often screening is done. Similar findings were reported by Ojikutu and Adetifa (2009), who indicated that the majority (93.3%) of study participants in their study preferred reporting at the hospital or any other health facility within their neighbourhood, whilst only 5.9% preferred to seek the intervention of traditional medical services. This is supported by Mugivhi, Maree and Wright (2009), who asserted that most women prefer biomedical treatment. Religious beliefs are particularly dominant amongst black women with a passionate confidence in God, but their mind sets are somehow stuck in attitudes and beliefs such as fatalism, magic, witchcraft and demons. Although Christianity and Islam have replaced traditional religions, the thoughts of the people about life and their attitude to it are still shaped by the old worldview (Akhigbe&Akhigbe, 2012).

The results also revealed that cancer prevention strategies practices by thestaff in Federal Universities of North-central Zone, Nigeria is not significant with t-value value of 1.611 which was found to be greater than the t-critical which is 1.972 at degree of freedom 751. This data clearly reveal that the hypothesis which states that there is no significant practice of cancer prevention strategies among staff of Federal Universities in North Central zone Nigeria was retained. This means that there is no significant practice of cancer prevention strategies among staff of Federal Universities in North Central zone Nigeria. This study is in line with the result ofthe study byOkobia, Bunker, Okonofua and Osimeu(2006) which also showed that the use of screening methods was very low among the study subjects where only 34.9% practiced Brest Self Examination in the past year and none ever had a mammogram. However, in a study of Jacobs, Penn &Brown

(2009) on the practice of BSE among black women in the United Stateit was found that 89.0% of respondents indicated practicing BSE during the past year, 74.0% indicated having done so during the past six months, and 39.0% indicated performing self-exam monthly. Similarly, Grunfeld, Ramirez, Hunter and Richards (2002) reported similar percentage of US women reporting practice of BSE monthly or more often.Participants instudyOkobia, Bunker, Okonofua, and Osimeu, (2016) had the right attitude towards breast cancer as majority indicated visiting the doctor for breast complaints. The use of screening methods was very low among study subjects. Odusanya and Tayo (2010) reported that 89% of Nurses in Lagos, Nigeria practiced BSE and 34.3% had CBE although majority of their study participants did not know the correct time or technique for carrying out the procedure. Available of the data indicates that majority of women in the screening age group in the developed countries undergo routine screening using all three methods including monthly BSE, annual CBE, and annual mammography (Frisell et al, 2011 &Bjurstam et al 2011). In a survey of practice of BSE among black women in the US, Jacobs, Penn, and Brown (2009) found that 89% of respondents indicated practicing BSE during the past year, 74% indicated having done so during the past six months, and 39% indicated performing self-exam monthly.

The results showed that knowledge of cancer prevention strategies influence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria. The findings of Meghir, Palme, and Simeonova. (2012) lie somewhere inbetween. Their estimates indicate that more educated men and women experiencereduced mortality up to the age of fifty, but that these life gains are offset by increasedmortality later on in life. Meghir et al. (2012) also consider cancer mortality as someof their health outcomes, which makes their study most closely related to this research.Meghir et al. (2012) found no impact of the Swedish compulsory school reform

on cancer mortalityat all cancer sites (but the lung). But they do find that more educated men andwomen face lower mortality rates in preventable diseases (which they define as lungcancer and cirrhosis of the liver). While their results on cancer mortality are verysimilar to the results we obtain in previous researches, which is reassuring in a literature assparse as this, that is, an estimated causal link between education, cancerrisk and cancer mortality, where the researcher look at all cancer sites together as well as themost common cancer sites in isolation.Ahmadian and Samah (2012) With regard to Muslim women, pointed out that Muslim meninappropriately use Islam to justify their authority and dominance over their spouses which creates another barrier for breast cancer screening

