Professor Sunday Adeyemi Adewuyi
MBBS, MCPS, FCPS, FMCR, FWACS, FICS
Professor of Radiology
(Clinical and Radiation Oncology)
Professor and Chief Consultant; Clinical and Radiation Oncologist
Department of Radiology
Faculty of Medicine

Clinical and Radiation Oncology Services in Nigeria:
That there be Quality Life after Cancer Treatment

AN

INAUGURAL LECTURE

BY

PROFESSOR SUNDAY ADEYEMIADEWUYI
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Dedication

To the memory of my beloved late father, Chief Deacon Jacob Adejumo Adewuyi and my darlyn and beloved mother Mama Dorcas Adebomi Adewuyi, who toiled day and night after Daddy's departure to glory, sent me to the University, stood by me all the way through and gave me the greatest asset which is education. They gave me the opportunity which they themselves never had.

To my friend and wife, Mrs. Kehinde Roseline Adewuyi and the beloved and wonderful children Emmanuel, Joshua, Michael and Grace Adewuyi, that they will excel far beyond my own achievements as it pleases God Almighty.

To my students who brought out the best from me in the course of my teaching and my patients from which I have learnt so much and to whom I remain committed to offer the best in my clinical services.

Above all, to the Almighty God who saw me through the turbulence of life and made this day a reality and a huge success and made me worthy to be highly privileged, favored and honored.

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Acknowledgments

"I will bless the Lord at all times: His praise shall continually be in my mouth. My soul shall make her boast in the Lord: the humble shall hear thereof and be glad. O magnify the Lord with me, and let us exalt His name together. I sought the Lord, and He heard me and delivered me from all my fears." Psalms 34:1-4.

I am eternally grateful to the Almighty God for being God and seeing me through the turbulence of life and making me victorious in life. Today, I stand before you as the first professor of Radiology, Ahmadu Bello University, Zaria to give the first inaugural lecture from the department of Radiology, Ahmadu Bello University, Zaria. All glory, honour and majesty to our Lord and Saviour Jesus Christ, Amen.

I wish to appreciate the Vice Chancellor, Prof Ibrahim Garba and his predecessors for creating the enabling environment to attain my full potentials and for providing me the platform to serve humanity. I am also grateful to the inaugural lecture committee for affording me this opportunity to give account of my stewardship in the academic arena.

I wish to seize this great opportunity to appreciate and remember my beloved parents Late Chief Deacon Jacob Adejumo Adewuyi who encouraged me to read Medicine and my beloved mother Mama Dorcas Adebomi Adewuyi who labored tirelessly to make sure that my dreams come through. She sold her jewels and precious clothing to see me through the Medical school. I remain eternally grateful for having both of you as my parents. Daddy may your soul rest continually in the bosom of our Lord Jesus Christ. Mama, may the Almighty God continue to give you good health, strength, joy and happiness all the days of your life, amen.

To my darlyn and best friend, Mrs. Kehinde Roseline Adewuyi, you are indeed a help meet for me. I will continually love and cherish you. You are one in a million, a precious jewel that I will continue to appreciate and cherish. Your support, love, advice and motherly care cannot be quantified. To the wonderful four nations that God blessed us with, Emmanuel, Joshua, Michael and Grace, I love you all and my sincere prayer is that you will be greater than your parents and you will never pass through the challenges that harassed your parents in Jesus name, Amen. Thanks for being good and wonderful children. I appreciate you all.

Today, I stand tall because I am standing on the shoulders of my teachers who have groomed me and imparted so much into me and made me an oncologist worth listening to. Notably, my father in the profession, mentor, supervisor and teacher who taught me the rudimentary of clinical and radiation oncology, Professor I. Kizilbash of the Nuclear Medicine, Oncology and Radiotherapy Institute (NORI), Islamabad – Pakistan. Others include Dr Mrs. Humera Faheem, Dr Faheem Mohammed, Dr Mrs. Fatmi, Dr Fatmi, Dr Mateen, Dr Riaz (Medical Physicist), and Dr Mrs. Rubina of NORI. I am grateful for all your efforts in training me and making me to have success in life.

I also wish to appreciate my fathers in the field of clinical and radiation oncology in Nigeria notably Professor Oladapo Babatunde Campbell (UCH, Ibadan), Professor Kingsley Kayode Ketiku (Retired), Professor Aderemi Tajudeen Ajekigbe (LUTH, Lagos), Professor Francis Durosinmi-Etti (LUTH, Lagos), and Professor Josbat Thomas Duncan (Retired). I am very grateful for your advice, encouragement and support during those turbulent years of my life.

I cannot forget those that were there for me during my undergraduate days and when I started residency prior to leaving for International Atomic Energy Agency (IAEA)

Fellowship Award. Those who saw the potentials in me and assisted me to achieve my dream, amongst who are Professor Alhassan Mela Yakubu who allowed me to start residency in Radiotherapy during the infancy stage of the department, Professor Elegba (CERT ABU ZARIA), Prof Ibrahim Abdu-Aguye, Professor Paul Nmadu (Late), Professor Iliyasu Mohammed (Late), Professor Elsie Samaila, Professor Nascint Mbibu (late), Professor Emmanuel Ameh, Professor Sunday Oladapo Shittu and Professor Abdulmumuni Hassan Rafindadi.

I am also grateful to the present and past Deans of Faculty of Human Medicine, Professor Adamu Girei Bakari (Current Dean), Prof Ibrahim Abdu-Aguye, Professor AH Aikhionbare, Professor Abdulmumuni Hassan Rafindadi and Professor Sani Mohammed Shehu, who assured me that hardwork pays and encouraged my researches despite the hostile environment.

I am specially indebted and grateful to the International Atomic Energy Agency (IAEA) for sponsoring me for Fellowship at the regional training center for Africa, Middle East and Asia at the Nuclear Medicine, Oncology and Radiotherapy Institute (NORI), Islamabad – Pakistan and for the other numerous fellowship and scientific visits to South Africa, Sudan, Uganda, Tanzania and Tunisia. Your efforts are not wasted and they are highly appreciated.

My special gratitude goes to institutions and organizations that sponsored my numerous scientific visits to China, India, Pakistan, Belgium, Czech Republic, USA, Germany, Kenya, Spain, United Kingdom, Turkey, Austria, Ghana, Australia, Serbia, South Africa, Israel, Malaysia, to mention a few, notably International Network for Cancer Treatment and Research (INCTR), ROCHE, NOVARTIS, SANOFI AVENTIS, ASTRA ZENECA, MERCK SERONO, National Cancer Institute (NCI) USA, Ahmadu Bello University, Zaria and Ahmadu Bello University Teaching Hospital, Zaria. I am

very grateful for the opportunities and I pledge to continue to render quality service to humanity.

Without the patients from whom I learnt so much, I cannot reach the level I am today, a Professor of Clinical and Radiation Oncology, the first Professor in Northern Nigeria and the first in Ahmadu Bello University, Zaria-Nigeria. Thanks to all my patients, through your suffering, I learnt to be compassionate and determined to improve the quality of care and life of cancer patients in Ahmadu Bello University Teaching Hospital Zaria and Nigeria at large. Your suffering pave way for better care for others after you. Thanks for your patience and endurance. May the Lord almighty never allow us and our beloved to be victims of cancer.

I wish to acknowledge my colleagues in the department of Radiology, Faculty of Medicine namely Dr Tajudeen Ayodeji Olasinde, Dr David Ayorinde Dawotola, Dr Adamu Abdullahi, Dr Umdagas Hamidu, Dr Nuhu Chom, Dr Phillip Ibinaiye, Dr Joseph Igashi, Dr Suleiman, Dr Ibrahim Zaria, Dr Abdullahi Adamu, Dr Sefiya Olarinoye Akorede, Dr. Bello Usman, Dr Goje and others for their support, encouragement and sharing of expertise. My postgraduate students (Residents Doctors): Dr Samuel Otene (now a consultant), Dr Tessy Ahmadu (now a consultant), Dr Benjamin Popoola (now a consultant), Dr Ikechukwu Chukwocha, Dr Ismail Zubairu, Dr Hadiza Theyra Enias, Dr Kenneth Olaofe, Dr. Samuel Kwis, Dr Jummai Jimeta and Dr Nuhu Tumba who made me to be on my feet and up to date and whom I enjoyed teaching my course "Management Decision", I appreciate you all. To the nurses whom I am closely knitted to for quality care to all our cancer patients, I am very grateful to you all for taking care of the cancer patients especially Mrs. Akaayar (retired), Mrs. Anyanwu, Mrs. Makanjuola, Mrs. Esther Obiniyi, Mrs. Koyan, Mrs. Balarabe, Mr. Saleh, Mrs. Eunice Amaonwu, Mrs. Sani (retired), Mrs. Ladan, Mrs. Abdullahi and others in the ward

that makes the ward round sweet and worth looking to. The oncology Pharmacists are not left out namely Pharm Ramatu Alabelewe, Pharm Bulus Markus, Pharm Suleiman, Pharm Bashir, Pharm Nafisa Yahuza, Pharm Saratu Mohammed and a host of others. I am indebted to the Medical Physicists (Mrs. Biola Olugbemiro and Mr. Jacob Mbaye), Therapy Radiographers (Mr. Godwin Eze, Mr. Patrick Idah and Mr. Eboh Eboh), radiotherapy technicians (Mr. Jonathan and Mr. Mohammed), Medical record Staff (Mr. Peluwa, Mr. Sanusi, Mr. Abdullahi Chairman, Miss Sarah, Mrs. Akor, Mrs. Mary, Mr. abdulganiyu Baba Offa) and our competent and reliable engineer Mr. Ibrahim who are very important team members. I am also grateful to the entire administrative staff of the departments of Radiology and Radiotherapy & Oncology (Mrs. Esther, Mrs. Oshafe, Mr. Silas, Mr. Auta, Mrs. Agatha, Miss Florence, and Mr. Abubakar Surajo).

I am deeply grateful to my research team in Radiotherapy and Clinical Oncology notably Prof. Modupeola Samaila, Prof. Adekunle Oguntayo, Associate Prof. Mrs. Abimbola Kolawole, Professor SO Shittu and Professor AH Rafindadi. I cherish our interactions, collaborations and researches.

It is gratifying to appreciate my siblings. The support I enjoyed throughout my school days and through my career from my siblings: Engr. Aderemi Adewuyi, Mrs. Funmilayo Farinre, Mrs. Elizabeth Olutunmogun, Pharm Victoria Mairafi, Mrs. Grace Fatai, Dr Taiye Adewuyi, Mr. Kehinde Adewuyi, Mrs. Yemisi Moses and Engr. Akinyele Adewuyi are highly appreciated.

Special appreciation to my spiritual parents for spiritual nourishment provided which sustained me through this journey of life, especially the leadership of Chapel of Goodness, ABUTH Tudun Wada, Zaria, Professor Josiah Onaolapo (Bethel Bible Church Graceland Zaria), Pastor Martins, Pastor

Ayoola Fadirepo, Pastor Mrs Agnes Akinjopo, Pastor Lanre Ashonibare, Pastor Sunday Adekunle, Reverend AA Alade (Gateway Baptist Church, Ibadan) and my dear friend and brother Dr Alexander Gomna.

