

**KNOWLEDGE, ATTITUDES AND PRACTICES OF HEALTHCARE
PROVIDERS IN LEVEL FOUR HOSPITALS OF WESTERN KENYA
TOWARDS CHILDHOOD CANCER**

BY

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DECLARATION

I declare that this project is my original work and that it has not been presented elsewhere for any academic purpose in any institution of higher learning.

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DEDICATION

I would like to dedicate this project to my family, Friends, colleagues, lecturers of Moi University School of Medicine, health care providers in Western Kenya and all the children and families affected by childhood cancer.

ABSTRACT

Background: Several types of childhood cancer have been found to be curable if detected early and the appropriate management instituted in good time. The level of Knowledge attitude and practices of healthcare providers have an impact on the management and outcome of childhood cancer.

Broad Objective: To assess knowledge, attitudes and practices towards childhood cancer among health care providers in selected level 4 hospitals in Western Kenya.

Methodology: This was a cross-sectional study carried out between March and August 2013 among HCPs in four level 4 hospitals in Western Kenya. Data collection was done by use of a self administered questionnaire. Descriptive data about knowledge on definition, common childhood cancers, clinical presentation, risk factors, diagnosis, management and referral system was collected. Data on attitudes and practices towards childhood cancer was also collected. Data was entered into an excel spread sheet, later exported to STATA V10 for analysis.

Findings: 238 HCPs participated in the study. 176 (73.9%) were female and 151 (63.4%) were nursing officers. The mean age (in years) and length of practice in years were 37.9 ± 10.4 and 13.7 ± 11.9 respectively. The most common source of information was tertiary institutions 177(74.5%). Although sixty eight percent of the healthcare providers had very good knowledge with regards to childhood cancer majority of HCPs except for the MOs scored poorly on the clinical presentation of childhood cancer. The differences in level of knowledge varied by study site, gender and not by cadre. Although majority of the HCPs scored well in the attitude score, a significant proportion (26%) still exhibited a negative attitude however, there was no significant association between attitude and cadre, site or gender. Only 87(36.6%) of the HCPs had ever participated in childhood cancer management with 54(62.3%) participating in referral.

Conclusions: There was a very good level of knowledge on childhood cancer except in clinical presentation where knowledge among MOs was satisfactory but inadequate among COs and NOs. Although the overall attitude was positive, there is a significant proportion of HCPs who portrayed a negative attitude. Less than half of health care providers had ever participated in the management of childhood cancers. The differences in level of knowledge varied by study site, gender and not by cadre.

Recommendation: Educational programs targeted at enhancing knowledge, attitudinal change and imparting proper practices among the HCPs by the relevant training bodies/institutions should be enhanced.

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DEFINITION OF TERMS

- **Knowledge-** the information, understanding and skills that one gain through education or experience. In this study it involved knowledge of HCPs about childhood cancers
- **Attitude-** A settled way of thinking or feeling about something. In this study, refers to attitude of HCPs towards a child with cancer
- **Practice-**The actual application or use of an idea, belief, or method, as opposed to theories relating to it. In this situation it implied the use of knowledge on childhood cancer to manage the affected children
- **Child:** Any persons under age of 18 years (Kenyan Constitution)
- **Health care providers** -in this study implied medical officers, clinical Officers and nursing officers

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency syndrome
ALL	Acute Lymphoblastic Lymphoma
AML	Acute Myeloid Leukemia
AMPATH	Academic Model for Prevention and Treatment of HIV
BScN-	Bachelor of Science in Nursing
EBV	Ebstein Barr Virus
FNA	Fine Needle Aspirate
HBV	Hepatitis B Virus
HCPs	Health Care Providers
HIV	Human Immunodeficiency Virus
HODs	Head of Departments
HPV	Human Papilloma Virus
INCTR	International Network for Cancer Treatment and Research
IREC	International Research and Ethics Committee
KAP	Knowledge, Attitude and Practice
KenCASA	Kenya Cancer Association
KNH	Kenyatta National Hospital
MTRH	Moi Teaching and Referral Hospital

NHL	Non-Hodgkins Lymphoma
PAP	Papanicolaou test
PGE	Percutaneous Endoscopic Gastrostomy
UICC	Union for International Cancer Control

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CHAPTER ONE

INTRODUCTION

Cancers figure among the leading causes of death worldwide, accounting for 8.2 million deaths in 2012. More than 60% of world's total new annual cases occur in Africa, Asia and Central and South America. These regions account for 70% of the world's cancer deaths. It is expected that annual cancer cases will rise from 14 million in 2012 to 22 within the next two decades¹.

Globally, 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. Fifty seven per cent (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.²

In high income countries, cancer is the second most common cause of death after cardiovascular conditions and epidemiological evidence points to the emergence of a similar trend in developing countries. Remarkable progress has been made in cancer management and prevention in these countries and although cancer incidence continues to rise due to influence of lifestyle and population growth, mortality has fallen.³

According to Global Cancer Facts and Figures 2nd Edition, childhood cancers are all cancers occurring in children below 15 years of age. They are a leading cause of childhood morbidity and mortality in developed countries such as the United States. However, childhood cancers are generally not a public health issue in most developing countries⁴. In developing countries where there is a high burden of HIV/AIDS, malaria, and other infectious diseases – even the lack of clean drinking water – treatment for cancer is often regarded as unaffordable. Thus, a significant number of children who

have cancer are most often never diagnosed, are diagnosed too late, or are diagnosed where treatment is limited or not easily available, accessible and affordable.⁵

Worldwide, an estimated 175,300 new cancer cases occurred among children aged 0 – 14 years in 2008 with about 96,400 children dying from cancer. The incidence rates of childhood cancer are generally higher in developed than in developing countries. However, the great majority of children and 80% of children with cancer live in developing countries despite difficulty in accurately determining the incidence of childhood cancer which are often unreported due to the greater attention and documentation given on the frequency of deaths from infectious diseases and malnutrition.⁴

The Cancer situation in Kenya is dire as the country faces a severe lack of Medical Practitioners and a large number of new cancer cases being diagnosed annually.⁶ In Kenya cancer, ranks 3rd as a cause of death after infectious diseases and cardiovascular diseases causing 7% mortality every year. Although population based data does not exist in the country, it is estimated that the annual incidence of cancer is about 80,000 and annual mortality is over 18,000 with up to 60 % of those who die being in the most productive years of their life.⁶

In Kenyatta National Hospital childhood cancer admissions make up to 15% of all the cancer admissions (1998-2008) and the mortality rate stands at 1 in 10 unlike in Western countries where survival rates stand at 7 in 10.⁷

According to the Kenya National Cancer Control Strategy, about 80% of reported cases of cancer are diagnosed at advanced stages, when very little can be achieved in terms of curative treatment. This is largely due to the low awareness of cancer signs and symptoms, inadequate screening services, inadequate diagnostic facilities and poorly structured referral facilities.⁸

Approximately 50–80% of childhood cancers are potentially curable. In addition, for the 20–30% who do present in the early stages, delays in instituting definitive treatment either allow the disease to progress, or render patients effectively moribund.⁹

It is conceivable that risk factor knowledge is mostly acquired during classroom teaching compared to exposure at the workplace. The health care professionals work with patients so they are mainly exposed to symptoms and signs of disease and to treatment outcomes rather than to the development process of the disease especially for non-communicable diseases such as cancer. The low level of risk factor knowledge among healthcare providers in the developing countries is suggestive of insufficient emphasis on the importance of primary prevention in the training curricula. In spite of rigorous efforts towards improving medical education in the developed countries, it has been realized that healthcare professionals including nurses are not adequately educated about cancer risk factors, risk assessment and cancer prevention⁹.

It is important that health personnel are aware of the risk factors, diagnosis and treatment of childhood cancer in order to guide their patients⁹.

According to the Kenya Health workforce report the majority of the Health care providers are nursing officers at 70% followed by clinical officers at 13% and the least represented group were the doctors at paltry 10% and a majority of them are female(77%) as shown on the table 1 below¹¹.

KENYAS HEALTH WORKFORCE REPORT

Table 1: composition of the Kenya Health Workforce

Kenya's Health Workforce ¹¹						
	Doctors	Dentists	Nurses/ Midwives	Clinical Officers	Laboratory Techs	TOTAL
Registered	6,306(9.8%)	780(1.2%)	43,970(68.6%)	8,300(12.9%)	4,699(7.3%)	64,055
Licensure Renewals	4,756	590	28,214	6,300	2,092	41,952

According to the Kenya National cancer control strategy, The Mercy Steps Cancer control Programme, the country has few cancer specialists who are concentrated in a few health facilities in Nairobi. This makes it difficult for a great majority of the population to access cancer treatment services resulting in long waiting times causing some previously curable tumours to progress to incurable stages. The reason for this sad situation is that cancer treatment infrastructure in Kenya is inadequate and some cancer management options are not readily available necessitating some Kenyans to seek cancer treatment abroad. Within the health care systems, cancer is treated through medical, surgical or radiation therapy. Effective treatments require that all these

modalities of treatment be available in the same setting to avoid distant referral and delays in treatment administration.¹²

According to the Kenya Essential Package (KEPH) Levels of health care delivery system are categorized into 6 levels as shown below.

Table2. Classification of hospitals in Kenya

Hospital category	Type	Senior most cadre	Examples
Level 6	Tertiary/referral hospitals	Super specialists	KNH, MTRH
Level 5	Secondary hospitals/provincial hospitals	Specialists	Kakamega provincial Hospital
Level 4	Primary hospitals/district/sub-district hospitals	Medical superintendents	Bungoma District Hospital
Level 3	Health centers	Clinical officer in-charge	Makunga Health centre in Mumias
Level 2	Dispensaries/clinics	Enrolled registered Nurse	Kapkolei Dispensary in Nandi county
Level 1	Community: villages/families/individuals		

The referral system in Kenya is organized in a manner that the first 3 levels consists of Hospitals that are the primary health facilities while the Level 4 facilities are the coordinating and referral centres for these smaller units.