The results also showed that knowledge of cancer prevention strategies do not influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria. It is believed thatan educated individual has more resources to devote to preventive and curative health care, prefers longerand healthier lives, is able to detect cancer early, and is better informed on howto seek and respond to the cancer treatments.it is therefore expected should see reduced cancer risks(and higher survival rates) among more educated men and women. Along similarlines, Cutler and Leras-Muney (2000) argue that differencesin resources, references and knowledge may explain why more educated men andwomen face lower health risks.Azubuike and Okwuokei (2013) state that practice of primary prevention strategies of cancer has strong has a very strong association with knowledge and practice of early detection strategies. The study showed that not all who knew about the preventive strategies practiced it, which also revealed that there is a very strong indication that practice increases as level of knowledge increases. Additionally, Azubuike and Okwuokei (2013) posited that there is an existing association between the knowledge of cancer risk factors and practice of

preventive strategies. Suggesting that knowledge of the risk factors seems to be a motivation to practice. Previous study by Haji-Mahmoodi, Montazeri, Jarvandi, Ebrahimi, Haghighat and Harirchi(2012) has also identified relationship between knowledge and practice of preventive procedures. However, the commonest reason reported for not practicing any of the preventive procedures was the feeling that one cannot get breast cancer, followed by lack of awareness and forgetfulness and then avoidance of fear and anxiety. Specifically, 'the feeling that one cannot get breast cancer' indicates denial, disbelief and superstition

The results revealed that there is significant influence of demographic characteristics of respondents (level of education, religion and age) on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria. Pokhrel, Martikainen, Pukkala, Rautalahti, Seppä and Hakulinen(2010) that high education has been found to help the patient in navigating through health care and in its systems that may appear complicated. Among those with highest education level, the highest survival proportions were observed in the health-conscious group, which, for example, exercises more than the others. Other life-style factors such as smoking and consumption of alcohol may also lay behind the relatively low survival proportions in those with the shortest education.The risk of encountering cancer has a clear relationship with social class and occupation but the risk is not always highest in the lowest socio-economic strata. The new study of Pokhrel et al (2010) shows now that the most educated had systematically higher cancer-specific survival proportions in the 27 cancer types in the study. The patients were divided into three groups (basic, medium and high education). A particular health-conscious group (physicians, nurses, teachers etc.) was studied separately and had even higher survival proportions than those with high education.

The results also revealed that there is no difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge, attitude and practice of cancer prevention strategies.The burden of breast cancer continues to increase in Asian countries according to Yoo (2010), although some strategies for breast cancer prevention strategies and treatment are in place. Two systematic literature reviews on cancer prevention strategies and breast cancer screening barriers, have shown wide disparity among breast cancer incidences in Asian countries (Yoo, 2010). Breast cancer incidence rates increased significantly until the end of the 1990's in Asian women. It was reported that, the percent of increase in breast cancer mortality for middle-aged women from the mid-80s to the mid-90s was the highest in Korea, followed by China, and Japan (Bray, 2014). Ahmadian and Samah (2012), reported that in Asian countries, breast cancer is also the most frequently diagnosed cancer among women, the crude incidence rate of breast cancer varied from 21.3 per 100,000 population in Jordan, 21.4 in Iran, 24.1 in Turkey, 34.86 in Malaysia, 48 in Japan to 54 per 100,000 population in Singapore. Breast cancer arises in the younger age group of Asian women, 40 to 49 years-old compared to the other Western counterparts, where the peak prevalence is realized between 50 to 59 years (Ahmadian&Samah, 2012).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The purpose of this study was to assess knowledge, attitude and practices towards cancer prevention strategies among of staff of Federal Universities in North-central Zone, Nigeria. Seven (7) objectives, research questions and hypotheses respectively was formulated and tested for this study. Related literature were reviewed under the conceptual framework, theoretical framework and empirical studiesother aspect covered by the literature review were concepts of cancer, prevalence of cancer, types of cancer, causes of cancer, cancer prevention strategiesgeneral symptoms of cancer, general treatments of cancer, risk factors for cancer, , knowledge of cancer prevention strategies, attitude towards cancer prevention strategies, practice of cancer prevention strategies, empirical study and Summary. Ex-post facto research design was adopted for this study. The population of the study comprised all academic and non-academic staff of the seven Federal Universities in the North-central Zone, Nigeria. The seven Federal Universities are; University of Ilorin (4,232), University of Jos (4,140), University of Agriculture Makurdi (3,912), Federal University of Technology Minna (3,122), University of Abuja (4,510), Federal University, Lokoja (2,504), and Federal University, Lafia (2,940). Hence, the total population of staff of these Federal Universities is 25,361. A sample of seven hundred and fifty-six (756) academic and non-academic staff was drawn from the population using a multi-stage sampling procedure of