To all those who have directly or indirectly contributed positively to my well being and career growth, too numerous to mention, I am very grateful. I will not forget all my classmates right from Baptist Primary School, (LEA) Kigo Road Kaduna, Government Secondary School, Musawa, School of Basic Studies (SBS), Ahmadu Bello University Zaria, Medical School (Faculty of Human Medicine) ABU Zaria and IAEA Fellows in NORI, I cherish your love, support, encouragement and assistance. God continually bless us and keep us for His glory.

To all my friends, I am thankful and indebted to you. I appreciate your huge support and inspiration which as contributed immensely to my success.

Finally and once again, I am grateful to the Almighty God for keeping me alive up to this day. God bless you all.

Protocol:
The Vice Chancellor
The Deputy Vice Chancellor (Academics)
The Deputy Vice Chancellor (Administration)
Other Principal Officers of the University
Deans and Directors
Eminent Professors
Members of Senate
Heads of Departments
Colleagues in the Academia
Distinguished Guests
Members of University Community
Members of the Teaching Hospital Community
My Dear Students and friends
My Dearest Patients and Cancer survivors
Gentlemen of the Press
Ladies and Gentlemen

Prologue:
It is with great pleasure, a sense of humility, gratitude to God and Honour to present this first inaugural lecture of the Department of Radiology, Faculty of Human Medicine, Ahmadu Bello University, Zaria.

Through my years of research, I consider this historic event a climax of my academic career in this great University.
When I started this journey in 2003, little did I know that one day I will be standing here before you as the first in Radiology to give account of my intellectual stewardship.

I indeed want to remain grateful to the Almighty God whose divine providence has been my guide and sustenance.

Introduction

Cancer is classified under non-communicable diseases and it is expected to rise especially as a result of westernization and ageing population. This is also evident in my department with rising number of new cancer cases annually. Presently, cancer is seen by many as a death sentence in Nigeria due to a lot of confounding factors which include dearth of manpower, inadequate infrastructural facilities and absence of political will to address this menace headlong.

The 3 major pillars of functional health care is availability, affordability and accessibility and where these 3 pillars are existing, a 4th pillar is sustainability. Presently, in Nigeria there are deficiencies in all the 3 major pillars of healthcare as it relates to cancer care in Nigeria.

Mr. Vice Chancellor Sir, Cancer is to many a death sentence! The title of my inaugural lecture is to give hope even when everything around speaks to the contrary. This has been a major goal in all my years of practice and I intend to carry us through history of clinical and radiation oncologic practice in the country, the present predicament we found ourselves and the negligence of both the leaders and the led which brought us to the sorry state we found ourselves today. This is an insight to the "*corruption*" in the health system. Mind you, corruption is not always about stolen money. According to the English Dictionary, corruption is defined as moral perversion, depravity, dishonest proceedings, debasement, rottenness or any corrupting influence.

Today, cancer is a death sentence because there are no available treatments or patients cannot access these treatments and where there is accessibility, the treatment is not affordable. Patients suffer agony from the disease and also from the psychological torturing inflicted upon these patients by the

actions and inactions of the government, health institutions, the hospital leadership and medical staff.

The chosen title of ***"clinical and radiation oncology services in Nigeria: that there be quality life after cancer treatment"*** is to arouse our conscience and help walk the talk in alleviating the suffering of the cancer patients, as no one is immune against this unwanted visitor called cancer that may visit anytime.

I do not intend to make you a clinical and radiation oncologist through this lecture but to educate you that we can do a lot together, capitalizing on the change agenda in sensitizing the populace and the leaders on the dilapidated state of clinical and radiation oncologic services in Nigeria and help stem the tide, improve the facilities, manpower and quality of care to a level that meets the international standard with resultant effect of improved quality of life after cancer treatment. I implore you to be patient with me as we journey together on this rough and turbulent road.

What is Cancer?

Cancer can be defined as malignant disease affecting the body which is characterized by uncontrolled growth and high tendency to metastasize to distant sites.[1] Cancer is a group of diseases involving abnormal growth with potential to invade or spread to other parts of the body.[2] Not all tumours are cancerous; benign tumours do not spread to other parts of the body.[3]

Symptoms and Signs

When cancer begins, in the very early stage, it invariably produces no symptoms. With time, symptoms and signs appear usually as a result of growth leading to a mass, destruction of normal organ function, secretion of substances that can cause alteration in normal physiology, pressure symptoms,

incompetence of systems and organs, weight loss, bleeding, ulceration etc.[4,5]

It is very important to know that some cancers can be detected before onset of symptoms and signs through screening and also to note that by the time some cancers are detected, it has obviously spread beyond capacity for cure. It implies that awareness, screening programs and early detection are very important and fundamental if we need to change the present trend of late presentation, advanced disease and high morbidity and mortality associated with cancer in our environment.[6-8]

Mr. Vice Chancellor Sir, my researches have shown that in this environment, the pattern of presentation is a reversal of the pattern seen in the developed countries. In developed countries, they have 20% of cancer incidence, 20% mortality, 20% of late presentation and 20% of advanced disease. In under developed countries, including Nigeria, they have 80% of cancer incidence, 80% mortality from cancer cases, and 80% of late presentation and 80% of advanced disease.[9-11] On the contrary, 80% of the radiation therapy megavoltage equipments, facilities and relevant manpower are located in the developed countries with 20% situated in under developed countries despite the high incidence of cancers.[12] What a scenario? We have the burden of cancer and dearth of facilities to manage them.[12,13] This is compounded by shortage of drugs and necessary legislation to assist cancer patients.

In this gathering, I am very sure if I should ask us to indicate by raising up of hands those that have relatives that have suffered from cancer, I am sure not a few hands will be raised. For some of us, the experience of beloved one suffering from cancer or having lost a beloved to cancer is very agonizing. Our hospitals have been relegated to mere consulting clinics and ill-equipped to attend to this "unwanted visitor" when it comes. My researches revealed that cancer destabilizes the

family, mob up the available family resources, renders the family poor and hopeless, stress the care givers psychologically and emotionally and finally, leaves the family with painful and agonizing memories of beloved ones.[14,15]

Causes of Cancers

The causes of cancer are broadly divided into two main factors namely the environmental and genetic factors. 90-95% of cases are caused by environmental factors and only 5-10% due to inherited genetics. Environmental factors include social habits, lifestyles, behavioral and economic factors, infection, diet and obesity, alcohol and tobacco use, radiation, stress, lack of physical activities, environmental pollutants, chemicals etc.[5,6,16-18] Therefore, the vast majority of cancers are non-hereditary (sporadic). Hereditary cancers are primarily caused by inherited genetic defect.[17] It therefore implies, that while one may not be able to alter the inherited genetic defects, it may be possible to take measures prior to manifestation of these tumours to either detect them early with possibility of cure or avoid the onset of such inherited tumours.

It is painful that cancer is caused predominantly by environmental factors that are relatively under the control of humans.[16-18] Adjustments of lifestyles can reduce the risk of many cancers. This is based on the hypothesis that if one is not exposed to the culprit carcinogens, then no risk of development of such cancers, e.g. exposure to Human papilloma virus (HPV) is the main culprit for cervical cancers in most cases. Non exposure or vaccination prior to exposure has been found to confer protection against HPV related cervical cancer.[8] The burden of cervical cancer in this environment is overwhelming because of non-uptake of screening programs and faulty social lifestyles.[5,7,8]

"You Feel Something, Say Something and See your Doctor"
Cancer is real! No individual is immune against cancer. It is a common cause of death among non-communicable diseases. Cancer occur irrespective of age, sex, colour, race, religion, education level, financial status or political party.[19-21] The pattern of cancer seen is influenced by the interaction of the host genetics and the environmental factors. Thus, the type of cancer seen varies from region to region within same country and from country to country and continent to continent.

According to Globocan 2012 report, there were 14.1 million new cancer cases, 8.2 million cancer deaths and 32.6 million people living with cancer (within 5 years of diagnosis) in 2012 worldwide. 57% (8 million) of new cancer cases, 65% (5.3 million) of the cancer deaths and 48% (15.6 million) of the 5-year prevalent cancer cases occurred in the less developed regions, Nigeria inclusive.

Figure 1: Map of the world

The overall age standardized cancer incidence rate is almost 25% higher in men than in women, with rates of 205 and 165 per 100,000, respectively. Male incidence rates vary almost five-fold across the different regions of the world, with rates ranging from 79 per 100,000 in Western Africa to 365 per 100,000 in Australia/New Zealand (with high rates of prostate cancer representing a significant driver of the latter). There is less variation in female incidence rates (almost three-fold) with rates ranging from 103 per 100,000 in South-Central Asia to 295 per 100,000 in Northern America.[22] The commonest cancers worldwide are lungs, breast and colorectal cancer in decreasing order. This report is limited by non-existence or inadequate cancer registry in less developed countries including Nigeria.

Table 1 showing the estimated incidence, mortality and prevalence worldwide in 2012 excluding non-melanoma skin cancer

All Cancers (excluding non-melanoma skin cancer)

Estimated Incidence, Mortality and Prevalence Worldwide in 2012

Estimated numbers (thousands)	Men			Women			Both sexes		
	Cases	Deaths	5-year prev.	Cases	Deaths	5-year prev.	Cases	Deaths	5-year prev.
World	7410	4653	15295	6653	3548	17169	14063	8202	32465
More developed regions	3227	1592	9559	2827	1287	8274	6054	2878	16623
Less developed regions	4164	3062	5747	3831	2261	8895	8014	5323	15532
WHO Africa region (AFRO)	265	205	468	381	250	696	545	456	1353
WHO Americas region (PAHO)	1454	677	3843	1429	518	4115	2882	1195	7958
WHO East Mediterranean region (EMRO)	263	191	461	293	175	733	555	367	1194
WHO Europe region (EURO)	1670	1081	4791	1744	852	4910	3715	1933	9701
WHO South-East Asia region (SEARO)	815	516	1237	968	555	2041	1724	1071	3278
WHO Western Pacific region (WPRO)	2642	1692	4493	1902	1095	4464	4543	2978	8956
IARC membership (24 countries)	3669	1900	9193	3349	1570	9402	7038	3470	18595
United States of America	825	324	2402	779	293	2373	1604	617	4775
China	1823	1429	2486	1243	775	2549	3065	2205	5045
India	477	357	565	537	326	1125	1015	683	1730
European Union (EU-28)	1403	716	3693	1265	551	3464	2635	1276	7157

Table 2 showing cancer incidence and mortality according to sex in selected countries/ regions