The essential drugs list does not include chemotherapy for cancer as well. Some of the very essential drugs for pain management are rare to find in most public hospitals. There is therefore need for clear policies concerning terminal pain management, supportive and palliative care for cancer patients in Kenya. Some of the main impediments to palliative care in Kenya include shortage of financial and human resources, lack of awareness and legal restrictions on the use and availability of opioid analgesics.¹²

Cancer research in Kenya is inadequate and not commensurate with the magnitude of the problem. This is due to inadequate funding and training facilities in cancer research. The comprehensive cancer surveillance is not comprehensive and overall the population based cancer registry is not effective.¹²

The important resources of dissemination of childhood cancer knowledge to the general population are the health-care professionals, educational institutions and media. Among the healthcare professionals, nursing officers comprise the group most suited for this purpose because of their enormous numbers. Doctors and clinical officers even with their smaller numbers are equally important in the dissemination of information about childhood cancer because they interact with the public within their social network. Since the HCPs can have a major influence on the behavior of the general public, they need to be knowledgeable themselves about childhood cancer risk factors and the importance of early detection through screening.¹³

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of Childhood Cancer

Cancer is a group of diseases that results from failure of the mechanisms that regulate normal cell growth and cell death leading to uncontrollable proliferation of cells, destruction of neighboring tissues and spread of the disease to other parts of the body⁴. It refers to over 100 different diseases characterized by uncontrolled growth and spread of abnormal cells⁴.

Childhood cancer differs from adult cancer in that it mostly stems from the embryonal (fetal cells) tissues while adult cancers are mostly carcinomas involving epithelial tissues. In contrast to adult cancers, a childhood cancer mostly has a relatively brief latency, is minimally preventable and genetic alterations may play a major role in the pathogenesis.¹⁴

2.2 Classification of childhood cancer of Childhood Cancer¹⁵

According to the International Classification of Childhood Cancer of 2013, childhood cancers include:

I. Leukemias, myeloproliferative and myelodysplastic diseases

- a. Lymphoid leukemias
- b. Acute myeloid leukemias
- c. Chronic myeloproliferative diseases
- d. Myelodysplastic syndrome and other myeloproliferative diseases
- e. Unspecified and other specified leukemias

II. Lymphomas and reticuloendothelial neoplasms

- a. Hodgkin lymphomas
- b. Non-Hodgkin lymphomas (except Burkitt lymphoma)

- c. Burkitt lymphoma
- d. Miscellaneous lymphoreticular neoplasms
- e. Unspecified lymphomas

III. CNS and miscellaneous intracranial and intraspinal neoplasms

- a. Ependymomas and choroids plexus tumor
- b. Astrocytomas
- c. Intracranial and intraspinal embryonal tumors
- d. Other gliomas
- e. Other specified intracranial and intraspinal neoplasms
- f. Unspecified intracranial and intraspinal neoplasms

IV. Neuroblastoma and other peripheral nervous cell tumors

- a. Neuroblastoma and ganglioneuroblastoma
- b. Other peripheral nervous cell tumors

V. Retinoblastoma

VI. Renal tumors

- a. Nephroblastoma and other nonepithelial renal tumors
- b. Renal carcinomas
- c. Unspecified malignant renal tumors

VII. Hepatic tumors

- a. Hepatoblastoma
- b. Hepatic carcinomas
- c. Unspecified malignant hepatic tumors

VIII. Malignant bone tumors

- a. Osteosarcomas
- b. Chondrosarcomas

c. Ewing tumor and related sarcomas of bone

Early symptoms of childhood cancer are usually nonspecific. Parents should ensure that children have regular medical checkups and should be alert to any unusual symptoms that persist⁴ and they include the following:

- Leukemia, a cancer of the blood-forming cells that may be recognized by bone and joint pain, weakness, bleeding, and fever
- Non-Hodgkin lymphoma (including Burkitt lymphoma) and Hodgkin lymphoma, which affect lymph nodes but may spread to bone marrow and other organs, and may cause swelling of lymph nodes in the neck, armpit, or groin; weakness; and fever
- Brain and other nervous system, which in early stages may cause headaches, nausea, vomiting, blurred or double vision, dizziness, and difficulty in walking or handling objects
- Neuroblastoma, a cancer of the sympathetic nervous system that usually appears as a swelling in the abdomen
- Retinoblastoma, an eye cancer that is typically recognized because of discoloration of the pupil of the eye and usually occurs in children younger than 4 years
- Wilms tumor (or Nephroblastoma), a kidney cancer that may be recognized by a swelling or lump in the abdomen
- Osteosarcoma, a bone cancer that most commonly appears as sporadic pain in the affected bone and may worsen at night or with activity, with eventual progression to local swelling; most often occurs in adolescents
- Ewing sarcoma, another type of cancer that usually arises in bone, appears as pain at the tumor site, and most often occurs in adolescents

- Rhabdomyosarcoma, a soft tissue sarcoma that can occur in the head and neck, genitourinary area, trunk, and extremities, and may cause pain and/or a mass or swelling
- Kaposi sarcoma, a cancer that develops from the cells that line lymph or blood vessels, is characterized by purple, red, or brown lesions on the skin and in some cases causes painful swelling, especially in the legs, groin area, or skin around the eyes.

Cancer can also be broadly divided into haematological and non-hematological malignancies. Hematological malignancies include leukemias (acute and chronic subtypes), lymphomas (Hodgkin's and NHL), myelodysplastic syndrome and Multiple myeloma while non-haematological malignancies or solid cancers include cancers of various organs e.g. brain, liver, kidney bones, muscles, adrenal glands, testis and ovary.¹⁷

Among the hematological malignancies, the lymphomas were the most common (11.9%) followed by acute leukemia (4.0%). Among the solid tumors, cancer of the esophagus (10.5%), cervix (7.9), breast (6.2%) Kaposi Sarcoma (5.9%) and prostate (4.4%) all adult cancers, were the most common in Western Kenya.¹⁸

Two-thirds of lymphatic malignancies in children are leukaemias, the majority being acute lymphoblastic leukaemia (ALL), followed by acute myeloid leukaemia (AML). Chronic myeloid leukaemia is consistently rare everywhere. Leukaemia occurs more often in under-fives, and the incidence decreases with age. Lymphomas constitute 20% to 30% of haematopoietic tumours. Among them Burkitt's lymphoma deserves a special mention.⁵

2.3 Risk Factors of Cancer Causation

The causes of cancer in children are poorly understood, though in general it is thought that different forms of cancer have different causes. According to scientists at the National Cancer Institute, established risk factors for the development of childhood cancer include family history, specific genetic syndromes (such as Down syndrome), radiation, certain pharmaceutical agents used in chemotherapy¹⁹ and ionizing radiation, from sources such as x-rays, is a known cause of leukemia and brain tumors. A recent review found that there is an approximately 40% increased risk of childhood leukemia and other cancers after maternal exposure to ionizing radiation during pregnancy.²⁰

A number of studies suggest that other environmental contaminants may play a role in the development of childhood cancers like Acute Lymphoblastic leukemia and Acute Myeloid leukemia among others. The majority of these studies have focused on pesticides and solvents, such as benzene.²¹

According to the American President's Cancer Panel, "the true burden of environmentally induced cancer has been grossly underestimated." This panel concluded that the causes of the increased incidence of childhood cancers are not fully understood, and cannot be explained solely by the introduction of better diagnostic techniques. The Panel also concluded that genetics cannot account for this rapid change.²²

Some relatively rare cancers are known to be attributable to inherited genetic conditions e.g. Li-Fraumeni syndrome: This syndrome occurs when a person inherits a mutation in the gene for p53 (*TP53*, a tumor suppressor gene). A normal gene for p53 stops the growth of abnormal cells. People with a *TP53* gene abnormality have a higher risk of childhood sarcoma, leukemia, and brain (central nervous system) cancers⁴. Worldwide,

the most common examples of infection-related childhood cancers are Burkitt lymphoma, Hodgkin disease, and nasopharyngeal carcinoma (all associated with Epstein-Barr virus), liver carcinoma (HBV), and Kaposi sarcoma (HIV and human herpes virus)⁴

2.4 Childhood Cancer Treatment

The management of patients with cancer requires multimodality treatment strategies. The treatment of cancer has two main aspects: Specific and Supportive. There are three modalities for specific therapy: surgery, radiotherapy and Chemotherapy. Supportive care involves counseling, screening and management of infections, pain control and nutritional support¹⁷

Treatment is coordinated by a team of experts including pediatric oncologists, pediatric nurses, social workers, psychologists, and others who assist children and their families.

Treating childhood cancer does not have to be expensive. By developing treatment regimens that account for the capacity of a country's medical facilities and providing proper training and advice to local doctors, progress can be made on relatively limited funds. However, more than 60% of the world's children with cancer have little or no access to effective therapy.⁴

2.5 Childhood Cancer Survival

Direct measures of population-based survival probabilities of cancer patients in developing countries are sparse - and little representative for childhood patients - and poorly describe the actual situation. This lack of information reflects the slight attention given to this group of diseases when health-care resources are limited and other diseases are more serious public- health problems. The little information available from

cancer registries indicates that survival of cancer patients in most developing countries is significantly poorer than in rich countries.⁴

In Eldoret, a study on the management and outcomes of wilms tumor in 2012, the survival rates were shown to be as low as 29% beyond 3 years of diagnosis¹⁷.

2.6 Empirical Review

Childhood cancer research worldwide and more so Africa is wanting. A lot of emphasis has been put on infectious diseases with very little done on childhood cancer. Not many studies on the Knowledge, attitudes and practices of childhood cancer especially among health care providers have been done.