simple random sampling procedure, stratified sampling procedure and proportionate sampling procedure. The instrument used for data collection was a questionnaire which was validated by five (5) jurors in the Departments of Human Kinetics and Health Education, Nursing Science and Veterinary Public Health of Ahmadu Bello University, Zaria.The results of the pilot study revealed that Spearman-Brown Split Half, Gutman Split Half and Cronbach Alpha reliability on knowledge, attitude and practice of cancer prevention strategies are 0.839, 0.813 and .859 respectively. Data collected was analyzed with Statistical Package for Social Science (version 22) using frequencies, percentages, mean, standard deviation, inferential one sample t- test statistics, independent sample t – test, Regression Analysis and Pearson Product Moment Correlation (PPMC) at 0.05 alpha level of significance.

The data, thus, collected was analysed to assess:

1. Knowledge of cancer prevention strategies among staff of Federal Universities in North-central Zone, Nigeria.
2. The attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
3. The practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria.
4. Whether knowledge of cancer prevention strategies influences attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
5. Whether knowledge of cancer prevention strategies influences practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria

6. Whetherdemographic characteristic of respondents (religion, level of education and age) influence their knowledge, attitude and practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria
7. Whethergender differences exist among staff of Federal Universities in North-central Zone, Nigeria in their knowledge, attitude and practice ofcancer prevention strategies

The findings of this study are summarized as follows:

1. Staff in Federal Universities of North-central Zone, Nigeria are significantly knowledgeable about cancer prevention strategies ($t = 4.207$; $p = 0.021$).
2. The attitude of staff in Federal Universities of North Central zone, Nigeria towards cancer prevention strategies is significant ($t = 3.512$; $p = 0.001$).
3. Cancer prevention strategies practices by the staff in Federal Universities of North-central Zone, Nigeria is not significant ($t = 1.611$; $p = 0.11$).
4. Knowledge of cancer prevention strategies significantly influence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria ($r = 0.838$, $p = 0.0012$).
5. Knowledge of cancer prevention strategies did not significantly influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria ($r=0.071$; $p =0.2$).
6. There is significant influence of demographic characteristics of respondents (level of education, religion and age) on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria ($f = 15.016$; $p =0.000$).

7. There is no significant difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge, attitude and practice of cancer prevention strategies ($t = 1.099$; $p = 0.11$).

5.2 Contributions to Knowledge

This study contributes to knowledge and existing literature that;

1. Staff in Federal Universities of North-central Zone, Nigeria are knowledgeable about cancer prevention strategies.
2. The attitude of staff in Federal Universities of North Central zone, Nigeria towards cancer prevention strategies is good.
3. Cancer prevention strategies practices by the staff in Federal Universities of North-central Zone, Nigeria is not good.
4. Knowledge of cancer prevention strategiesinfluence attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria.
5. Knowledge of cancer prevention strategies will not influence practice of cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria.

6. There is influence of demographic characteristics of respondents (level of education, religion and age) on knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria.
7. There isno difference between male and female staff of Federal Universities of North-central zone, Nigeria in their knowledge, attitude and practice of cancer prevention strategies.

5.3 Conclusion

Based on the findings of this study, it was concluded that adequate and positive knowledge of cancer prevention strategies and attitude exist among staff of Federal University in North-central Zone, but their practice of cancer prevention strategies was found to be grossly inadequate. Specifically, the following conclusions were drawn;

1. Knowledge of cancer prevention strategiesexists among staff in Federal Universities of North-central Zone, Nigeria are
2. Positive attitude towards cancer prevention strategieswas found among staff in Federal Universities of North Central zone, Nigeria
3. Poor practice of cancer prevention strategies was found among staff in Federal Universities of North-central Zone, Nigeria
4. Knowledge of cancer prevention strategiestranslateinto positive attitude towards cancer prevention strategies among staff in Federal Universities of North-central Zone, Nigeria

5. Knowledge of cancer prevention strategies do not mean that staff in Federal Universities of North-central Zone, Nigeria practice cancer prevention strategies.
6. Demographic characteristics of respondents (level of education, religion and age) had influence knowledge, attitude and practice of cancer prevention strategies in Federal Universities of North-central Zone, Nigeria
7. Male and Female staff of Federal Universities of North-central zone, Nigeria do not differ in their knowledge, attitude and practice of cancer prevention strategies