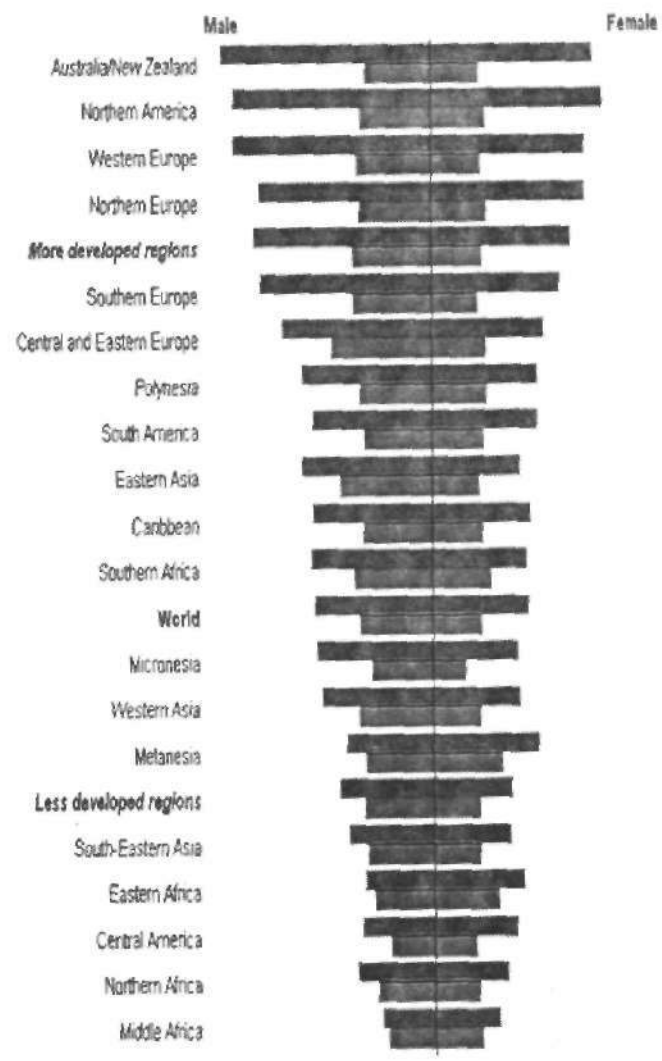
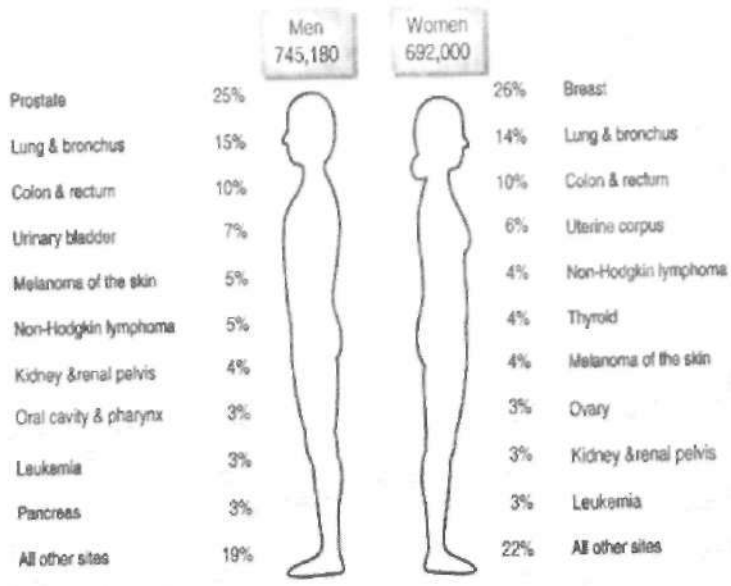


Figure 2 showing cancer incidences in the United States of America:



Mr. Vice Chancellor Sir, my researches revealed that the pattern in Nigeria varies slightly from the pattern seen worldwide but very similar to the pattern seen in less developed world with cervical cancer and breast cancer top most in women and Head & Neck cancers and prostate in men.[5,7,11,23] The statistics in Nigeria is predominantly hospital based data because of the deficient cancer registry in the country. Hospital data has a lot of limitations as not all cancer patients present to the hospital for proper diagnosis and management. A lot of our people die of cancer without being diagnosed due to ignorance and apathy for orthodox treatment.

The radiotherapy and oncology department of Ahmadu Bello University Teaching Hospital (ABUTH) receives patients from all parts of the country due to paucity of radiotherapy facilities and the incessant breakdown of linear accelerators in the country.

Figure 3 showing the estimated cancer incidence worldwide in 2012: Men

My research in gynaecological malignancies revealed that the incidence of cervical cancer is predominantly influenced by social lifestyle especially multiple sexual partners caused by polygamy, high rate of divorce and remarriage; early age at

first coitus, Human immunodeficiency virus (HIV) infection, smoking and the prevalence of HPV in the female population and other aetiologic factors.[4,7] It is expected that with female education, increased awareness, vaccination against HPV, the incidence of cervical cancer will decrease. Presently, there is high disease burden from cervical cancer in this environment. In the elderly patients, the pattern is not different from that of the general population as my research has shown that the commonest in men is prostate cancer followed by head and neck cancer and the commonest in women is cervical cancer followed by breast cancer. In the paediatrics age group, the commonest solid tumour seen in this environment is retinoblastoma followed by the soft tissue sarcomas (both rhabdomyosarcoma and non-rhabdomyosarcoma), lymphomas and Wilm's tumours in decreasing order.

Human immunodeficiency virus (HIV) infection is common in this environment. With advent of HAART, a lot of HIV positive patients live longer and this increases the chance of developing AIDS related cancer. The study carried out by me in this environment revealed cervical cancer and Kaposi sarcoma as the leading cancers in HIV positive patients. The study also revealed that HIV-related cancers occur in younger patients, with aggressive disease, shorter duration of symptom, undifferentiated histology, metastases to unusual sites and suboptimal response to conventional treatments. Mortality is very high in this class of patients.[24,25] There is need for further multidisciplinary approach to evolve the best optimal care for these patients in spite of the high prevalence of HIV in our environment.

In terms of mortality, there is less regional variability than for incidence, the rates being 15% higher in more developed than in less developed regions in men, and 8% higher in women. In men, the rate is highest in Central and Eastern Europe (173 per 100,000) and lowest in Western Africa (69). In contrast, the

highest rates in women are in Melanesia (119) and Eastern Africa (111), and the lowest in Central America (72) and South-Central (65) Asia.[22] This report is also limited by deficient cancer registry in less developed countries including Nigeria.

Figure 4 showing the estimated cancer mortality worldwide in 2012: Men

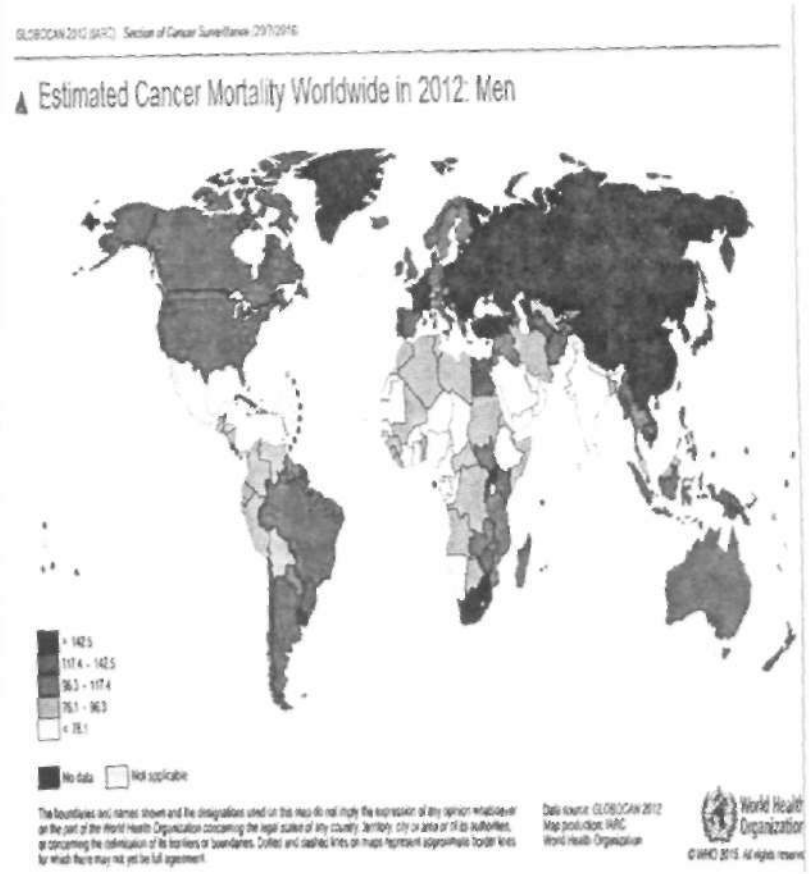
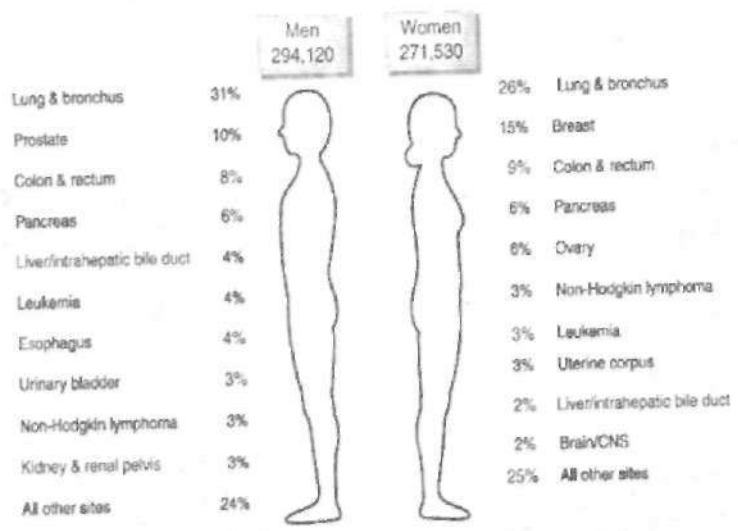


Figure 5 showing cancer mortality in United States of America:



Mr. Vice Chancellor Sir, my researches also revealed that due to late presentation and advanced stage disease, significant proportion of the patients presented with oncologic emergencies.[26] The commonest oncologic emergencies seen in this environment include tumour haemorrhage followed by bone pain with imminent spinal cord compression from bone metastases.[26,27] In the same vein, a lot of patients presented late with metastatic disease. The commonest sites of metastases vary with the tumour biology and the pattern on chest radiograph is predominantly multiple lesions. The commonest site of metastases for breast cancer and prostate cancer is bones.[9,11,28]

Because of the late presentation and advanced stage disease, most of our patients are not candidate for curative treatment. It is very important to improve cancer awareness and screening especially for the common cancers which is prevalent in our

environment namely cervical, breast, head and neck and prostate cancers. For this group of patients presenting with advanced and metastatic disease, palliative care is the aim of treatment with intent to control symptoms, improve quality of life and prolong survival as cure is often very remote.[29-32] This also underscores the role of multidisciplinary approach and involvement of palliative care team, care givers and the religious leaders especially at the terminal stage of life.[33,34] With respect to the high incidence and burden of cervical cancer in the environment, there is also need to acquire high dose rate (HDR) brachytherapy equipment to reduce the long waiting time presently experienced by the patients as the low dose rate (LDR) machine can only treat 2 patients per week compared to about 20 patients per day with the HDR. There is an urgent need to correct the needs and constraints experienced with the brachytherapy in this environment.[35]

The Vice Chancellor Sir, due to the overwhelming burden of cervical cancer in this environment and the long waiting time for radiation therapy, my research evolved the use of cisplatin chemotherapy for haemostasis in bleeding cervical cancer which has eventually improved survival, quality of life of patients and changed the management of cervical cancer in developing and low resource countries.[30]

A lot of efforts have been put into developing multidisciplinary team (MDT) in the management of cancer patients in this institution. It is the right direction in cancer care and all specialists involved in the care of cancer patients should align themselves into the principle of multimodality and multidisciplinary approach to cancer management. It is a win – win – win situation for all including the patients, clinicians and caregivers. The patients receive the best available optimal care with resultant improvement in survival and quality of life of patients after treatment. This MDT must include the clinical & radiation oncologist, pathologists, surgeons, radiologists,

oncology pharmacist and oncology nurse as major team members. Others are included as the need arises. The pathologist is very relevant as there might be need for review of slide or in diagnostic dilemma as a lot of patients were referred from other institutions with their pathology reports.