A study done in Brazil showed that although all respondents knew how to refer a child suspected to have cancer to a physician, their knowledge of the early warning signs and symptoms of pediatric cancer was very low.²³

A study done in Mulago Hospital on knowledge, attitude and practice on cervical cancer screening among health workers, 93% considered cancer of the cervix as a public health problem and their knowledge about PAP smear was 83%. However, despite a high knowledge of PAP smear, only less than 40% knew the risk factors for cervical cancer, eligibility for and screening interval.²⁴

It was also found that despite knowledge of the gravity of cervical cancer and prevention by screening using a PAP smear, attitudes and practices towards screening were negative. The health workers who should be responsible for opportunistic screening of women they care for are not keen on getting screened themselves.²⁴

Similarly, in a study on knowledge of cervical cancer and screening practices at a regional hospital in Tanzania, less than half of nurses had knowledge regarding cervical

cancer. However, the study found that significant association between knowledge levels of cervical cancer and transmission of Human Papilloma Virus (HPV) and age. The young nurse had more adequate knowledge than the older nurses. The knowledge also varied significantly between cadres of nurses with the registered nurses having more adequate knowledge than enrolled nurses. Majority of the nurses did not know screening intervals and a few were aware of HPV vaccine. Despite the good knowledge levels, 84.6% of the nurses had never had a PAP smear.²⁵

A different study on knowledge, attitude and practices related to prevention of cervical cancer among female health workers, most cadres of health workers included, conducted Ibadan department of Obstetrics and Gynecology, University College Hospital, Ibadan, Nigeria showed that knowledge about the condition was high among doctors, inadequate among nurses, and predictably poor among hospital maids.³² Most of the health workers (93.2%) had never had PAP smears performed on them³². This significantly showed that though the knowledge may be high, the attitude and practices related to prevention are poor or non-existent.²⁶

Similar studies on knowledge, attitude and practice, have shown that despite a high level of knowledge, the attitude and practices of health care workers related to cancer is still poor. This is further illustrated by a study of knowledge; attitude and practice of breast cancer screening among female health workers in a Nigerian urban city that showed that majority of respondents (55%) have knowledge about the risk factors for breast cancer. Furthermore, the awareness of mammography as a diagnostic method was found to be very high (80%) but extremely low knowledge of mammography as a screening method was found. Mammography practice of only 3.1% was found among those above 40 years of age who qualify for routine annual screening. Relatively low

knowledge (45%) about self-breast examination (BSE) as a screening method was found.²⁷

In a study done in Jordan, it was found that health-care providers influence patients' perceptions of their hope. Nurses' behavior can play an important part in inspiring and strengthening hope as they are constantly around the patient right from the time of diagnosis through to the end of the treatment.²⁸

Previous research in Turkey among Nurses found out that nurses were aware of their attitudes towards being positive with cancer patients and its significance in support for cancer patients.²⁹

In Turkey, traditionally it was noted that oncology units were among the least favoured places for nurses to work in Turkey.³⁶ Many general nurses reported not wanting to work with cancer patients due to their negative view of cancer as a terminal condition in addition to the comparative lack of support in general for clinical nurses in Turkey.³⁰

The evidence for the relationship between social support and cancer progression is sufficiently strong for breast cancer as shown by some methodologically sound studies also found that structural support indices were more frequently associated with disease progression than the indices of functional support in breast cancer. Also, low social support can lead to poor health behaviors, which may then predict an increased vulnerability toward cancer and its associated mortality and to psychosocial stress, which can influence the immune system via the endocrine system and cause angiogenesis and promotion of tumor growth. Therefore, it may be significant to identify patients who may be more at risk due to the psychosocial vulnerability resulting from low social support. HCPs may need to undertake a systematic

exploration of support networks with the patient, and discuss strategies for mobilizing the support that is available to them.³¹

Despite advances in medical sciences that have led to effective treatments for cancer, myriad myths and biases related to cancer pervade both patients and professionals' ideas on causation, course of illness treatment and recovery, and act as hindrances to early detection treatment and rehabilitation. It has been suggested that regardless of rationality, education or sophistication the attitudes or beliefs that lead to fear of cancer exist to some extent in everyone. Attitudes to cancer may create a barrier to communication between patients and healthcare professionals and may influence decision making about referral to specialist services and the selection of appropriate treatments.³²

CHAPTER THREE

OBJECTIVES

3.1 Research Question

What is the level of knowledge, attitudes and practices towards childhood cancer among Healthcare providers in selected level 4 hospitals in Western Kenya?

3.2 Study Objectives

3.2.1 Broad Objective

To assess knowledge, attitudes and practices towards childhood cancer among health care providers in selected level 4 hospitals in Western Kenya.

3.2.2 Specific Objectives

The specific objectives of the study were:

1. To assess the level of knowledge on childhood cancer amongst healthcare providers.
2. To assess the attitude of healthcare providers towards childhood cancer.
3. To establish the practice among health care providers with regards to childhood cancer
4. To describe the relationship between the socio-demographic characteristics of healthcare providers and their knowledge, attitude and practice on childhood cancers.

3.3 Problem Statement

It is suspected that late presentation following slow referral and delays in diagnosis are some of the factors responsible for the lower cancer cure rates in developing countries.^{32, 33}

Myths and biases related to cancer involve both patients and professionals' ideas on causation, course of illness treatment and recovery, and act as hindrances to early detection treatment and rehabilitation.³¹

According to the regional cancer registry at Kenya Medical Research Institute (KEMRI), about 80% of reported cases of cancer are diagnosed at advanced stages, when very little can be achieved in terms of curative treatment. This is largely due to the low awareness of cancer signs and symptoms, inadequate screening services, inadequate diagnostic facilities and poorly structured and equipped referral facilities.⁸

The existing curricular in training institutions in the developing countries puts little emphasis on childhood cancer with a lot of dedication given to infectious diseases only yet cancer now ranks 3rd in causing mortality.

Finally, many patients develop and die from cancer but are not captured in the national health statistics because of unavailability of established reporting procedures. There are few cancer registries in Kenya, one at KNH and another at MTRH and both utilize hospital based statistics.

3.4 Justification

Data on knowledge of HCPs on childhood cancer will help the government/training institutions to come up with appropriate policies to guide training on cancer.

However, data on the level of knowledge, attitudes and practice towards childhood cancer among health workers in developing countries is unavailable⁶.

In Kenya about 80% of childhood cancers present in advanced stages and only 1 in 10 children survive compared to 7 in 10 in the developed countries.⁷ Mortality rate in less developed countries is approximately twice that in the US and Canada³⁴.

The more we know about attitudes held by healthcare professionals towards childhood cancer, the more we can predict behavior and perhaps influence behaviors in direction resulting in reduced mortality and morbidity and enhanced quality of life.³⁷

Diagnosis and treatment of childhood cancer is available in a few tertiary hospitals in Kenya but most of the children arrive at appropriate health facilities with advanced cancer and there is growing recognition that by giving HCPs the relevant knowledge about the signs and symptoms specific to childhood cancer and the diagnostic and treatment skills, it may be possible to reduce pediatric cancer deaths.^{35, 36}

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Study Design

This was a cross-sectional study. This method was chosen as it provides data on a large population at a particular time and the main outcomes of the study are descriptive. The method allowed a relatively large sample population to be interviewed at a reasonable cost and timeframe. It also allowed data on all variables to be collected at once.

4.2 Study Site

The study was carried out in level four hospitals of Western Kenya. According to the Kenyan Health Delivery System organogram, district hospitals are classified as level four facilities which are the coordinating and referral centres for the smaller units (levels 1-3 facilities). Level four facilities were picked because they are the lowest level of hospital category that has all the three cadres of healthcare providers that this study targeted the medical, nursing and clinical Officers.

Bungoma District Hospital is located in Kanduyi division, Bungoma South district in Bungoma County. It has a bed capacity of 216. Busia District Hospital is located in Busia district in Busia County and has a bed capacity of 185. Kocholia District Hospital is also located in Busia County at the cosmopolitan border of Kenya and Uganda in Teso North district and has a bed capacity of 57. Vihiga District hospital is located in Vihiga district in Vihiga County with a bed capacity of 160.

Western province is the centre of major agricultural activities, including maize, dairy, poultry and sugarcane farming. Industries associated with farming are also found in the region. The region is majorly occupied by the Luhya community and also the Teso people. The area is the main catchment area of the Moi Teaching and Referral Hospital – Eldoret.

4.3 Study population

- Western province has 12 level 4 hospitals run by the Ministry of health. There are an average total of 1500 nursing officers, 500 Clinical officers and 50 medical officers manning these facilities. Majority of the HCPs are females and Nurses.

4.4 Target Population

The target population comprised of Medical Officers (MOs), Nursing officers (NOs) and clinical officers (COs) working in different departments of the four hospitals under study in western Kenya. There were a total of 524 HCPs in the selected level 4, four hospitals as shown on tables 3 below.

Table 3: Distribution of HCPs in the Four Selected Hospitals

	MOs	RCOs	NOs	Total
Busia	14	48	94	156
Bungoma	10	49	145	204
Vihiga	14	49	55	118
Kocholia	3	6	37	46
Grand Total				524

4.5 Sample Size

Since the sampling frame (Total number of Health care providers) was known, the researcher applied the formula for finite population as follows;

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

Where n = sample,

N = population size (524)

e = accepted level of error taking alpha as 0.05.

Calculating sample size yields the following;

$$n = \frac{524}{[(1 + 524(0.05)^2)]}$$

$$n = \frac{524}{2.31}$$

$$n = 227, \text{ subjects}$$

Adjusting for 5% non-response yields

$$n = \frac{227}{0.95} = 238, \text{ subjects}$$

4.6 Sampling Techniques

The study was carried out in hospitals in Western Kenya and the choice of Western Kenya was done purposively knowing that Western Kenya is the main catchment area for the pediatric oncology unit at MTRH.

Western Kenya has a total of 12 level 4 hospitals and the choice of the four level 4 facilities was done by systematic random sampling with a k of 3 as shown below.

Total No. of Hospitals,	$N = 12$
Desired sample size,	$n = 4$
Sampling Interval,	$K = N/n = 12/4 = 3$

The hospitals were arranged in order of the population size of the healthcare providers from the most populated to the least populated and the third hospital was picked randomly as the starting point followed by every third hospital. Bungoma, Kocholia, Busia and Vihiga were selected from the pool. The starting point was randomly picked at the third hospital in the ordered list.

The healthcare providers were stratified by cadre into medical officers, clinical officers and nursing officers. The proportional allocation of HCPs sampled in each hospital as well as by cadre was calculated. Health care providers' names were written down on small pieces of papers after which they were randomly picked to draw the required number of respondents per cadre.