5.4 Recommendations

Based on the conclusions of this study, the following recommendations are made: Since it has been established that adequate and positive knowledge of cancer prevention strategies and attitude exist among staff of Federal University in North-central Zone, but their practice of cancer prevention strategies wasfound to be grossly inadequate, basedon the foregoing, the researcher made the following recommendations;

- Concerned agencies (in essence;Cancer Foundations, WHO, ACS and NCI) and Ministries Departments and Agencies of government should double effort in ensuring that knowledgeand attitude of Universities staff and the general populace about cancer prevention strategiesis sustained
- Activities that can as well improve people's practice such as health intervention programmes (in essence; video play, radio jingles and print media intervention) should be made available by Ministry of Health through health education for the citizens (Universities staff) so as to have improved attitude towards cancer prevention strategies

- Adequate intervention programmes such as informed radio jingles and health education on improved practice of avoidance of risk factors and health education on positive health behaviours should be carried out by Agencies of government (MDAs), Non-governmental organisationson Academic and Non-academic staff of Universities in North-central Zone to bridge the gap that exist between knowledge, attitude and practice.

5.5 Suggestions for Future Research

Further studies should be conducted on the following:

a) Knowledge of cancer risk factors among residents of North central Zone, Nigeria
b) Knowledge, Attitude and Practice of avoidance of cancer risk factors among civil servants in Northern states Nigeria
c) Assessment of impact of health behaviour on Practice of Cancer Prevention strategies among University students in Nigeria

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APPENDIX I

DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION

AHMADU BELLO UNIVERSITY, ZARIA - NIGERIA

(OFFICE OF THE HEAD OF DEPARTMENT)

VICE CHANCELLOR: **Professor Ibrahim Garba,** *B.Sc., M.Sc., (ABU); Ph.D. (London); D.I.C.*

HEAD OF DEPARTMENT: **Professor M. A. Suleiman,** *N.C.E. (OYSCE); B.Sc. (UNICAL); M.Sc. Ph.D. (ABU)*

Date:----------

Dear Sir/Madam

REQUEST TO VET QUESTIONNAIRE

Mr. AKOREDE, Seun Nurudeen is a Ph.D. student in Health Education in the Department of Physical and Health Education. In partial fulfillment of the requirements of his programme, he is conducting a research on **"Assessment of Knowledge, Attitude and Practices Towards Cancer Prevention Among Civil Servants of Federal Universities in North-Central Zone, Nigeria".** He will be using questionnaire to collect information required for his study.

In this regards, he has prepared a questionnaire which I am sending herewith. On the basis of your professional expertise, and years of experience, you have been selected as one of the jurors to vet the questionnaire to improve its quality, scope and appropriateness.

I would appreciate it very much if you kindly spare your precious time to go through this critically and carefully and make your suggestions and comments. The candidate will personally retrieve the questionnaire from you as directed by you.