Mr. Vice Chancellor Sir, my partnership with ROCHE Pharmaceutical Company has brought the advancement in pathology using Immunohistochemistry (IHC) testing into the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria and as improved tremendously the competence and practice in this center through the provision of IHC panels to resolve some diagnostic dilemma which the Pathology department now manages. With the availability of immunohistochemistry for diagnosis in the institution, there is need for the expert opinion of the pathologists.[36-38] The MDT will also evolve the best care available and affordable in this environment as everything in the literature, as done in the developed world are not feasible in our environment due to deficient facilities. Therefore, it is pertinent to evolve treatment guidelines in resource constraints environment like ours.

Sir, there is poverty in the land! In view of the prevailing poverty in this environment, there must be alternative to out of pocket payment for treatments for the indigent patients. The state and federal government must evolve a welfare package and or health insurance scheme for indigent cancer patients. Similarly, the religious bodies must not be left out in this social and religious responsibility to cater for the needy and sick people.[39,40] I wish at this juncture to commend the Vice Chancellor for the frequent roles played in ensuring optimal care of Staff of the University with cancer through financial assistance.

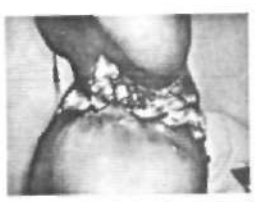
The outcome of treatment also varies from region to region, predominantly influenced by available resources (both facilities

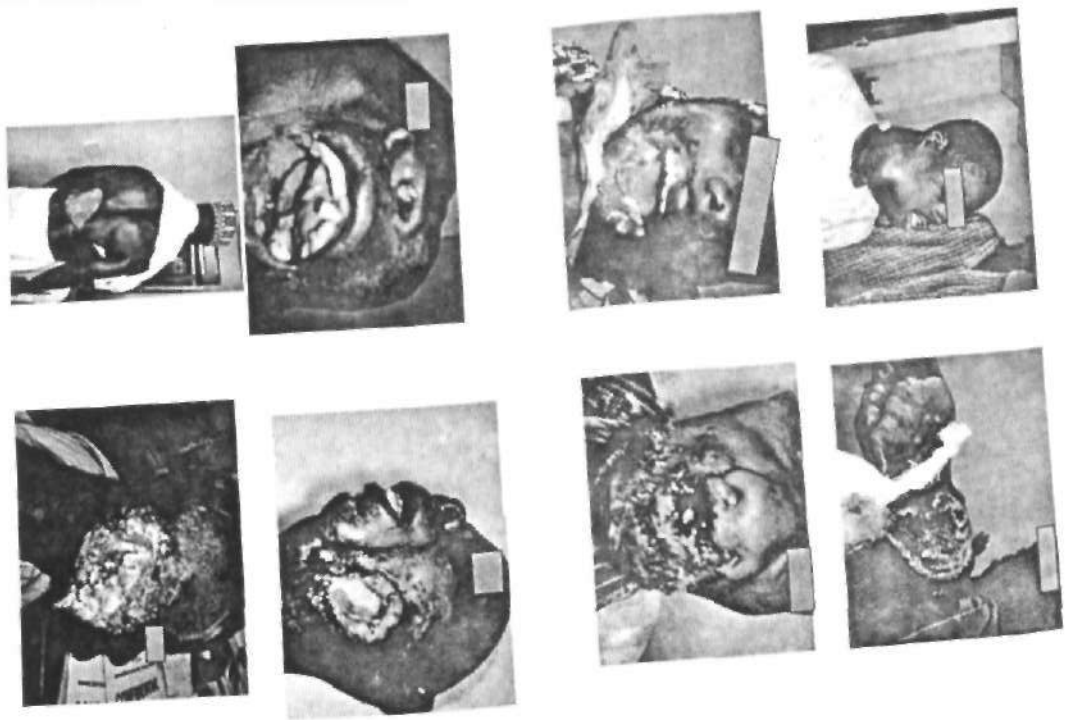
and manpower), stage at presentations, extent of uptake of screening programs, prevailing poverty in the populace, awareness and attitude to orthodox treatment, beliefs and culture, health insurance and to a larger extent corruption in the health system and lack of political will by the leaders. The university community must lead in this education and advocacy on cancer.

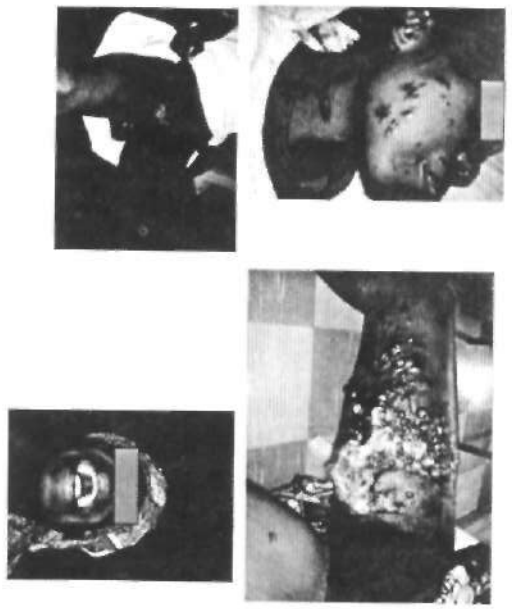
Consider this equation briefly (Adewuyi's equation):
"Corruption in Health Sector + Lack of political will = Annihilation of cancer patients"

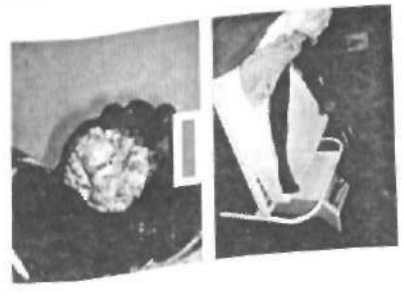
Nigeria is the most populous African country with a population approaching 200 million people based on 2006 population census and average growth rate of 3.1%. Surprisingly, it is one of the least developed countries with inadequate, suboptimal clinical and radiation therapy facilities for the teeming cancer patients.
The main 3 pillars of any health system coded as 3As is Availability, Accessibility and Affordability and where all these 3 pillars exist, a 4th pillar; Sustainability becomes very relevant. All these components are faulty with respect to cancer care in Nigeria's health system. Many of the cancer patients have little or no access to safe and modern radiation therapy.[12, 41-43] It is not available or non-existent in many region of Nigeria, the few available centers are not accessible to most cancer patients, and where accessible, it is not affordable. Definitely, if nothing urgent is done, cancer will remain a death sentence in Nigeria!

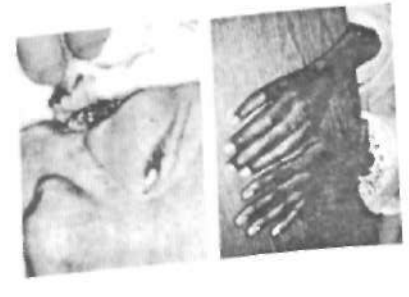
Clinical Photographs

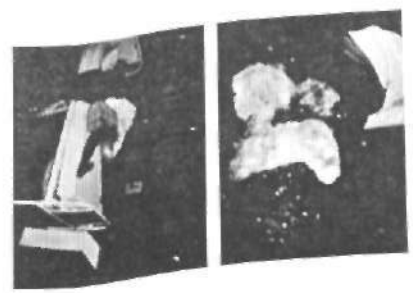


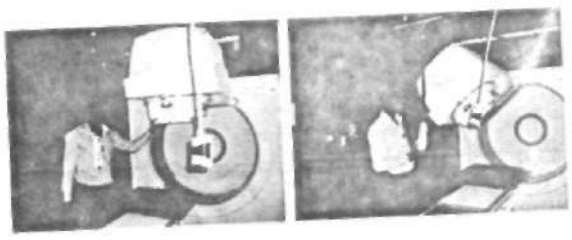


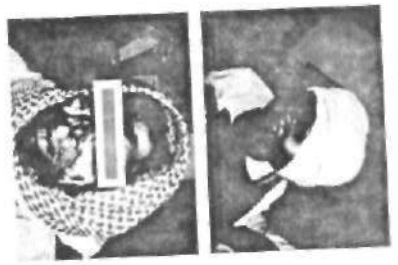


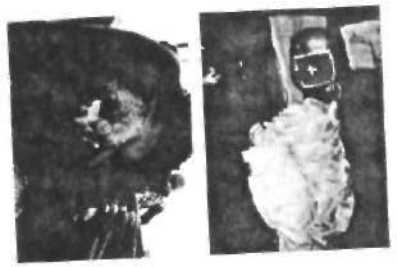


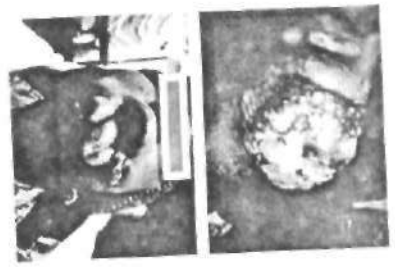


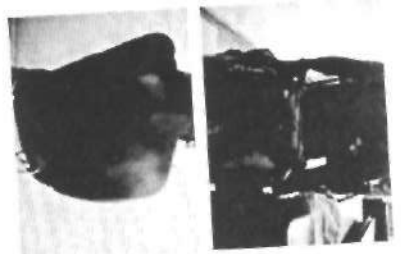


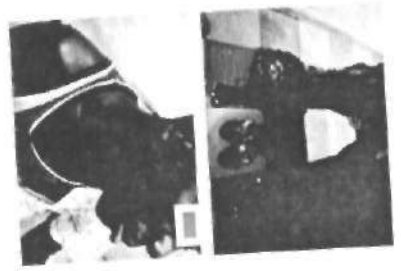












Mr. Vice Chancellor Sir, in my effort to improve quality of life of cancer patients, I researched on the infrastructural facilities and manpower development regarding cancer care in Nigeria, the results were appalling.[12,41] There is need to obtain a better understanding of the status of radiation oncological practices in Nigeria and help to sensitize the Nigerian government and its developmental partners including the education sector / universities on the way forward. The Ahmadu Bello University, Zaria can become a major stakeholder in this battle. This is premised on the fact that the nation health care delivery system has significant inputs from the patients, health care professionals, financiers (government/ institutions) and partners. A good synergy among these stakeholders is required to achieve optimal care and the desired improvement in quality of life of cancer patients.