Table4: Proportional allocation of HCPs

Hospital	Proportional No. of HCPs	Number of MOs	Number of COs	Number of NOs
Busia	$(\frac{156}{524}) \times 238 = 71$	$(\frac{14}{156}) \times 71 = 6$	$(\frac{48}{156}) \times 71 = 22$	$(\frac{94}{156}) \times 71 = 43$
Bungoma	$(\frac{204}{524}) \times 238 = 93$	$(\frac{10}{204}) \times 93 = 5$	$(\frac{49}{204}) \times 93 = 22$	$(\frac{145}{204}) \times 93 = 66$
Vihiga	$(\frac{118}{524}) \times 238 = 54$	$(\frac{14}{118}) \times 54 = 6$	$(\frac{49}{118}) \times 54 = 22$	$(\frac{55}{118}) \times 54 = 25$
Kocholia	$(\frac{46}{524}) \times 238 = 21$	$(\frac{3}{46}) \times 21 = 1$	$(\frac{6}{46}) \times 21 = 3$	$(\frac{37}{46}) \times 21 = 17$

4.7 Inclusion/Exclusion Criteria

4.7.1 Inclusion Criteria

1. Medical officers, clinical Officers and nursing Officers who gave informed consent.

4.7.2 Exclusion Criteria

1. Health care providers on Leave
2. Students

4.8 Data Collection Methods

A standardized self-administered questionnaire was employed. Questions were partly drawn using information on childhood cancer from literature. Additional questions were adapted, after modification, from questionnaires used in other cancer studies.

The questionnaire was pre-tested by conducting a pilot study at Huruma Sub District and Uasin Gishu District Hospitals in Uasin Gishu County to ensure feasibility of the study, reliability and validity of the research instrument.

The Principal Investigator contracted two clinical officer research assistants who underwent training on the subject cancer, the research ethics and the research questionnaire to ensure clarity and understanding. The research assistants were assigned two hospitals each. The Principal Investigator together with the research assistants did the introductory visit then the research assistants continued with the rest of the data collection but with close supervision by the principal investigator.

The questionnaire was in four parts. The first part gathered details of a participant's social-demographic characteristics. The second part of the questionnaire assessed the level of knowledge of participants on various aspects of childhood cancer management using a set of 13 questions. The third part had 22 statements testing the attitude towards childhood cancer and the final part of the questionnaire focused on the reported practices of healthcare providers with regards to childhood cancer.

The respondents were informed that this was not an exam and that their responses would remain confidential.

4.8.1 Validity and Reliability of the Research Instrument

4.8.1.1 Validity

Validity is the quality attributed to measures of the degree to which the research instrument conforms to the established knowledge. It refers to the extent to which an instrument asks the right questions in terms of accuracy of that which is being investigated. The face validity of the research instrument, (questionnaire) was established by presenting it to the experts in the department of pediatrics for their input which were included in the final draft and also from the pilot study.

4.8.1.2 Reliability

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. In this study, a small- scale pilot study was carried out on the target population for the purpose of validating the reliability of the instrument, gauging the length of an interview, familiarizing data collectors with the Interview process, and to get a glimpse of possible pitfalls that one must anticipate and deal with before the final study was launched. This was done at a facility different from those that participated in the study but in the same locality. In addition, research assistants were trained and monitored to ensure that they were competent and administer the questionnaires in the right way. This guaranteed reliability of the research instrument.

4.8.2 Study Variables

4.8.2.1 Predictor Variables

The Independent variables in this study were:

- Age
- Years of Clinical Practice
- Cadre
- Current department of operation

4.8.2.2 Dependent Variables

The dependent variables in this study were:

- Level of Knowledge on childhood cancer
- Health care providers Attitude towards childhood cancers
- Practice by Health care providers regarding childhood cancers

4.9 Data Management, Analysis and Presentation

Upon completion the questionnaires, they were checked for completeness and marked. The questions were answered with a tick/mark for the correct answer among several choices that were given, some of which were wrong and others were correct. A correct response earned one mark and a wrong response earned no marks. Failure to tick the correct choice earned no mark. Failure to tick the wrong answer provided was assumed to mean that he understood that it was an incorrect and earned one mark. The total score varied from question to question. The scores were transformed into percentages of correct answers for each question on the knowledge section.

Coding in preparation for entry and analysis followed. Data entry was done on an excel sheet which was later imported to STATA software for analysis. Descriptive statistics (Frequencies, median and standard deviation) were computed. Summation was done and knowledge was graded using a scale that was adopted from a fairly similar study that was done in Nigeria as shown in Table 5 below.

Table5: Rating of Knowledge

Score	Interpretation
< 40%	Poor Knowledge
40-60%	Good Knowledge
60-80%	Very Good Knowledge
>80%	Excellent Knowledge

NB: This scale was adopted from a study done in Nigeria.³⁸

The section on attitudes had 22 hypothetical statements with the possible responses graded using the five point Likert scale (1, 2, 3, 4, 5). The scales were then transformed

from 1, 2, 3, 4, 5 to -2, -1, 0, +1, +2 respectively. The total scores were summed for every individual. The median (IQR) total-attitude-scores were reported. The Kruskal Wallis test statistic was used to assess whether the median total-attitude-scores differs significantly across the socio-demographic characteristics. To evaluate the overall attitude, we computed the average score per individual for all the 22 responses. This mean attitude-score ranges from -2 to +2. Anyone whose mean attitude-score was less than zero was considered to have a negative attitude, zero for a neutral attitude and a mean attitude-score greater than zero was a positive attitude.

The practices section had 15 questions; each question was analyzed separately to indicate the level of practice and the correctness of the practices employed by healthcare workers in the management of childhood cancer.

Cross tabulations to help identify the patterns and the levels of knowledge, attitudes and practices among the HCPs with regard to childhood cancer was performed. Significance was set at $\alpha=0.05$ and results are presented in the form of tables, graphs and pie charts.

4.10 Ethical Considerations

Ethical approval for the study was sought from the Moi University/MTRH Institutional Research and Ethics Committee (IREC) before its commencement and Consent and authorization to conduct the study in the selected level 4 hospitals was sought from the relevant Medical Superintendents. Furthermore, the purpose of the study was explained to the respondents and that there were no direct benefits to them. They were also informed that there were no risks involved in participating in the study.

Finally, the respondents who accepted to be part of the study after making an informed decision signed written consent forms before questionnaires were administered to them. The questionnaires were serialized and did not bear the respondents name and the

respondents were free to withdraw from the study at any point. Completed questionnaires were afterwards kept in a locked cabinet accessed by the investigator and the statistician / analyst only.

4. 11 Study Limitations

1. Small proportion of study participants delayed return of the questionnaires for several hours raising issues about their reliability of their responses. This challenge was addressed by following up to collect the questionnaires as soon as they were completed.
2. The sample size in this study is skewed in favor of nurses because of relatively smaller number of other cadres in the Institutions. This challenge was addressed by comparing the three groups separately in data analysis.
3. The practice in this study is reported and not observed and participants may have reported what they know from the literature and not what they have not actually practiced.

CHAPTER FIVE

RESULTS

5.1 Socio-demographic Characteristics

A total of 238 HCPs participated in the study. The respondents were of varied socio-demographic backgrounds. One hundred and seventy six (73.9%) of them were female while 63.4% (151) of them were nursing officers. Distribution as per departments was even. The respondents had a mean age (in years) of 37.9 ± 10.4 and had practiced for an average of 13.7 ± 11.9 years as indicated in table 6 below.

Table 6: Socio Demographic Characteristics of the Participants

Characteristic	Study Site				Total
	Busia n (%)	Bungoma n (%)	Vihiga n (%)	Kocholia n (%)	
Gender					
Male	26(41.9)	22 (35.5)	6 (9.7)	8 (12.9)	62 (26.1)
Female	45(25.6)	71 (40.3)	47 (26.7)	13 (7.4)	176 (73.9)
Designation					
Nursing officers	43(28.5)	66 (43.7)	25 (16.6)	17 (11.3)	151 (63.4)
Clinical officer	22(31.9)	22 (31.9)	22 (31.9)	3 (4.3)	69 (29)
Medical officers	6 (33.3)	5 (27.8)	6 (33.3)	1 (5.6)	18 (7.6)
Department					
Outpatient	20(30.3)	23(34.8)	14(21.2)	9(13.6)	40 (16.8)

Obstetrics & Gynecology	14(27.5)	17 (33.3)	16 (31.4)	4 (7.8)	51 (21.4)
Paediatrics	18(45)	16(40)	6(15)	0(0)	66 (27.7)
Internal Medicine	9 (37.5)	11 (45.8)	4 (16.7)	0 (0)	24 (10.1)
Surgery	10(17.5)	26 (45.6)	13 (22.8)	8 (14)	57 (23.9)
Mean age ±SD	36.3±10.1	37.4 ±10.8	42.5 ± 8.7	36.8 ± 9.2	37.9 ± 10.4
Length in practice ± SD	11.7±10.7	14.3± 12.8	16.3± 12.0	10.0 ± 9.8	13.7 ± 11.9

5.2 Knowledge on childhood cancer

5.2.1 Source of Information

Majority, 74.5% (177) obtained information about childhood cancer from colleges, whereas 53.8% (128) obtained from seminars/conferences / CMEs as indicated in figure 1 below.