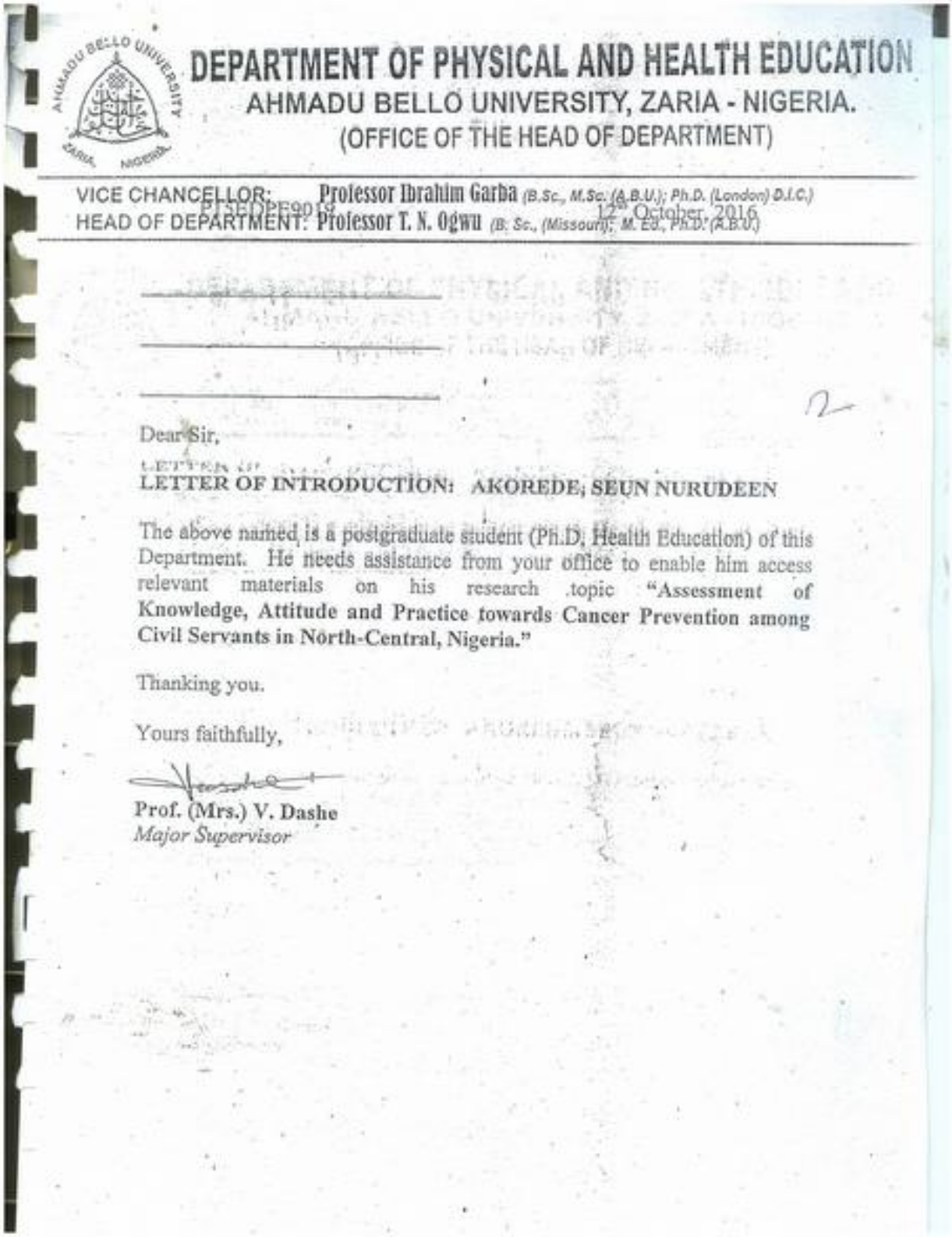
Thanks.

Dashe

Prof. V. Dashe

(Major Supervisor)

APPENDIX II



DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION
AHMADU BELLO UNIVERSITY, ZARIA - NIGERIA.
(OFFICE OF THE HEAD OF DEPARTMENT)

VICE CHANCELLOR: Professor Ibrahim Garba (B.Sc., M.Sc. (A.B.U.); Ph.D. (London) D.I.C.)
HEAD OF DEPARTMENT: Professor T. N. Ogwu (B. Sc., (Missouri); M. Ed., Ph.D. (A.B.U.)

PASED/PE/2016 12th October, 2016

Dear Sir,

LETTER OF INTRODUCTION: AKOREDE, SEUN NURUDEEN

The above named is a postgraduate student (Ph.D, Health Education) of this Department. He needs assistance from your office to enable him access relevant materials on his research topic **"Assessment of Knowledge, Attitude and Practice towards Cancer Prevention among Civil Servants in North-Central, Nigeria."**

Thanking you.

Yours faithfully,

Prof. (Mrs.) V. Dashe
Major Supervisor

APPENDIX III

Required Sample Size†
from: The Research Advisors

Population Size	Confidence = 95.0% — Degree of Accuracy/Margin of Error				Confidence = 99.0% — Degree of Accuracy/Margin of Error			
	0.05	0.035	0.025	0.01	0.05	0.035	0.025	0.01
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
900	269	419	568	823	382	541	672	854
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,361	378	760	1449	6965	647	1285	2403	10029
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1505	8514	658	1330	2563	13583
84,172	382	777	1509	8620	659	1333	2573	13855
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1352	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
264,000,000	384	784	1537	9603	663	1354	2654	16585

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APPENDIX 1II

LETTER OF INTRODUCTION: MR. AKOREDE SEUN NURUDEEN

Dear Respondent,

Mr AKOREDE SeunNurudeen is a Postgraduate student specializing in Health Education in the Department of Human Kinetics and Health Education Ahmadu Bello University, Zaria. He is conducting his research on **Assessment of Knowledge, Attitude and Practice of Cancer Prevention strategies among Staff of Federal Universities in North -central Zone, Nigeria.**

He has developed this research instrument for the purpose of data collection only, could you please fill in the needed information. The information you provide will be confidentially handled and use only for academic pursuit.