The traditional and herbal medicines enjoys wide acceptance in Nigeria mainly due to the fact that it blends readily with the sociocultural life of the people in whose culture it is deeply rooted.[4] One of the reasons why there is little patronage of the orthodox medicines is because it has not gained wide acceptance and yet to blend with sociocultural life of the people. Also a lot of patients still operate faith-based treatments with resultant late presentations, high morbidity and mortality.[14,15] There is need for improved awareness campaign on cancer. In our environment, different people have different names or description for cancer. Can you translate cancer in to your native language? This is the starting point if we desire our people to accept orthodox medicine and change the present norm of late presentation and high mortality. There is need for a paradigm shift.

How the Journey of Health Care Begins in Nigeria

The first health care facility in Nigeria was a dispensary established in 1880 by the Church Missionary Society (CMS) in Obosi, Anambra State. In 1885, the first hospital was established in Abeokuta, Ogun State, Sacred Heart Hospital Abeokuta by the Catholic Church of Nigeria. Within a short time, the first government hospital was established in 1889 in Cross Rivers State, the St. Margaret Hospital, Calabar. Thereafter in 1939, precisely 50 years later, the first Medical school was established, the Yaba Medical College, Lagos to produce the necessary medical personnel for health care delivery. The university College Hospital Ibadan was the first teaching hospital established in 1948 in the South west and the first in the North was established in 1955 in Kano.[44,45]

The first cancer department was established in Lagos University Teaching Hospital (LUTH), Idi Araba after independence in early 1960's and the first Cobalt-60 machine for treatment in 1973 in LUTH followed by the 2nd in UCH Ibadan in 1987. The first cancer center with Cobalt-60 machine in the north was Ahmadu Bello University Teaching Hospital (ABUTH), Zaria which started treatment in 2000, although the brachytherapy unit was established earlier in 1995. The first center with Linear accelerator in Nigeria is the National Hospital, Abuja which started treating patients in 2000. Other centers started treatment as follows: Usman Danfodio University Teaching Hospital (UDUTH), Sokoto in 2009; University of Nigeria Teaching Hospital (UNTH), Izalla – Enugu in 2012; University of Benin Teaching Hospital (UBTH), Benin in 2012, courtesy of Presidential Program for upgrade of Teaching Hospitals (VAMED).[12]

Sir, by the special grace of God, I was the supervising consultant oncologist under VAMED for the establishment of cancer centers in Benin (UBTH), Sokoto (UDUTH) and the first and pioneering Clinical and Radiation Oncologist to treat

patients with computerized treatment planning in UDUTH by extension the first in Nigeria. I was also engaged to set up oncology units at the Federal Medical Center (FMC) Katsina and Barau Dikko Specialist Hospital Kaduna due to the overwhelming patients' population.

Mr. Vice Chancellor Sir, what can Ahmadu Bello University do? With the presence of Center for Energy Research and Training (CERT), Physics and Chemistry departments, Ahmadu Bello University Teaching Hospital (ABUTH), there is need for concerted efforts and collaboration to evolve technologies that can benefit our cancer patients in this part of the world and to train medical physicists, therapy radiographers and maintenance engineers for the treatment machines.

Challenges Facing Cancer Care in Nigeria

The challenges facing cancer care in Nigeria is overwhelming and really needs the political will to surmount them.[41] A few of the problems and challenges will be highlighted:

- High disease burden
- Low awareness amongst the populace
- Deficient diagnostic and therapeutic equipments.
- Deficient infrastructural facilities.
- Deficient manpower (Surgeons, Oncologists, Pathologists, Pharmacists, Radiographers, Medical Physicists, etc)
- Deficient National and regional cancer registry.
- Prevailing poverty in the populace.
- High cost of health care.
- Apathy / low acceptance of orthodox medicine with bias towards traditional, herbal and religious institutions.
- Wrong concept of Health in the populace.
- Health is not number 1 priority issue for the Federal government of Nigeria.

- Too many competing demands with cancers in the Federal ministry of health (FMoH).
- Incessant breakdown of equipments without backup.
- Procurement of equipment without inputs from the end users.
- Unstable electricity, dependence on alternative power source and exorbitant cost of running equipments on diesels.
- Bureaucracy / bottle necks for procurement of spare parts for equipments.
- Absence of maintenance culture and contract with supplier.
- Lack of prompt response by foreign engineers when equipment is faulty.

Ladies and Gentlemen, all the above directly or indirectly contributes to the appalling situation of cancer care in Nigeria, poor quality of life of patients, late presentation, advanced disease and high morbidity and mortality.[9-15, 41]

The Vice Chancellor Sir, with worsening economy and falling oil price, provision of capital intensive medical equipment is an unaffordable luxury in this part of the world due to wrong priorities and endemic corruption.[12, 41] Despite the approval of some cancer drugs under the National Health Insurance Scheme (NHIS), the scheme is yet to fully implement this approval, and some very important diagnostic tests needed for cancer diagnosis are obviously deleted from NHIS. The elites including university lecturers and political leaders have found a cheaper way out with very expensive implication on the generality of Nigerian population. Medical tourism to India, Egypt, South Africa, United Kingdom, United State of America, Germany and Saudi Arabia to cater for relatives having cancer sometimes using National funds at the expense or detriment of developing the health centers in the country. Is

this not corruption? Definitely, being diagnosed of cancer in Nigeria is a death sentence due to costs of drugs, surgeries, investigations, radiotherapy, deficient facilities for radiation therapy and specialized care, and inadequate manpower in every aspect of oncologic therapies.[41]

Why is the situation better in North and South African countries and worse in the sub-Saharan countries?. In my research, evidence abound that there is concerted political will, government commitment and involvement of private / non-government organizations (NGO) in the funding of cancer care which has turn things around in their favour.[12] In Egypt and South Africa, there is significant contribution to cancer care through the development of the radiation therapy facilities by the private sector.[12,41] This is absent in Nigeria. Nearly all the NGOs are concerned with Malaria, HIV & AIDS, and other infections related ailments; none wants to be involved in cancer care. The success and existence of optimal cancer care is determined by the presence of radiation therapy facilities. It is pertinent to recognize the role of radiation therapy in cancer management both for curative and palliative intents and the need to immediately address the paucity of manpower, equipment and faulty geographical distribution in the country.[12,41,46,47]

Radiation therapy is an essential part of treatment of cancers.[47] In high income or developed countries, with early stage disease as the pattern of presentation, 50-60% of the new cases of cancer would require radiation therapy at least once and up to 25% might receive a second course.[49-51] In this environment as is in other under developed and developing countries with advanced stage disease and late presentation, patients with cancer would have greater need of radiation therapy. Despite evidence that radiation therapy for cure or palliation is cost effective, cancer patients in Nigeria have limited or no access to radiation therapy.[12, 41,48,49]

Mr. Vice Chancellor Sir, as the first professor of clinical and radiation oncologist in Northern Nigeria, having benefited immensely from Ahmadu Bello University, ABU teaching hospital, Nigeria and the international community, I wish to put it on records that I have mandate to continue to invest at local and national levels towards optimal cancer care and improvement of the quality of life of cancer patients. In this respect, strategies for developing radiation oncological services need planning at the national level and substantial investments for staff training and equipments. In this country, no priority is given to cancer care services by the healthcare planners at all levels. Similarly, the rural population in this country lacks a sense of cancer awareness or recognition that treatment is available. Where the knowledge exists, the long distance to such centers and poverty become major obstacles. Travel expenses, accommodation and other factors prevent or delay many of those who are aware of their diseases from seeking medical attention. This contributes to the advanced stages at presentation with attendant morbidity and mortality.[13, 26]

Sir, adequate access to radiation therapy is a very crucial component of modern multidisciplinary cancer care.[41, 53] The provision of safe and effective radiation oncology services is complex.[53] In order to salvage the current situation of poor radiation oncological services, there is need to know the current status of radiation therapy facilities and manpower in Nigeria as a baseline for future references. It is very important to note that the availability or provision of megavoltage equipments has been used as a yardstick for optimal cancer services worldwide.[47] The validity of this approach lies in the fact that to run such unit requires governmental commitment in the form of substantial building infrastructure, equipments, staffing, maintenance and regulation of the use of ionizing radiation.[53,54] The present Cobalt-60 machine in use in ABUTH is ageing and needs a change. The center will benefit in total upgrading of infrastructural facilities and employment of more

manpower. There is need for the university management to support the teaching Hospital in her quest to acquire modern radiotherapy facilities including linear accelerator, CT simulator, HDR brachytherapy machine, computerized treatment planning system and others. It will suffix to mention that the creation of College of Health Services in ABU from the present faculty of Human Medicine will assist in manpower development like radiographers, physiotherapists, medical physicists amongst others.