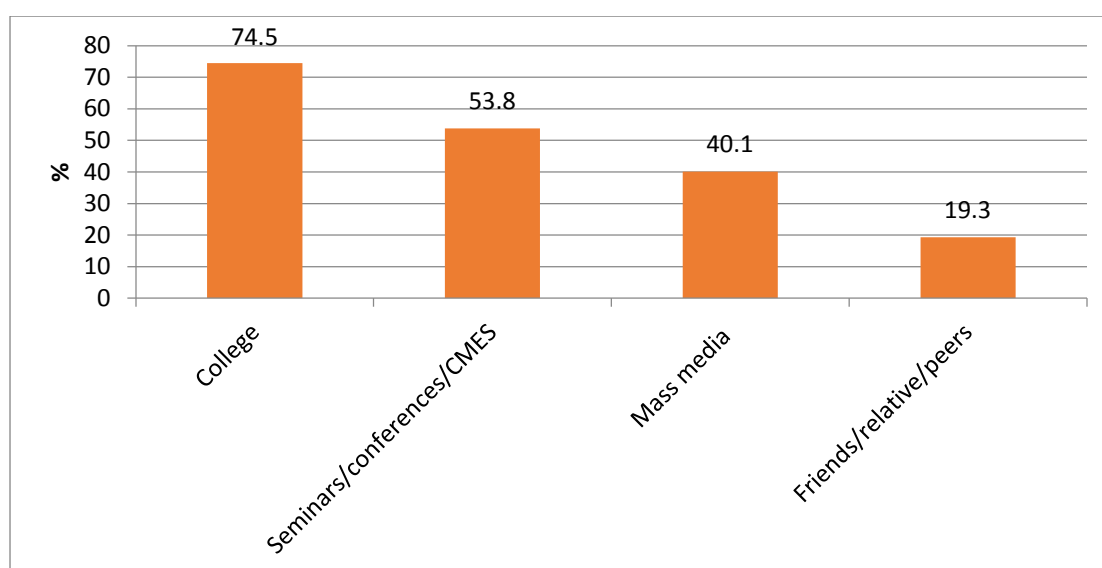


Figure 1: Source of Information about Childhood Cancer

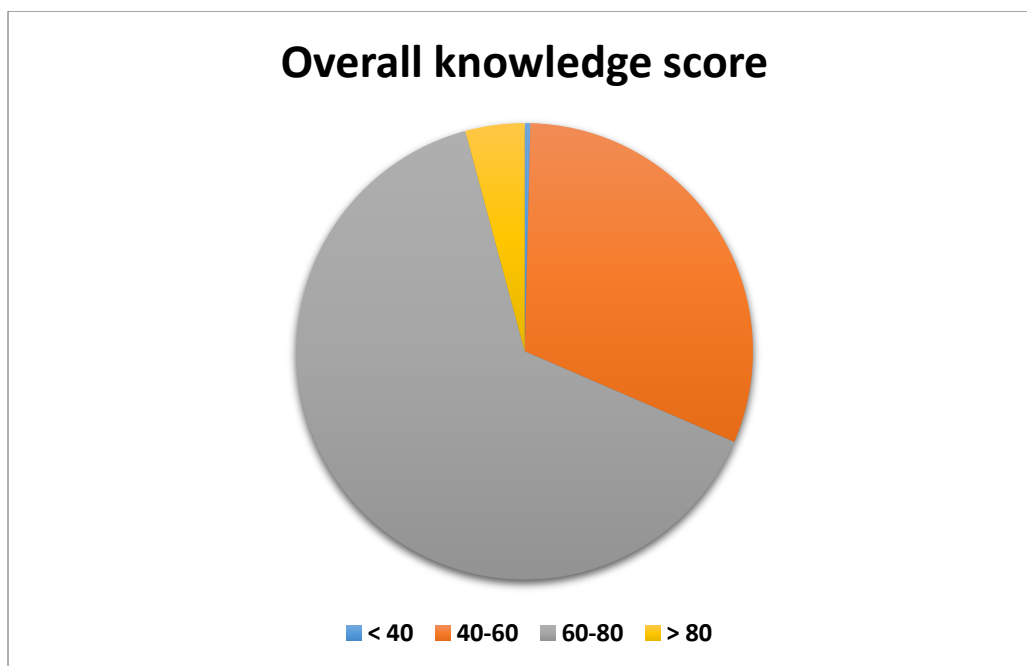


Figure 2: Overall Knowledge Score

The average knowledge score was very high as shown on figure 2 above. Majority scored between 60% and 100% overall with less than 1% scoring below 40%.

Table7: Knowledge of specific aspects of childhood cancer by Cadre

	NOs	COs	MOs	p-value
Knowledge on the definition of childhood cancer				
No	11 (7.3)	4 (5.8)	0 (0)	
Yes(correct definition)	140(92.7)	65 (94.2)	18 (100)	0.524
Knowledge on risk factors				
Poor	8 (5.3)	3 (4.3)	1 (5.6)	
Good	42 (27.8)	15 (21.7)	3 (16.7)	0.645
Very good	78 (51.7)	44 (63.8)	10 (55.6)	
Excellent	23 (15.2)	7 (10.1)	4 (22.2)	

Knowledge on common types of childhood cancers				
Poor	4 (2.6)	3 (4.3)	0 (0)	
Good	16 (10.6)	4 (5.8)	0 (0)	0.363
Very good	68 (45)	23 (33.3)	8 (44.4)	
Excellent	63 (41.7)	39 (56.5)	10 (55.6)	
Knowledge on association between childhood cancer and HIV				
No	29 (19.2)	3 (4.3)	2 (11.1)	
Yes	122(80.8)	66 (95.7)	16 (88.9)	0.027
Knowledge on common clinical features				
Poor	89 (58.9)	34 (49.3)	6 (33.3)	
Good	45 (29.8)	16 (23.2)	3 (16.7)	
Very good	13 (8.6)	14 (20.3)	8 (44.4)	0.004
Excellent	4 (2.6)	5 (7.2)	1 (5.6)	
Knowledge on diagnosis				
Poor	22 (14.6)	3 (4.3)	0 (0)	
Good	40 (26.5)	14 (20.3)	4 (22.2)	0.065
Very good	89 (58.9)	52 (75.4)	14 (77.8)	
Knowledge on treatment				
Poor	2 (1.3)	0 (0)	0 (0)	
Good	15 (9.9)	3 (4.3)	0 (0)	0.447
Very good	22 (14.6)	11 (15.9)	1 (5.6)	

Excellent	112 (74.2)	55 (79.7)	17 (94.4)	
Knowledge on referral system				
Poor	7 (4.6)	4 (5.8)	2 (11.1)	
Good	34 (22.5)	14 (20.3)	4 (22.2)	0.431
Very good	58 (38.4)	23 (33.3)	10 (55.6)	
Excellent	52 (34.4)	28 (40.6)	2 (11.1)	
Knowledge on prevention				
Poor	13 (8.6)	3 (4.3)	1 (5.6)	
Good	32 (21.2)	8 (11.6)	0 (0)	0.108
Very good	71 (47)	43 (62.3)	10 (55.6)	
Excellent	35 (23.2)	15 (21.7)	7 (38.9)	

5.2.2 Knowledge on the definition of childhood cancer

Majority of the HCPs (more than 90%) were able to identify the correct definition of childhood cancer. The p-value was 0.524.

5.2.3 Common childhood cancers known to the HCPs

Knowledge on the common types of childhood cancers was found to be high across all the carders with majority scoring excellent with a p-value of 0.363.

Leukemia was the most known type of childhood cancer (203, 85.4%) followed by neuroblastomas (63.4%), Lymphomas (62.3%), and nephroblastomas (62.3%) in that order. There were still some HCPs that identified adult cancers as being childhood cancers: 10.8% identified cancer of the esophagus while another 7.1% identified gastric cancers, 7.1% prostate cancer and 6.1% identified breast cancer which are known to be predominantly adult cancers as shown in the figure 3.

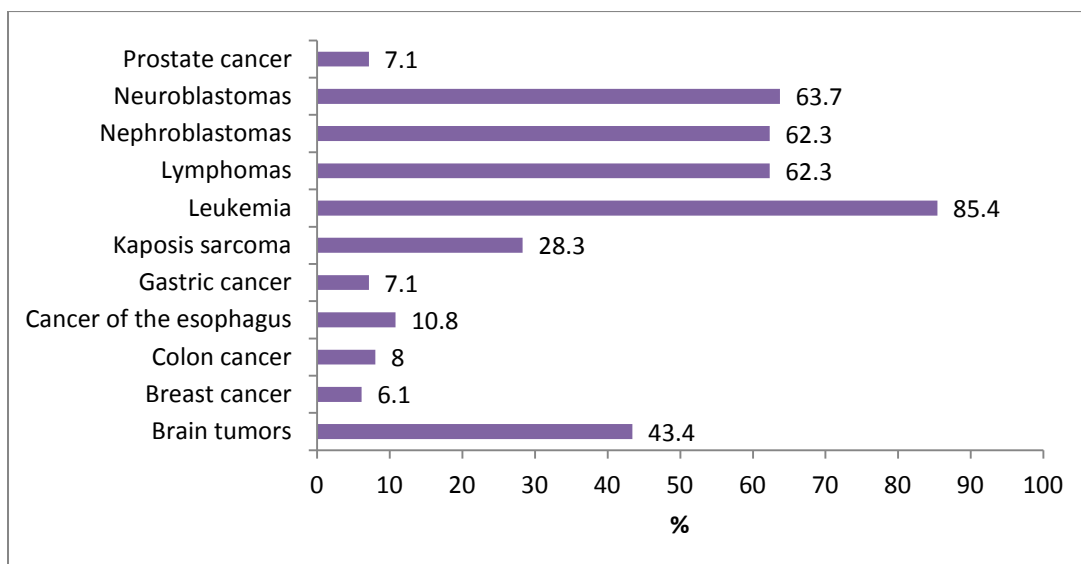


Figure 3: Types of childhood cancers known to the healthcare providers

Table 8: Risk Factors / Causes of Childhood Cancers

Risk Factor / Cause	Frequency (%)
Don't know	7 (2.9)
Being cursed	8 (3.4)
Infections e.g. EBV, Malaria	69 (29)
Inheritance/genetics	183 (76.9)
Living in rural areas	9 (3.8)
Radiations	166 (69.7)
Sin	10 (4.2)
HIV/AIDS	101 (42.4)
Lack of exercise	14 (5.9)
Smoking cigarette	84 (35.3)
Unhealthy lifestyles	79 (33.2)
Chromosomal abnormalities e.g. Down's syndrome	72 (30.3)
Certain genetic syndromes e.g. Neurofibromatosis	120 (50.4)
Chemotherapy and radiation treatment for prior cancer episodes	82 (34.5)

5.2.4 Knowledge on Risk factors

Knowledge on risk factors was found to be generally high across all the three cadres with the three cadres scoring very good and excellent with a p-value of 0.645.

Approximately seventy seven per cent of the respondents 76.9% (183) reported inheritance/ genetics as risk factor / cause of childhood cancer while 69.7% (166) identified radiations. Slightly over a half of the HCPs 50.4% (120) reported certain genetic syndromes e.g. neurofibromatosis. There were still some who thought unhealthy living styles 33.2% (79) and curses 3.4% (8) were risk factors/causes of childhood cancer.

5.2.5 Common clinical features of Childhood Cancer

Knowledge on general clinical features of childhood cancer was found to be poor with nursing officers and clinical officers but much better with medical officers with a p-value of 0.004.

Childhood cancers were reported to present as anemia by 81.9% (195), swellings/ masses 76.9% (183), swollen glands 76.5%(182) and as abdominal distention (69.7%) 166 by the participants. See table 9 below.