Thank you

Akorede S. N.
Researcher

Instruction: Please, tick [✓] the appropriate choice in the box provided which best describes your opinion

Section A: Demographic Characteristics of the Respondents

1. **Age Range in years:** (a) 18 – 29 ( ), (b)30 – 39 ( ) , (c)40 – 49 ( ), (d) 50 and above ( )
2. **Gender**: (a) Male ( ), (b)Female ( )
3. **Highest level of Education**: (a) SSCE ( ),
   (b) NCE ( )
   (c) B.Sc.( )
   d)M.Sc ( )
   (e) Ph.D ( )
4. **Religious Affiliations:** (a) Islam ( ),
   (b) Christianity ( ),
   (c) traditional ( )
5. **Level of Income per month**: (a) N 50,000 - 100,000 ( )
   (b) N150, 000 – 249,000 ( )
   (c) N 250,000 – 349,000 ( )
   (d)N350,000 and above ( )

Instruction: Please tick (√) the option you think is most appropriate in the column provided in each section. The keys are as follows:

SA – Strongly Agreed; **A** – Agreed; **D** – Disagreed; **SD** – Strongly Disagreed

Section B: Respondents' Knowledge of Cancer Prevention strategies

S/N	Item	Responses			
		SA	A	D	SD
1	Maintaining healthy weight can reduce cancer risk				
2	Work place hazard such as radiation can be a risk factor of cancer				
3	Age of an individual can predispose one to cancer				
4	Tobacco smoking increases risk of cancer				
5	Family history [heredity] could be a determinant to cancer risk				
6	Early presentation of cases could safe severity of cancer condition				
7	Infectious agents such as human papilloma virus (HPV) can lead to cancer				
8	Packaged foods such as beef diet and saturated fat contains carcinogenic substances that can cause cancer				
9	Early cancer detection allowsfor effective treatment				
10	Prolong exposure to air pollution by pesticide, dust, chemicals increases risk for cancer				
11	Prolong exposure to water pollution due to chemical agents increase risk for cancer				
12	Chemo preventive properties of drugs can help reduce cancer risk occurrence				
13	Prolong exposure to radiations such as X-ray increase cancer risk				
14	Screening of blood before transfusion prevent cancer				
15	Education about cancer through intervention programmes can eliminate cancer				

Instruction: Please tick (√) the option you think is most appropriate in the column provided in each section.

Section C: Respondents' Attitude towards CancerPrevention strategies

S/N	Item	Responses			
		SA	A	D	SD
1	I prefer to maintainhealthy body weight in order to reduce cancer risk				
2	I prefer to have a job at workplace free of radiations that predispose me to cancer				
3	I will like to take preventive actions against cancer to minimize its occurrence as I age				
4	I feel it is not healthy to smoke tobacco as it increases risk of cancer				
5	Once I feel cancer in my family history [heredity] I will avoid risk factors				
6	I feel early presentation of cases could safe severity of cancer condition				
7	I feel infectious agents such as human papilloma virus (HPV) can lead to cervical cancer				
8	I feel packaged foods such as beef and saturated fat contains carcinogenic substances that can cause cancer				
9	I feel early cancer detection allowsfor effective treatment				
10	I feel prolong exposure to air pollution by pesticide, dust, chemicals increases risk for cancer				
11	I feel prolong exposure to water pollution increase risk for cancer				
12	I feel Chemo preventive properties of drugs can help reduce cancer risk occurrence				
13	I feel Prolong exposure to radiations such as X-ray increase cancer risk				
14	I feel Screening of blood before transfusion prevent cancer				
15	I feel education about cancer through intervention programmes can eliminate cancer				

Instruction : Please tick (√) the option you think is most appropriate in the column provided in each section. The keys are as follows:

MO – Most Often;O – Often; LO – Less Often; NA – Not at All

Section D: Respondents' Practice ofCancerPrevention strategies

S/N	Item	Responses			
		MO	O	LO	NA
1	I have to stop tobacco smoking in order to prevent risk of cancer				
2	I eat healthy food with moderation				
3	I participate in physical activities to maintain healthy weight				
4	As a family we engage in colonscopy every ten years				
5	As a family, we have open dialogue with family doctor in support of important cancer preventive measures				
6	My participation in cancer screening is in accordance with medically recommended guidelines				
7	I feel infectious agents such as human papilloma virus (HPV) can lead to cervical cancer				
8	I avoid packaged foods such as beef and saturated fat that containcarcinogenic substances which can cause cancer				
9	I engage in medical test to ensure early cancer detection of cancer				
10	I avoid prolong exposure to air pollution by pesticide, dust, chemicals that increases risk of cancer				
11	I avoid prolong exposure to water pollution due to chemical agents that increases risk of cancer				
12	I use prescribed drugs with chemo preventive properties that can help reduce cancer risk occurrence				
13	I avoid prolong exposure to radiations such as X-ray that increases cancer risk				
14	I ensure screening of blood before transfusion can prevent cancer				
15	I engage in educational intervention programmes on cancer so as to broaden my knowledge of risk factors				

APPENDIX IV

Table 2: Sampled Number of Respondents from Selected Federal Universities in North-central Nigeria

S/N	Name of Institution	Academics (a)	Sample Size Selected (2%)	Non-Academics (b)	Sample Size Selected (2%)	Sample Size Selected (2%)
1.	Federal University of Technology Minna	703	$\frac{703x4}{100} = 30$	2,420	$\frac{2420\times4}{100} = 48$	126
2.	University of Agriculture Makurdi	1,142	$\frac{1142\times4}{100} = 46$	2,770	$\frac{2770\times4}{100} = 55$	156
3.	University of Abuja	1,129	$\frac{1129\times4}{100} = 48$	3,381	$\frac{3381\times4}{100} = 68$	184
4.	Federal University Lafia	630	$\frac{630\times4}{100} = 28$	2,812	$\frac{2310\times4}{100} = 47$	122
5.	University of Jos	1,296	$\frac{1296\times4}{100} = 52$	2,844	$\frac{2844\times4}{100} = 58$	168
		5,690		**12725**		**756**

APPENDIX V

Result of the Split half reliability test

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

	Part 1	Value	.788
		N of Items	18[a]
	Part 2	Value	.781
		N of Items	17[b]
		Total N of Items	35
		Correlation Between Forms	.785
Spearman-Brown Coefficient		Equal Length	.839
		Unequal Length	.793
		Guttman Split-Half Coefficient	.813

Result of the Cronbach Alpha Reliability test

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

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Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.859	.821	35

Item Statistics

	Mean	Std. Deviation	N
Question 1	3.1000	.05368	30
Question 2	3.4040	.49824	30
Question 3	3.2500	.55915	30
Question 4	3.4010	.59824	30
Question 5	3.3500	.81273	30
Question 6	3.1400	.68304	30
Question 7	3.1060	.72084	30
Question 8	3.2500	.71635	30
Question 9	3.4500	.78640	30
Question 10	3.8050	1.20698	30
Question 11	3.4000	.28258	30
Question 12	3.3000	.23110	30
Question 13	3.4000	.26972	30
Question 14	1.9500	.07868	30
Question 15	3.2050	.79785	30
Question 16	2.5000	.88852	30
Question 17	3.1020	.68056	30
Question 18	3.2500	.54640	30
Question 19	2.3500	.47292	30
Question 20	3.2000	.75244	30
Question 21	2.4000	.63085	30
Question 22	3.6000	.26636	30
Question 23	2.1200	.92950	30
Question 24	2.2020	.41872	30
Question 25	3.0400	.87367	30
Question 26	2.0000	.24264	30
Question 27	2.6040	.59464	30
Question 28	3.2000	.32435	30
Question 29	2.0700	.30116	30
Question 30	3.0400	.06202	30
Question 31	3.6070	.73499	30
Question 32	3.6000	.92950	30
Question 33	2.2040	.97854	30
Question 34	2.6010	.39318	30
Question 35	3.6060	1.07057	30

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.250	1.950	3.805	2.878	2.003	.075	35