The conventional megavoltage equipment for external beam radiotherapy is either a linear accelerator which generates x-rays and electrons or cobalt-60 machine which in the course of radioactivity emits gamma rays with an average energy of 1.25MeV. These equipments though very expensive still require other sophisticated equipments as accessories for safety and optimal patient care. These include conventional simulator, CT-simulator, 3D computerized treatment planning system, multileaf collimator, well equipped mould room, immobilization devices, C-arm x-ray machine, fluoroscopy machine, brachytherapy machine (LDR & HDR) and necessary and relevant equipment for quality assurance and dosimetry.[53-55]

Table 3 showing equipments distribution in commissioned radiotherapy centers

Center	Linear Accelerator	Cobalt 60	Superficial x-rays	Conventional simulator	CT Simulator	3D TPS	Brachytherapy	Mould room
ABUTH	-	1	1 (non-functioning)	-	-	-	LDR = 1	Yes
UCH	-	-	-	1 (non functioning)	-	-	HDR = 1 (non functioning)	-
LUTH	1	-	-	-	1	Yes	-	Yes
NHA	1	-	-	-	-	-	LDR = 1	Yes
UDUTH	1	-	-	-	1	Yes	-	Yes
UNTH	1	-	-	-	1	Yes	-	Yes
UBTH	1	-	-	-	1	Yes	-	Yes
FTH Gombe	-	-	-	-	-	-	HDR = 1	-
EKO Hospital	-	1	1	-	-	-	-	Yes
Total	5	2	2	1	4	4	LDR = 2 HDR = 2	7

Table 4 showing manpower distribution in Nigerian radiotherapy centers

Centers	Radiation Oncologist	Medical Physicists	Therapy Radiographer	Oncology Nurses	Mould Room Technician
ABUTH	5	2	2	4	2
UCH	8	4	6	4	-
LUTH	-	5	5	2	-
NHA	6	4	-	15	-
UDUTH	3	7	4	4	3
UNTH	3	3	4	2	1
UBTH	5	3	4	2	-
FTH Gombe	2	2	-	2	-
EKO Hospital	2	1	3	1	-
Others	10	-	-	-	-
Total	51	31	35	36	6

Table 5 showing the number of megavoltage machine and population per megavoltage in selected countries

Country	Department	Cobalt 60	Linear Accelerator	Total Megavoltage machine	Megavoltage per million	Megavoltage per department	Population million per megavoltage
Australia	42	4	86	90	4.80	2.14	0.21
China	552	381	286	667	0.53	1.47	1.89
India	358	256	35	291	0.30	1.55	3.35
Japan	611	213	603	816	6.46	1.34	0.15
Pakistan	19	21	13	34	0.26	1.79	3.85
Sri Lanka	4	7	0	7	0.37	1.75	2.70
Indonesia	16	15	9	24	0.12	1.50	8.33
Bangladesh	11	10	1	11	0.09	1.0	11.1
Nigeria	9	2	5	7	0.033	0.8	30
Egypt	35	25	28	53	0.80	1.51	1.26
South Africa	15	16	24	40	0.78	2.22	1.13

Figure 6: graph comparing the expected manpower with the observed

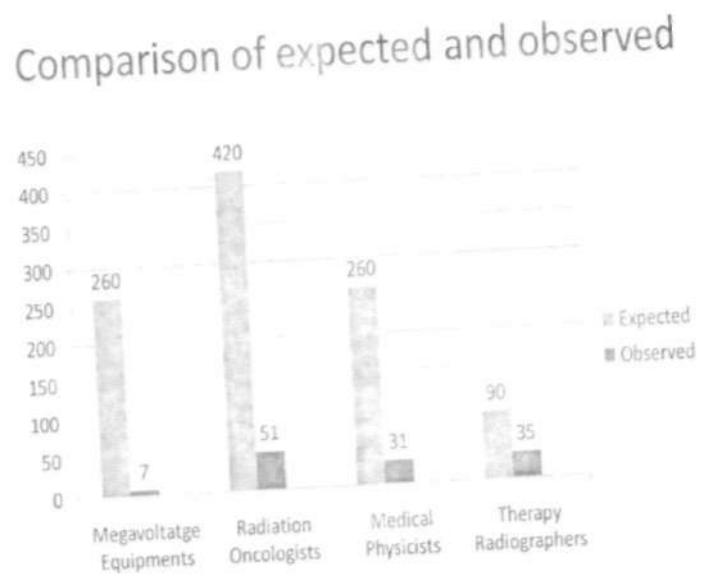


Figure 7: map of Nigeria showing the distribution of megavoltage machines

MAP OF NIGERIA SHOWING THE DISTRIBUTION OF MEGAVOLTAGE MACHINES

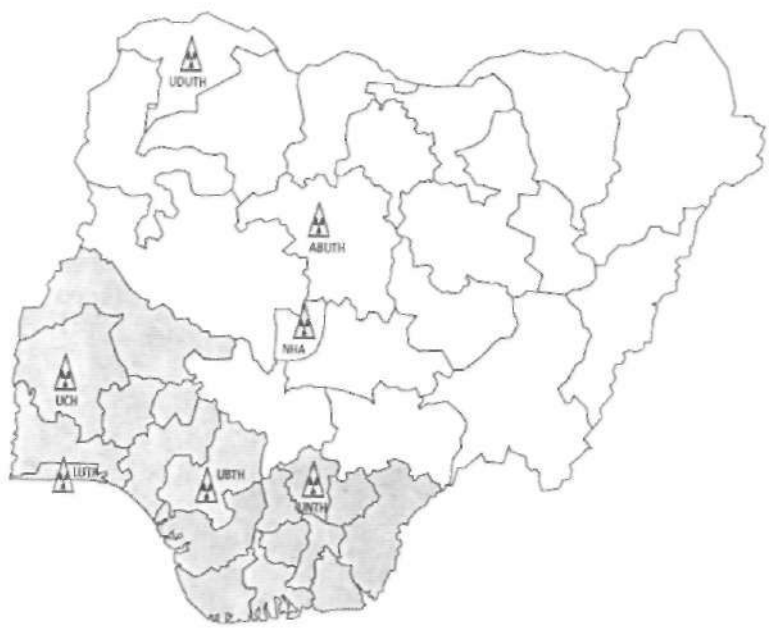
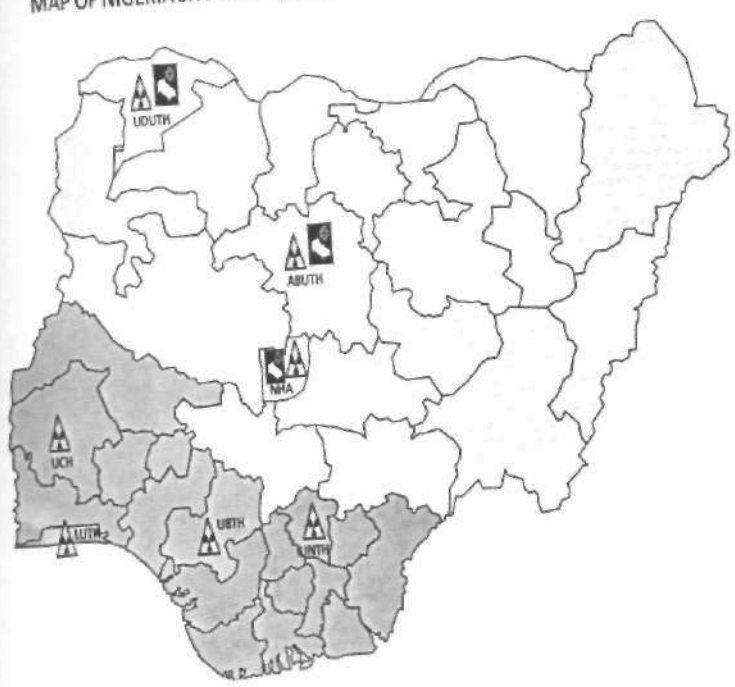


Figure 8: map of Nigeria showing the functioning centers with megavoltage machines



Megavoltage Equipment in Nigeria: Current Status versus what is needed

The International Atomic Energy Agency (IAEA) recommendation is that there should be one megavoltage equipment per 250,000 populations and if there is excellent cancer registry, one megavoltage equipment per 350-400 new cancer patients.[56] Considering Nigeria to be having a population of at least 180 million people, the expected number of megavoltage equipment is 720 units. Nigeria has only seven (7) megavoltage equipments which is 1% of the requirement. Similarly, where there is an excellent cancer registry, the IAEA advisory group in 1993 suggested that the typical incidence of new cancer patients is 75-150 per 100,000 population according to data from developed countries.[56,57] The incidence may be higher in Nigeria where apathy for orthodox care is the norm and most patients first attend faith and traditional clinic before the lucky few remembers the hospital. This implies, using an average of 100 new cancer patients per 100,000 populations, Nigeria is expected to have an average cancer incidence of 180,000 patients per annum. With reference to the literature, about 60% of these patients will require radiation therapy at one time or the other in the course of cancer treatment, therefore 108,000 cancer patients will require radiation therapy per annum.[50-52]

Using the IAEA recommendation of one megavoltage equipment for about 350 cancer patients, Nigeria requires about 308 megavoltage units. Presently, there is only 7 (2.3%) megavoltage available. While these figures may be contested according to the concept of "service and standard of care", it is indisputable that one machine for 25 million or more people in Nigeria is grossly inadequate. Whichever recommendation used for the analysis, it is certain that there is gross shortage of megavoltage equipments for cancer treatment in Nigeria with the country having only 1-2.3% of the required megavoltage equipments.

There is shortage of other necessary equipments in all the centers.[12,41] The absence of superficial and deep x-ray machines make some cancers to be managed sub-optimally. Similarly, the absence of conventional or CT simulators in most centers result in high chances of "geographical miss", recurrences, suboptimal care and complications with attendant high morbidity and mortality. The absence of high dose rate (HDR) brachytherapy in most centers especially in the north with very high incidence of cervical cancer minimizes the number of patients with cervical cancer that can be treated according to the treatment protocol. Mr. Vice Chancellor Sir, the university can create an impression in this aspect by procuring equipments for treatment or entering into partnership with developed centers or countries. From the table 5 shown on the distribution of megavoltage machines, although developing countries represent about 85% of the world population, the industrialized countries (western Europe, Japan and North America) have 60% of worlds radiotherapy facilities and about 80% of all linear accelerators.[12, 50-52]

The best outcome when treating cancer patients with radiation therapy is obtained through multidisciplinary team (MDT) approach involving radiation oncologist, medical oncologist, surgical oncologist, oncology Nurses, therapy radiographers, medical physicists, diagnostic radiologist, pathologists, oncology pharmacists etc.[58] Deficiencies in any of the core unit or specialists of the MDT can stop treatment or render equipment underutilized or cause suboptimal care for the patients.

There is need for stable source of electricity for megavoltage equipments. In this part of the world, we are all witnesses of the "Darkness" the power holding company of Nigeria (PHCN) has subjected us to over the years and it appears there is no respite in sight in the nearest future. Chief Executives of Health

institutions have become managers of generators and diesel to run the hospitals. The equipments are very sensitive to electricity fluctuation and very expensive to maintain on generators. This contributes significantly to the high cost of radiation therapy services in the country. It also contributes to incessant breakdown of the equipment, interruption or delay in treatment and prolongation of treatment period resulting in tumour repopulation, recurrence and poor prognosis. Can CERT help this great institution in power generation?

Manpower: Current Status versus what is needed

Competent personnel are a major factor in safe and effective radiation therapy to cancer patients. Since inception in 1979, the National postgraduate Medical College of Nigeria (NPGMCN) has produced about 6000 consultants / Specialists in the various fields of Medicine. Sub specialty especially in Radiotherapy and Oncology is among the worst hit with just about 50 radiation and clinical oncologist in the country practicing. There is no representation of this specialty in most hospitals under the State and Federal because there is no established department. Another reason for this shortage is lack of incentives for specialists in this field of oncology despite attendant health hazards from using ionizing radiation. Of the 50 radiation and clinical oncologist practicing in Nigeria, 10 are not practicing in the field of expertise due to lack of "vacancy" in established radiotherapy centers.

The recommendation by IAEA is that there is need for minimum of 2 radiation oncologist per center with additional 1 radiation oncologist per 200-250 new cancer patients treated annually.[56-58] The average number of new cancer patients seen per annum in the Radiotherapy and Oncology Department of ABUTH is conservatively about 1500 patients.[9,26] This implies that the center requires about 8 – 10 consultant oncologists in the department. Presently, ABUTH has only 4 consultants' clinical and radiation oncologists, grossly under staff. This is

further substantiated by the fact that only 25-30 patients should be under a single radiation oncologist at any one time to avoid radiation accidents and suboptimal care. Vice Chancellor Sir, this center is a shining star in Northern Nigeria and the teeming population of cancer patients look up to Ahmadu Bello University and the Teaching Hospital for optimal care. There is urgent need to employ more consultants for optimal cancer care in this great institution.