Table 9: Childhood Cancer Presentation

Presentation	Frequency (%)
Anemia	195 (81.9)
Abdominal distention	166 (69.7)
Diarrhea	34 (14.3)
Difficulty in breathing	69 (29)
Easy bruisability	63 (26.5)
Fever	98 (41.2)
Headache	67 (28.2)
Hemiplegia	54 (22.7)
Blood in stool	43 (18.1)
Swollen glands	182 (76.5)
Proptosis	89 (37.4)
Swellings/masses	183 (76.9)
Vomiting	58 (24.4)
Weight loss	174 (73.1)
white eye reflex (leukocoria)	86 (36.1)

5.2.6 Diagnosis of Childhood Cancer

Knowledge on the various modes of childhood cancer diagnostics was found to be generally high across all the carders but none scored excellent with a p-value of 0.065.

Majority reported that various types of childhood cancer can be diagnosed through Biopsy for histology (205, 86.3%), imaging (174, 73.1%), history and physical exam (166, 69.8%) while 127 (53.6%) that through lab tests as shown in figure 4 below.

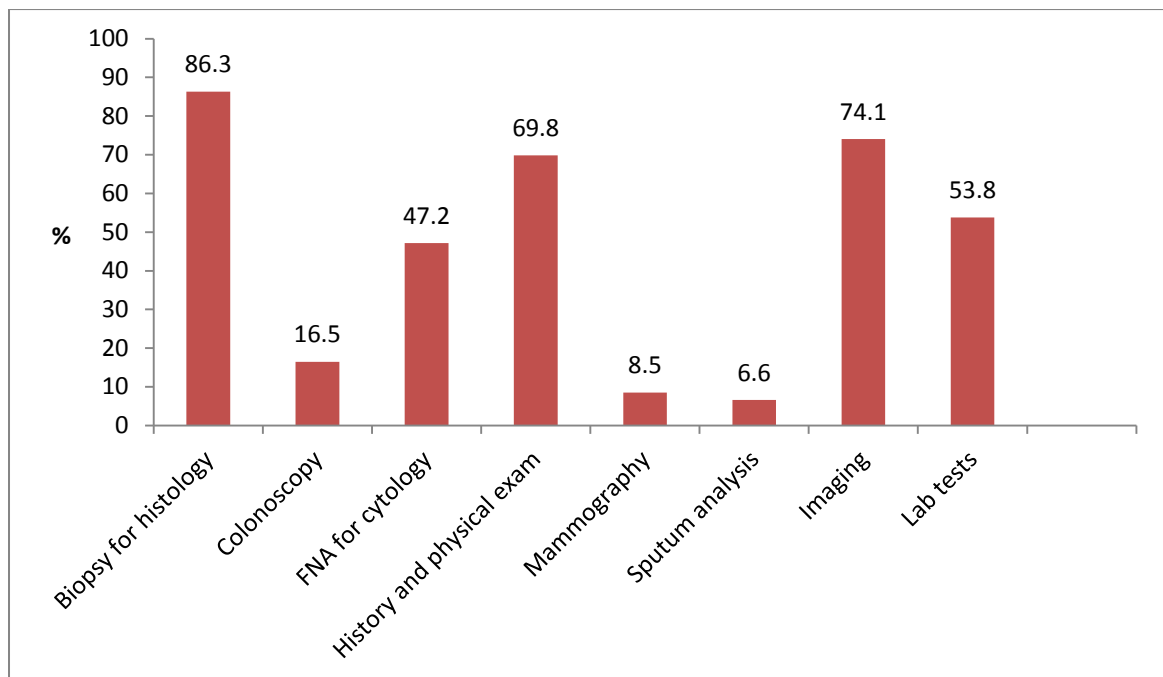


Figure 4: Childhood Cancer Diagnosis

5.2.7 Knowledge on the Treatment options of childhood cancers

Knowledge on childhood cancer treatment was found to high. The three categories of participants scored very good and excellent with a p-value of 0.447.

The specific treatment options for childhood cancer known to the health care providers included chemotherapy (226, 95.3%), Radiotherapy (192, 80.7%) and surgery (163, 68.4%).

5.2.8 Knowledge on the Referral system

Knowledge on the cancer treatment centres around Western Kenya was found to be adequate across all the carders with a p-value of 0.431.

Majority of the respondents could identify the cancer treatment centres in the region correctly. 176(74.1%) identified the Moi Teaching and Referral Hospital while 110, (46.2%) identified the former New Nyanza provincial General hospital currently the Jeramogi Oginga Odinga Teaching and Referral Hospital. There is still a significant fraction that identified Kakamega provincial hospital.

5.2.9 Knowledge on childhood cancer prevention

Knowledge on childhood cancer prevention was found to be equally high with majority scoring very good and excellent with a p-value of 0.108.

With regards to knowledge on childhood cancer prevention methods, seventy seven per cent of the respondents reported avoidance of exposure to radiations (185, 77.8%), avoiding exposure to carcinogens (148, 62.3%) and regular medical check-ups (153, 64.2%) as shown in figure 5 below

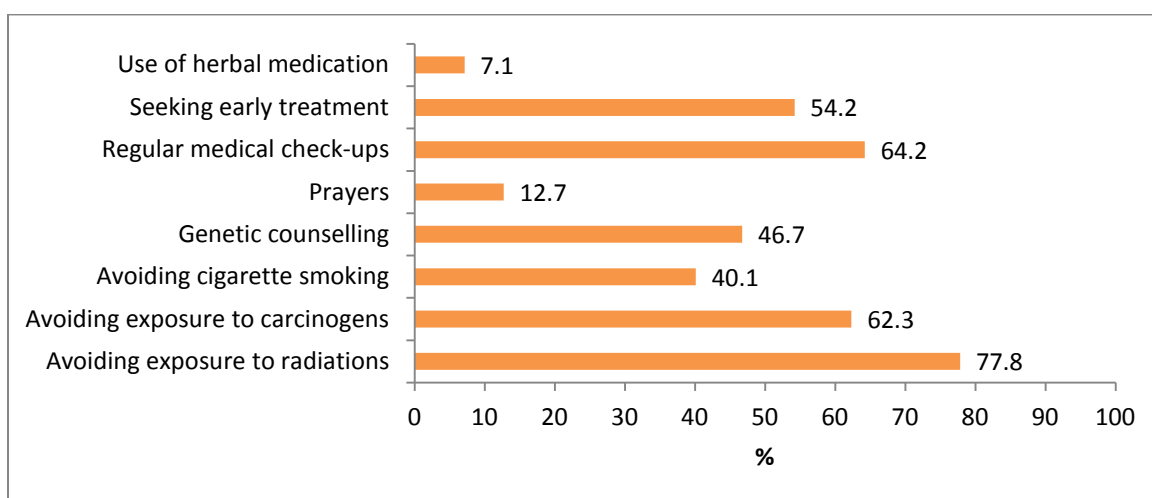


Figure 5: Childhood Cancer Prevention Techniques

5.2.10 Overall Knowledge Score by Site, Cadre, Gender age and length of practice

Generally, most HCPs had a satisfactory level of knowledge on childhood cancers, its risk factors, presentation, diagnosis and treatment as well as prevention. However, Knowledge by site and gender was found to be statistically significant with p-values of $p=0.032$ and $p=0.01$ respectively.

Knowledge by age, length of practice and cadre was not found to be following any particular pattern with p-values of 0.684, 0.271 and 0.331 respectively.

Table 10: Overall Knowledge Score by site, cadre, gender age and length of practice

Variable	Overall knowledge score				p-value
	<40	40-60	60-80	>80	
Site					
Busia	0 (0)	22 (31)	46 (64.8)	3 (4.2)	
Bungoma	1 (1.1)	23 (24.7)	66 (71)	3 (3.2)	0.032
Vihiga	0 (0)	29 (54.7)	24 (45.3)	0 (0)	
Kocholia	0 (0)	0 (0)	17 (81)	4 (19)	
Cadre					
NOs	1 (0.7)	53 (35.1)	93 (61.6)	4 (2.6)	
COs	0 (0)	18 (26.1)	46 (66.7)	5 (7.2)	0.331
MOs	0 (0)	3 (16.7)	14 (77.8)	1 (5.6)	
Gender					
Male	0 (0)	9 (14.5)	45 (72.6)	8 (12.9)	0.01
Female	1 (0.6)	65 (36.9)	108 (61.4)	2 (1.1)	
Age, mean (sd)	35.2 (9.6)	36.4 (10.3)	38.6 (9.8)	35.7 (9.4)	0.684
Length of practice, mean (sd)	10.4 (9.9)	13.5 (10.1)	14.0 (11.3)	10.8 (9.1)	0.271

5.3 Attitudes of HCPs towards Childhood Cancer

The overall attitude was found to be positive with 74% of the respondents' portraying a positive attitude.

5.3.1 Attitude scores by cadre

Attitude among the HCPs was generally same though most nursing officers and clinical officers seemed to have slightly better attitude towards childhood cancer than the medical officers with a p-value of 0.4318 as indicated in table 11 below.

Table 11: Attitude Scores by Cadre

	NOs	COs	MOs	Kruskal -Wallis p-value
Median(IQR)	30 (25-33)	30 (27-33)	27 (23-32)	0.4318

IQR-Interquartile range

5.3.2 Attitude score by site

The general attitudes across all the selected hospitals was same though HCPs in Kocholia hospital exhibited a better attitude to childhood cancer (median=23, IQR27-35) as compared to those in the other three hospitals. Nonetheless, that was not found to be statistically significant with a p-value of 0.2211 as shown in table 12 below.

Table 12: Attitude Scores by Site

<i>Site</i>	<i>Busia</i>	<i>Bungoma</i>	<i>Vihiga</i>	<i>Kocholia</i>	<i>Kruskal-wallis p-value</i>
Median (IQR)	31 (27-33)	30 (24-33)	29 (23-31)	33 (27-35)	0.2211

5.3.3 Attitude score by Gender

Attitude by gender was not found to follow any particular trend. The scores were more or less the same with a p-value of 0.81 as shown in table 13 below

Table 13: Attitude Scores by Gender

	Male	Female	Kruskal -Wallis p-value
Median (IQR)	30 (26-33)	29 (25-33)	0.81

5.3.4 Attitude score by Age

There was no particular trend observed in attitude by age. The p-value was 0.726.

Table 14: Attitude Scores by Age

	35 years & below	Over 35 years	Kruskal -Wallis p-value
Median (IQR)	32 (28-35)	28 (24-32)	0.726

5.3.5 Attitude score by length of practice

There was no statistical significant relationship between the length of practice and the health care provider's attitude towards childhood cancers (p-value=0.432).

Table 15: Attitude Scores by length of practice

	16 & Below length of practice	Over 16 years Length of practice	Kruskal -Wallis p-value
Median (IQR)	34 (30-37)	36 (33-38)	0.432

Generally, many HCPs (74.0 %) expressed a positive attitude towards childhood cancer whereas about 26.0 % showed a contrary attitude towards childhood cancer.

Most of the health care providers believe that the attitude of the patient influences the course of cancer disease (130, 54.6%), that the supportive attitudes of family and

friends can favorably influence the course of childhood cancer disease (157, 66%), the family's reaction plays a large part in improving the quality of life of a child with cancer (200, 84. In addition, they agreed that it is important to convey messages in a caring manner to children with cancer (200, 84%) and early referral of children with cancer to improve their outcome (161, 67.6%). (See Annex 4)

5.4 Reported Practices on Childhood Cancer

Less than half of the healthcare providers 87(36.6%) had ever participated in the management of child with cancer as shown in table 16 below.

Table 16: Participation in the Management of Child with Cancer per site and cadre

	Frequency	Percent
Study site		
Busia	24	33.8
Bungoma	46	49.4
Vihiga	9	16.2
Kocholia	8	40
Cadre		
Nursing officer	48	31.8
Clinical officer	28	40.6
Medical officer	11	58.8

The level of participation in childhood cancer management was found to be high among medical officers 58.8% (11) and lowest among nursing officers (48, 31.8%)

The level of participation was found to be high in Bungoma (46, 49.4%) and lowest in Busia (24, 33.8%) as shown in table 16 above.

5.4.1 Types of childhood cancers encountered by HCPs

The most common types of childhood cancers encountered by HCPs were the acute lymphoblastic leukemia 45(51.9%) followed by Non-Hodgkin's lymphoma 29(33.8%) as shown in figure 6 below.

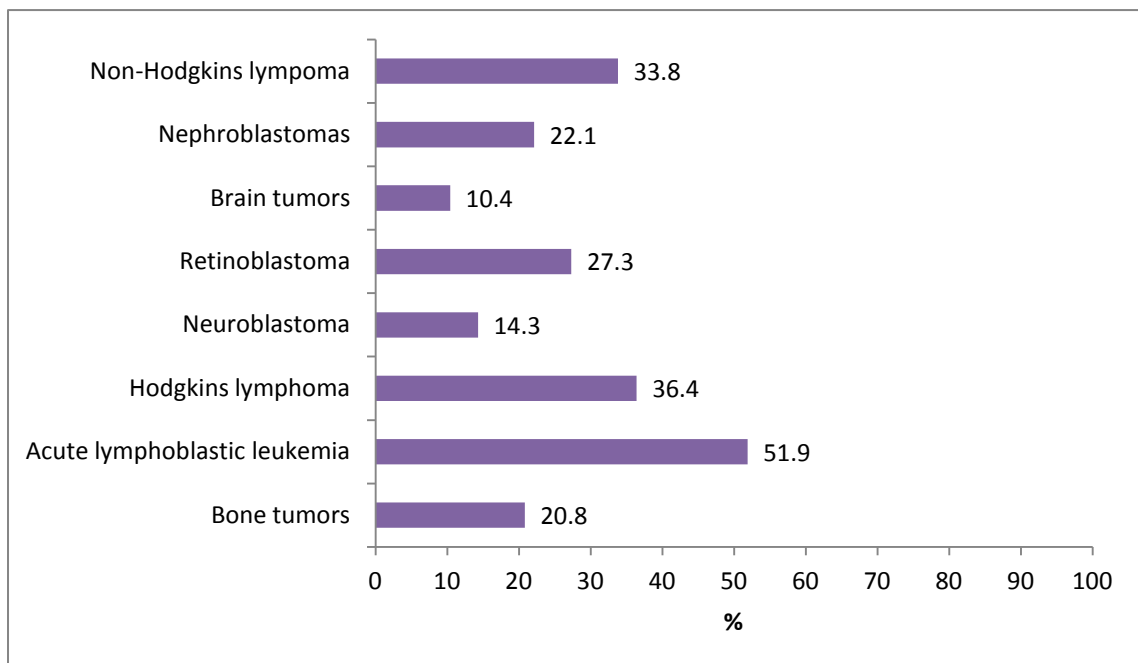


Figure 6. Common types of childhood cancers encountered

5.4.2 Aspect of childhood cancer management participated in

Among those who participated in the management of childhood cancer, 54(62.3%) participated in referral while 41(46.8%) in counseling, diagnosis and treatment as in figure 7 below.

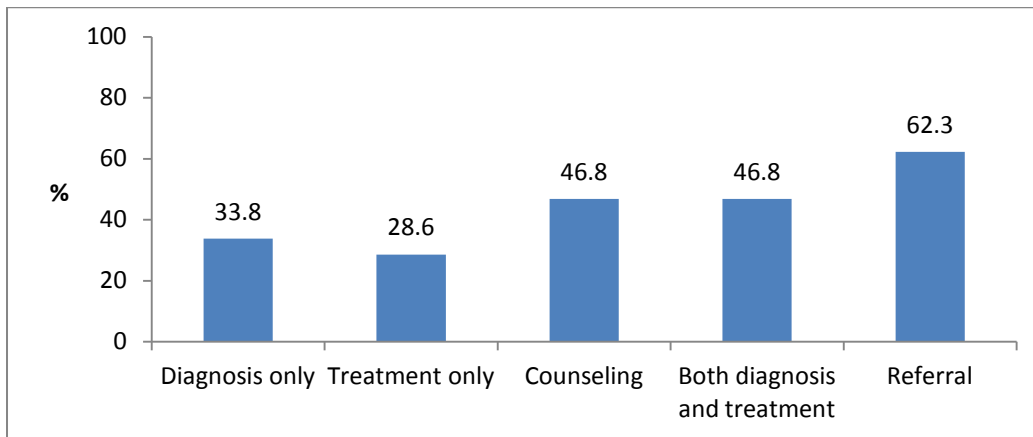


Figure7: Aspect of cancer management participated in

5.4.3 Various childhood cancer diagnostics participated in

Among the childhood cancer diagnostic techniques participated in, 45(51.9%) reported participation in carrying out lab investigations, 51(58.4%) taking history and doing physical examination while 38(44.2%) participated in taking Biopsy for histology as shown in fig 8 below.

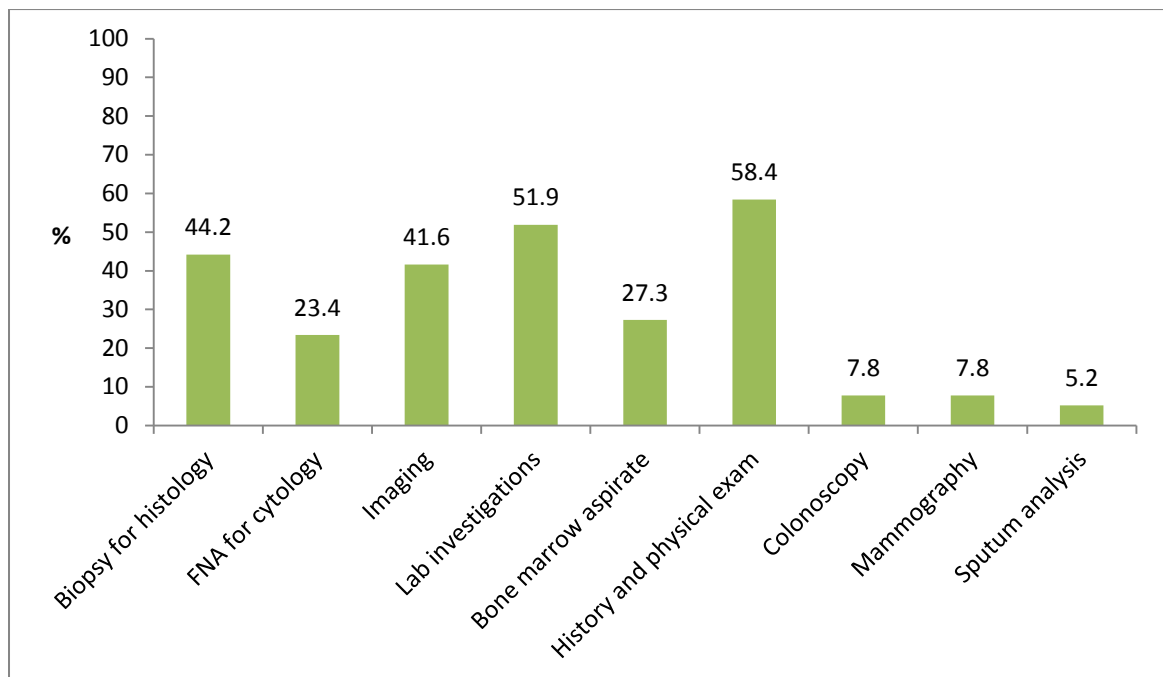


Figure 8: Diagnostic techniques HCPs participated in

5.4.4 Other aspects of childhood cancer management participated in

Among the healthcare providers who had practiced in childhood cancer management, 73 (84.4%) and 77 (88.3%) explained to their patients the common cause /risk factors of the type of cancer they are suffering from and counseled parents of children diagnosed /suspected with cancer on the available modes of treatment respectively. Seventy two of them (83.1%) had ever participated in the treatment of a child with cancer of which 50 (70%), had administered chemotherapy while 10 (13.3%) had provided support.

For those who had never participated in the treatment of a child with cancer, 5 (62.5%) had referred a child with or suspected to have cancer for further treatment.

Only 2 (25%) reported to making a follow-up to make sure they arrive on time and 8(62.5%) agreed that it is important to refer a child suspected or diagnosed with cancer immediately. 6 (50%) reported to encounter challenges referring children of which

5(75%) encountered unwillingness of the guardians to refer the patient and lack of proper referral structures.

Six (100%) counsel the guardian/parent of a child with cancer on the importance of timely referral and advice them to get NHIF while 5(80%) counsel them on how childhood cancer can be prevented.