Considering Nigeria as a country with expected 108,000 new cancer patients per annum requiring radiation therapy, Nigeria needs about 432 radiation oncologists. Presently, there are only 50 radiation oncologists. Similarly, there will be need of more radiation oncologists for brachytherapy and 3D computerized treatment planning. Obviously, there is gross shortage of radiation oncologists in Nigeria.

Other components of staffing are also grossly affected. The country needs 270 Medical Physicists but only 31 are available (1 Medical Physicist per 400 new cancer patients). To treat an average of 75 cancer patients per megavoltage equipment per day, the center needs 6 therapy radiographers (Medical Imaging Scientists) with additional radiographers for simulations, brachytherapy, treatment planning and a supervisor.[56,57] This implies at least 10 therapy radiographers per center having only 1 megavoltage equipment for treatment of 75 patients per day. ABUTH has only 2 therapy radiographers, and the situation is not different in other institutions. This limits the number of patients that can be safely and effectively treated per day.

Other shortages are seen with respect to dedicated maintenance engineers and mould room technicians coupled with inadequate experience with megavoltage equipments and absence of relevant tools. This makes the turnaround for repairs very long, at times in months to years, waiting for the engineers from the manufacturers to come and rectify simple repairs. At this

juncture, I wish to commend the engineers from CERT who are always readily available to assist the department whenever the need arises. At a time like this with rapid development in medical equipment technology, I advise that the engineering departments of Ahmadu Bello University should come around for possible collaboration towards equipment and spare parts fabrication.

The paucity of trained staff negatively affects patients because of the following resultant effects:

- Restriction of number of patients who can be treated at a time.
- Under utilization of equipments.
- Sub optimal treatment.
- Prolonged waiting time.
- Disease progression and metastasis.
- Medical tourism within and outside the country.
- Apathy for orthodox treatment.
- Dissatisfaction amongst Medical Professionals
- Poor quality of life for the patients.
- Increase morbidity and mortality.

Furthermore, for optimal cancer care, an important aspect to be salvaged is the availability of drugs at affordable prices to the cancer patients. Presently, there is no up to date National Drug Formulary. Most current narcotics, chemotherapy and targeted therapy drugs for cancer care are not enlisted in the National drug formulary, which implies that if oncologists must work within the legal frame work of National Drug formulary, the cancer patients cannot receive optimal care. Out of stock syndrome still persist in our tertiary health institutions.[12] Because of the bureaucracy and cost of branded medications, most Pharmacy departments cannot stock the required drugs for the cancer patients. Affordability, accessibility and availability relating to cancer drugs must be addressed if

patients must receive optimal care. Many of the drugs in the market do not have National Agency for Food and Drugs Administration and Control (NAFDAC) registration number and the source of the drugs cannot be traced in case of adverse drugs reaction. A new development that is very fearful is absence of important life saving drugs for cancer treatment in the market due to non availability of foreign exchange. Since the beginning of this year, Novartis Pharmaceutical company has closed their oncology unit with attendant non-availability of Zometa which is a very important life saving drug which also guarantees improvement of quality of life for patients with bone metastases and other pathologies. Injectable narcotics are relatively available now but the oral form (tablets / syrup) must be made to be readily available for use especially in terminal care.[27] Similarly, the bureaucracy must be relaxed to enable patients receive adequate pain palliation.[27] In most health institution, there is deficient storage facility especially for the targeted therapies that require cold chain. This is compounded by the frequent power out stages experienced in this country.[41]

The Change Agenda of the Political Class and Prospect for Health Institutions

This current government is popularly known with the slogan "CHANGE". According to the English dictionary, change is defined as "to make the form, nature, content, future course etc of (something) different from what it is or from what it would be if left alone. The passing from one place, state, form or phase to another". It is very obvious that one thing that is constant in life is change. It implies that there is a constant desire to move from one state to another state usually with favourable outcome. The present health system in Nigeria needs change if anything good will happen to cancer care in Nigeria.

Under the present system of operation of the Federal Ministry of Health (FMoH), the cancer patients are forgotten and are bound to suffer because of the following:

- Cancer care is not on the priority list or order of the FMoH.
- A lot of competing factors that relegated cancer care to the background; competing factors like under 5 mortality, HIV & AIDS, maternal mortality, Immunization programmes, Primary health care (PHC), etc.
- Exorbitant cost of setting up cancer treatment centers.
- Short falls in annual budgetary allocation to the FMoH.
- Apathy of the NGOs and Private institutions towards investments in cancer care in Nigeria.
- Absence of Public Private Partnership in respect to cancer care.
- Absence of functioning National Cancer Registry and inadequacy of hospital based cancer registry statistics on cancer incidence.

The summary of these is that the "**deadliest cancer**" which is "**corruption**" has eaten deeply into the fabrics of the health system in Nigeria. Corruption is not all about stealing or misappropriation of public funds. It is defined as **"moral perversion, depravity, perversion of integrity, dishonest proceedings, debasement or alteration, rottenness in the system"**. From this definition, you will obviously agree with me that corruption is well established and deeply rooted in the Nigerian Health system.

Mr. Vice Chancellor Sir, the failure of the government to plan and take care of cancer patients, failure to meet up with challenges of ageing populations and the changing pattern of diseases in Nigeria is an act of corruption and rottenness.[20,59-61] The resultant effects of corruption and the rottenness in the health system include:

- High morbidity and mortality of cancer patients.
- Medical tourism at the expense of local health institutions.
- Brain drain of radiation oncologists, surgeons, medical physicists, radiographers, etc.
- Stage migration of cancer patients with resultant worse prognosis.
- Sense of hopelessness and resignation of cancer patients.
- Tendency to see cancer as death sentence instead of chronic manageable disease.
- Relegation of tertiary health institutions to mere consulting rooms.
- Obsolete and non-functioning equipments.
- Long waiting time and delay in treatment.
- Frequent industrial strike and disharmony.
- Prolonged turnaround for maintenance.

Adewuyi's Equation of cancer patients' annihilation:
Corruption in heath sector + Lack of political will = Annihilation of Cancer patients

QED.

The effect of corruption and rottenness in the Health sector is disastrous to all. The expectation of the cancer patients specifically and the Nigerian citizens in general is that the Change agenda of the current administration will create a paradigm shift from the norm to a state where there is hope and optimal care is guaranteed for cancer patients and citizenry.

To achieve the above, the Federal Government directly or through the FMoH needs to take a drastic measure aimed at rehabilitation of existing infrastructures and the creation of new centers with the installation of modern equipments. The manpower aspect must not be left out. The necessary improvement in the power supply cannot be over emphasized. Our experiences are promises without fulfillment with attendant resentment towards the government. There must be political will to execute the various promises of the government concerning the health sector.

The political will is needed to implement the mandatory 15% of annual Federal budget to the Ministry of health, the implementation of the National Health Act, the enrolment of cancer patients for full treatment by the NHIS, establishment of National Cancer Registry, review of the National Drug Formulary, establishment of treatment guidelines and protocols for cancer treatment, encouragement of the public private partnership and necessary legislation needed for the establishment of the above.

The Economic Climate and Cancer Patients in Nigeria

Nigeria is known to be the most populated black nation on earth. Nigeria accounts for 1 in every 4 black persons. Said to be rich in oil and other natural resources and frequently referred to as the giant of Africa. Nigeria was recently ordained as the largest economy in Africa. The titles of Nigeria are too numerous to mention. One undisputed fact is that 70% of Nigerians are living below the poverty line.[41] Indeed, poverty is prevalent and endemic in the land that is said to be the largest economy in Africa. Presently, the richest man and second richest woman in Africa are Nigerians.

Poverty plays a very significant role in the situation Nigerian health sector finds itself. A lot of diseases are related to low socioeconomic status and prevailing poverty in the population.[17] Certain cancers like cervical cancer are known to thrive in low socioeconomic environment.[4] Similarly, prevailing poverty and low socioeconomic factors are responsible for low uptake of screening programs, late presentations, apathy for orthodox treatment, advanced stage disease, abandonment or none completion of treatment, worse prognosis and high morbidity and mortality.[37-43]

To worsen the above scenario, cancer care is not fully covered under the National Health Insurance Scheme (NHIS) even for those patients under the Federal government. Most cancer patients' treatment funding is out of pocket. A few patients are sponsored by the State or Federal government. Those from elite group go to abroad to receive treatment only to be referred back for palliative care or continuation of treatment after being drained of their resources or have their corpses brought back home.[41] The cost implication of medical tourism yearly is enough to fully establish 1 cancer center every year and to also train relevant manpower needed.[41]

The average cost to treat a cancer patient with generic (for chemotherapy) and radiation therapy ranges from N100,000.00 to N500,000.00. This is excluding the use of branded chemotherapy drugs and targeted therapy which runs in millions of Naira for complete course of treatment. The available centers for treatment are very few and most patients have to travel from one geopolitical zone to another spending a lot on transportation, feeding, accommodation and other incidental needs.[12]

The average waiting time for cancer patients to receive radiation is up to 3-6 months as the few functioning centers are overcrowded with patients from different part of the country.[30] Many centers have been down due to faulty equipments for up to 1 year, yet to be fixed by the government with resultant disease progression and worsening prognosis for the patients.[41] In some instances, a lot of patients cannot even feed themselves lest they access treatment for the cancer. They live in abject poverty, depending on the benevolence of the medical team, social welfare department, and any donation from philanthropists.[39] The patients only know pains and suffering with attendant poor quality of life and eventually die.[14] Care givers and relatives are left with terrible memories of the pains and agony suffered by their beloved ones before dying. Patients are denied peaceful death and relatives denied sweet memories.[14] Something urgent must be done to salvage the plight of cancer patients in this country and guarantee better quality of life after cancer treatment!

What should be done to Salvage Clinical and Radiation Oncology Services in Nigeria?

The responsibility to salvage radiation oncology services in Nigeria, by extension the care of cancer patients lies in the hands of all of us; the government cannot do it alone. Cancer is real and it does not discriminate base on tribe, religion, sex, educational level, political class or party. We are witnesses of renowned academicians locally and internationally that have succumbed to the threat of cancer. A lot of politicians' lives have been cut short and dreams shattered by this unwanted visitor that may decide to visit anyone at anytime.

Government has responsibility to cater for the well being of her citizens by providing all components required for optimal care of her citizens. Similarly, the government should be ready to account for every death of her citizens as a result of negligence and corruption in high places.

The following are possible ways to salvage the radiation oncological services in Nigeria:

A. Establishment of New Cancer Centers and Equipping of Existing Centers with Modern Radiation Therapy Facilities

The government should consider establishing new cancer centers in regions where there is none.

The establishment of cancer centers is very expensive and usually beyond the usual annual budgeting of Teaching Hospitals. The government must plan and establish new centers in all the geopolitical zones of the country. To achieve this, there must be alternative source of funding (interventionfund) to meet up with the cost implication.

If the political will is there, the government will know how to source for the funds either through direct budgeting from

source or through partnership with established international agencies like the International Atomic Energy Agency (IAEA), World Health Organization (WHO), etc. A particular percentage of the Federal government revenue like the one done for ecological fund, dedicated oil blocks, special taxations, royalties are options that can be used to establish more centers. Most of the existing centers have obsolete and non-functioning equipments. The government should take the inventory of existing centers and note their deficiencies and peculiarities and equip them with the aim of correcting the deficiencies.

B. National Health Insurance Sscheme to Treat Cancer Patients

The NHIS should cater for all cancer patients irrespective of their employment status. For non-employee of the federal and state government, the NHIS should get a special platform where the general population can have an health insurance scheme which will eventual assist the patients if they develop cancer. The NHIS should be empowered to cater for patients from diagnosis to treatment and follow up. All necessary sophisticated diagnostic investigations should be included under NHIS. Also both generic and branded chemotherapy drugs including targeted therapy should be included.

C. Multidisciplinary Team for Cancer Management (MDT)

All Teaching and Specialist Hospitals under the federal and state government should set up multidisciplinary team for management of cancer patients. All barriers to the setting up of MDT should be removed. This will eventually help in developing treatment guidelines for all cancers. Presently, only very few centers have functioning MDT and treatment guidelines.

D. Training and Retraining of Manpower

There should be regular, organized training and retraining of personnel involved in the management of cancer patients. This improves the quality of care given to the patients and also serves as motivation to the staff. All cadres of staff should be trained and retrained. There should be a paradigm shift from the norm where only heads of department are trained and retrained. Similarly, after such training, there should be avenue to step down such training to other staff by the trained staff. Sir, the university should be active in this aspect.

E. Medical Audit & Quality Assurance (QA) in Health Institutions

Our institutions are not subjected to rigorous accounting of mortality that occurred in the institutions. Similarly, the various staffs were never asked to account for their stewardship. What suffix is filling of APER forms. Mission and vision to achieve within a specified period where not outlined and so staffs do what they desire to do, in some instances, they do not even have job description and specification. This lack of job specification, job description and targets set for the staff permits underproduction, loitering and absenteeism. There should be a system where teams are asked to account for mortalities and morbidities. They should give account of how many patients were managed and the outcome of treatment. The government and health institutions should develop instruments that can be used to objectively assess the performance of the staffs apart from using the APER forms. Targets should be given to each staff and promotion must be merited. There is need to audit the different component of healthcare with respect to cancer care. The treatment facilities must be subjected to QA.

F. Regional and National Cancer Registry

The government should stand up to her responsibilities and establish functional national cancer registry and by

collaboration with the state government develop regional cancer registry. The advantages of establishment of cancer registry are numerous and it will give statistics on the pattern of cancer seen in different regions, aid the mobilization of relevant resources and equipping the centers based on the pattern of cancers seen. It will help long term planning for cancer management in terms of infrastructure facilities, equipments and manpower training to meet with the challenges of cancer patients. It will provide platforms and statistics useful for discussion with foreign partners, donors, international agencies who usually depend on information and statistics from cancer registry. It will also provide opportunities for translational researches that will help in reducing cancer incidence and ways to prevent its onset. Presently, there is paucity of data at National level on the incidence, prevalence, morbidity and mortality of various types of cancers in Nigeria. Most available statistics were hospital based and extrapolation from international guidelines and recommendations.

G. Cancer Awareness Programs for the General Population

During the Ebola epidemic that rocked the West African countries in 2014 & 2015, a lot of efforts were put in awareness campaign by West African countries and the international community which assisted in curtailing the epidemic. Such massive awareness campaign is also needed on the causes, symptoms, signs, treatment options for cancer. The knowledge of cancer is very poor amongst the general populace and this negatively affects the desire for screening. The media houses, both private and government owned media outfits should set aside period everyday to talk about cancer in the radio, television, newspapers and on social media platforms. Similarly there should be cancer journal club amongst the journalists that will train the journalist on health issues especially cancers for effective presentation to the population. The radio FM station of ABU can collaborate with

ABUTH, guidance and counseling department, mass communication department and faculty of education in educating the people in our immediate environment. Mr. Vice Chancellor Sir, a research was jointly done with Prof Mrs. Bello of Guidance and Counseling department on counseling approaches to the control of tobacco smoking at adolescence towards the reduction of tobacco related health hazards in Nigeria. The Vice Chancellor should encourage this type of collaboration.

H. Public Private Partnership

The North and South African countries especially Egypt and South Africa have better cancer care facilities because of the involvement of the private institutions in health care management. In Nigeria, there is only 1 private hospital in Lagos with radiation therapy facility. This apathy from the private institutions may be a reflection of the uncertainty in Nigeria policies and legislations and the prevailing insecurities. The government must provide enabling environment and legislation to enable private companies set up cancer centers and to recoup their expenses over a period of time. This is a win – win – win situation for everybody, the government, patients and the financiers. The legal framework must be done to attract non-governmental organizations like MTN, GLO, Fortis oil, Dangotes, Otedolas and the likes.

I. Corporate Social Responsibility of Major Multinational Companies

During my sojourn in Asia, specifically in Isiamabad, Pakistan, a fully equipped modern hospital called the Mother and Child hospital was built by the Japanese government as a corporate social responsibility of Japanese companies doing business in Pakistan. There are a lot of multinational companies from Europe, US, China, Japan that are making businesses with a lot of financial gain in Nigeria. They rather pay royalties to individuals at the expense of directly assisting in developing

areas of needs of the nation. The government should encourage Nigerians in Diaspora and developed countries in transferring technology to Nigeria through the establishment of well equipped cancer centers with necessary exchange programs amongst the specialists. This will drastically stop medical tourism and develop the health system to international standards.

J. Insertion of Basic Medical Information on Cancer in Non-Medical Undergraduate Curriculum

Mr. Vice Chancellor Sir, there is need for the inclusion of basic health information on cancer and other health issues in the undergraduate curriculum as a means of increasing knowledge and awareness on cancer. The National University Commission should develop a program for 100 and 200 levels students irrespective of discipline / course of specialization where basic knowledge on the causes, symptoms & signs and treatment options of cancer will be taught to the students. This will improve knowledge, uptake of screening, early presentation to hospital with resultant early stage and better prognosis. It will also reduce social lifestyles that increase the incidence of cancer. The academic office should look into this suggestion.

K. Legislation on Cancer Care in Nigeria

The government should summon courage and political will and implement the National Health Act which is positioned to solve some of the issues raised earlier on citizens health, accessibility, affordability and availability of health care in Nigeria.

The National Health Act will also:

- Strengthens the health care services at the State and Local government levels, all the burden will not rest on the Federal government alone. It also has responsibility to solve the infrastructural development problems in the health sector at all level of governance.

- It will stop medical tourism which is a common phenomenon in Nigeria, using tax payers money to sponsor healthcare of a few individuals at the expense of developing the health institutions within the country.
- It is positioned to implement the mandatory 15% budgetary allocation of the Federal government to the Ministry of health as recommended by African Union since 2001.
- It also focuses on special funds needed to develop the health care system and hold the managers and specialists accountable. By extension, it hopes to delete incessant industrial strikes and disharmony in the health sector.

According to the Director of Hospital Services of FMoH (17/9/2015) Dr Patience Osinubi, the situation in Nigeria presently is "If Doctors are not on strike, Nurses are; when Nurses and Doctors are at work, other health workers down tools. Unfortunately, it is the people who bear the brunt". Industrial strikes have paralyzed the health sector to the extent that in 2015, the Federal Health sector functions optimally for only 4 months in the year. Industrial disharmony and strikes must be stopped in the health sector. Alternative ways to resolve conflicts and disagreement must be created to avoid unnecessary harm to the patients.

The government should strengthen existing institutions that will guarantee improved quality of care of cancer patients. Such institutions that need to be strengthened include SERVICOM and Anticorruption and Transparency Units in Teaching Hospitals and universities (ACTU). There should be a forum through Federal Ministry of Health that will permit interactions and partnership with established cancer centers in developed countries. This will aid the development of treatment guidelines, protocols, collaboration amongst

specialists in cancer care and multidisciplinary team approach for cancer management. Similarly, the university should broaden existing collaboration with partners and donors to include researches in oncology.

L. Survivorship Platform as a Tool for Cancer Education

A lot of well to do Nigerians have suffered from cancers and are survivors of this dreaded disease. Such individuals should become advocates on cancer care and should form a platform to educate the populace on symptoms and signs of cancers, side effects of treatments, treatment options and available treatment centers and psychosocial issues associated with cancer management. Cancer advocacy by survivors is a very strong pillar in cancer prevention, early detection, optimal treatment and survival. The cancer survivors from the university and hospital communities can initiate this platform and together change the present norm of late presentation and advanced disease in our environment.

Conclusion

Mr. Vice Chancellor Sir, in my 13 years of research and determination to improve cancer care and the quality of life of cancer patients after treatment in Nigeria, I realized a large and significant deficiency exists in the availability of all components of cancer therapy in the country with respect to infrastructure and manpower and this negatively affects availability, accessibility and affordability of optimal cancer care. Nigeria faces gross shortage of radiation oncologists, highly specialized surgeons and other personnel with under supply of megavoltage machines. Cognizance should be taken of specific short falls to ensure that there is expansion of existing centers and creation of new centers especially in every geopolitical zone and major teaching hospitals in the country. The government should exercise political will to ensure that cancer patients receive optimal care irrespective of their status in the society. There is need for concerted efforts to eliminate apathy for orthodox treatment, late presentation and advanced disease through massive awareness campaign and advocacy.

Recommendation

- There is need to expand existing centers and create new ones in every geopolitical zone and major teaching hospitals through intervention funds of the Federal government as done for HIV/AIDS.
- The FMoH should partner with major multinational companies in the country with the aim of upgrading the infrastructure and quality of care of cancer patients.
- There is need for training and retraining of all cadres of staff involved in cancer care and collaboration with established centers in developed countries.
- NHIS should begin to accept all cancer patients by being responsible for the cost of drugs, investigations, radiation therapy and other specialized care.
- Government should established functional National Cancer Registry and regional centers for gathering of statistics on cancer incidences for proper planning.
- The Federal Government should be implementing the National Health Act to ameliorate the suffering of cancer patients.
- The president should setup a presidential committee or a Presidential Working Group to see to the immediate necessary action to bring succor to all cancer patients, set aside the various bureaucracies in the optimal care of cancer patients.
- Ministerial committee to coordinate the activities in all cancer centers / radiotherapy departments. This committee should liaise between the Federal Ministry of Health and the Chief Medical directors of the institutions.
- There is a need for committee of stakeholders involved in the care of cancer patients, procurement of equipments, financing of healthcare and the regulatory bodies.

Thank you for listening.

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