CHAPTER SIX

DISCUSSION

6.1 Socio-demographics

Majority of the respondents in this study were females (73.9%), and nursing officers (63.4%). This is in keeping with the data from a situational analysis report done by The Kenya Health Workforce Project that shows majority of the health work force are nursing officers, seventy-seven percent of them are female and twenty three percent male. This could also be explained by the fact that nursing is largely viewed as a female profession from the time of the pioneer nurse Nightingale and the trend has remained the same ever since. The mean age of the respondents was similar to the study done in Nigeria that showed that the mean age in years was 37.5 ± 8.438 ³⁸.

6.2 Knowledge

Majority of the health care providers were able to identify the correct definition of childhood cancer as indicated by their choice of 'it is a group of disease characterized by uncontrolled growth and spread of abnormal cells'. This is similar to a study done in Pakistan on breast cancer where ninety-nine percent of the nurses correctly identified breast cancer as a non-communicable disease¹⁰.

Only a quarter of the health care workers scored excellent while slightly over half scored very good on the level of knowledge on risk factors of childhood cancer; this is similar to the study on knowledge on breast cancer risk factors done in Lagos that showed that only 14% of the respondents had excellent knowledge on risk factors of breast cancer. Thirty seven percent had poor knowledge of risk factors and this was higher than what was found in our study and this could be explained by the difference in the type of cancers studied and also the methodology used.³⁸ in the same study, 56% of doctors had

excellent knowledge, this contrasts our study where only 5.6% of doctors scored excellent. This could be explained by the fact that a lot of breast cancer awareness campaigns have been done worldwide while childhood cancer has not been taken seriously especially in the developing countries where not much educational campaigns have taken place.

Three quarters of the respondents in our study scored more than half on the knowledge on risk factors, this is contrary to a KAP study done at Mulago hospital (2006) showed that less than 40% knew the risk factors for cervical cancer, again this could be due to the fact that different methodologies were used to study these two different types of cancers.²⁴

Still on knowledge on risk factors, a KAP study done in a Nigerian urban city found out that more than half of respondents had very poor knowledge on risk factors of childhood cancer; this is contrary to our study where knowledge on risk factors was found to be high. The difference could be explained by the differences in the methodology and the different types of cancers involved.²⁷

Majority of the Healthcare providers indicated that ALL was the most frequently diagnosed type of cancer more than NHL yet NHL is known to be the most prevalent type of cancer in the western region according to a study done in Western Kenya on the epidemiology of diagnosed childhood cancers.¹⁸ This could be explained by the fact that ALL has been identified by literature from developed countries as the most prevalent type of childhood cancer and a lot of the literature that HCPs read in training institutions coming from that region.

HIV/AIDS was identified as having a relationship with increased prevalence of childhood cancers by less than half of our respondents. This is comparable to a study done in a regional hospital in Tanzania where impaired immunity was identified by

only 8% of the nurses as a risk factor for cervical cancer⁷. This is a poor result given that there is evidence linking childhood cancer to HIV infection more importantly so in a country where HIV prevalence is estimated to be high.²⁵

Knowledge about clinical presentation of childhood cancers was relatively low with majority of nursing officers (58.9%), clinical officers (49.3%) scoring poorly and slightly more than half of the medical officers scoring slightly higher (very good). This is generally lower when compared to the scores on knowledge on childhood cancer risk factors where majority scored highly. It is conceivable that risk factor knowledge is mostly acquired during classroom teaching compared to exposure at the workplace. The health care professionals work with patients so they are mainly exposed to symptoms and signs of disease and to treatment outcomes rather than to the development process of the disease especially for non-communicable diseases such as cancer.¹⁰ The low level of knowledge on clinical presentation of cancer patients among HCPs in the developing countries is suggestive of insufficient exposure to cancer patients since most of the facilities lack the ability to diagnose and treat these patients. The few that are diagnosed are referred, so the HCPs in the lower level health facilities do not get enough exposure to the management of these patients. In spite of rigorous efforts towards improving medical education even in the developed countries, it has been realized that healthcare professionals are not adequately educated about cancer risk factors, risk assessment and cancer prevention¹⁰.

The outcome in this study is different from the study done in Brazil that showed that knowledge on the early warning signs among community health workers was very good²³. This could be due to the difference in methodology where our study was focusing on doctors, nurses and clinical officers whereas the Brazilian study focused on

community health workers whose level of training and patient care is comparatively lower than the cadres involved in our cohort.

Only 41.2% identified fever as a sign of childhood cancer, this could be due to the fact that fever is associated more with infectious causes than cancer and the first thing that comes to the mind of a HCP is infection rather than cancer in our setting where the burden of infectious diseases and malnutrition is relatively higher.

Knowledge on diagnosis of childhood cancer was found to be high in our study, this is similar to the study done by Nasiru on breast cancer where ninety nine percent of the participants were aware of breast self examination and ninety one percent were aware of mammography as a diagnostic technique³⁸. The similarity in the two studies could be explained by the fact that knowledge on the cancer diagnosis can be acquired from class.

The knowledge on referral system in our study was found to be high and this was similar to the Brazilian study where most community health workers knew that children with cancer should be referred to cancer specialists²³. This could be explained by the fact that the MTRH which is the main cancer treatment centre in the region has opened satellite cancer treatment units in some of the areas in this region therefore enhancing the awareness of the HCPs on the services offered.

Knowledge among MOs and COs was higher as compared NOs although there was no statistical difference between level of knowledge and carder in this study but in a study done in Nigeria, knowledge regarding cervical cancer was high among doctors and inadequate among nurses. Childhood cancer education remains low in Kenya both in the Universities and the middle level health care training institutions and also in the public health foras.²⁶ It is also important to recognize the fact that doctors are the once

tasked with diagnosis and treatment which gives them an edge over the nurses whose work is supportive in the management of children with cancer. This could have contributed to the higher level of knowledge among medical officers and clinical officers as compared to nursing officers.

In this study there was a statistically significant difference between the site and the level of Knowledge and this could be because of the Academic Model for Prevention and Treatment of HIV/AIDS (AMPATH) cancer network that is collaborating with some of the hospitals in Western Kenya in the delivery of oncology services.

6.3 Attitude

The overall attitude in this study was positive with more than half of the respondents being positive but there was still a significant proportion (26%) of HCPs that portrayed a negative perception about childhood cancer.

Majority of the respondents in this study stated that the supportive attitudes of family and friends can favorably influence the course of childhood cancer disease. This is similar to a study done in Turkey among nurses that found out that they were aware of their attitudes towards being positive with cancer patients and its significance in support for cancer patients.²⁹

In this study, it raises concern to note that a significant number of the HCPs believe that surgery on a child with cancer could spread the disease. This is a cause for worry since these are the people whom the community relies on to provide advice on matters to do with health and this could be contributing to some of presentation witnessed in the children from these localities.

In this study about three quarter of the HCPs believed that childhood cancer could be treated and cured if diagnosed early however, a study done in a semi-urban in southern Nigeria showed which reported that less than half of participants believed that breast cancer is curable if detected early⁴⁵. Another study conducted among literate Nigerians almost a decade ago revealed that only 5% believed that cancer is curable when detected early⁴⁶. The difference in the two studies as compared to our study could be due to the different populations sampled. This study sampled the HCPs while the other studies sampled the ordinary people who have not had any medical education.

Belief in the efficacy of traditional methods of therapy and prayer in the cure of breast cancer is widespread among females in developing countries and African-American women^{40, 41, 43} however, in this study, less than a quarter of the HCPs are convinced that herbal mode of treatment was better in the treatment of childhood cancer as compared to conventional medicine. A study conducted among nurses in Lagos, Nigeria also found that more than two-third believed in prayer houses as places of effective treatment of breast cancer⁴². Wrong cultural and religious beliefs about cancer are significant factors in late presentation of the disease^{40, 41, 43}. In a study done in Eastern North Carolina in the USA, strong religious beliefs were found to be common among women⁴¹. The report showed that a majority believed that God works through doctors to cure breast cancer. In addition, minority, who were mainly African-Americans, believed that medical treatment was unnecessary because only God could cure breast cancer. A significant proportion of healthcare professionals in this study believed in efficacy of herbal medicine. Cancer management services are offered in specialized centers only where the cost of treatment is high and many people HCPs included, may be retorting to herbal medication and prayers as the last hope so as to be seemed to do something about the disease. This raises concern because such beliefs could have negative impact on

their role in creating appropriate awareness about childhood cancer in Kenya, a country where majority of those with the disease present with advanced stages. The difference in the results could be due to the different samples on the two studies. HCPs are bound to have a better than the general population since they understand the principles of cancer management.

There is also a significant proportion of HCPs that believed that almost all children with cancer would die. This kind of attitude impacts negatively on the commitment of HCPs on the care of children with cancer. This could easily cause a breakdown of the communication between the HCP and their patients whom they perceive as hopeless. There was a mixed picture on the preference to mode of death in this study. More than a quarter of the respondents stated that they would rather die of heart disease than cancer. This shows the contempt with which they hold childhood cancer and have this perception that cancer has a poorer prognosis than other chronic disease. This could easily translate to poor care of these children suffering from cancer since they believe that it has the poorest prognosis and are therefore more miserable and would most likely die of it anyway³².

6.4 Practice

Majority of the HCPs reported to having never participated in the management of child with cancer, this could be attributed to the fact that most of the hospitals even the training institutions do not offer oncology services instead they emphasize more on communicable diseases and therefore a lot of the healthcare providers in this study had never had any experience with childhood cancer management and the cases that are diagnosed in these institutions are most likely referred elsewhere for treatment.

The most common types of childhood cancers reported around the study area were ALL followed by NHL; this is contrary to the known epidemiological pattern in Western Kenya which indicates that the most common type of cancer in the area is NHL¹⁸. This could be attributed to the stormy nature of ALL presentation requiring several admissions for recurrent anemia and infections making it appear like it is the most common childhood cancer.

Among the childhood cancer diagnostic techniques majority reported to have participated in history and physical examination, lab investigations and Biopsy for histology. This could be explained by the fact that these are the only available diagnostic techniques to our healthcare providers in the resource limited setting and they are not exposed to other newer and advanced techniques like immunohistochemistry, CT scans and MRIs.

Majority of those who had ever participated in the treatment of a child with cancer had administered chemotherapy while a minority had offered supportive care only. This could be explained by the fact that the only readily available and widely used treatment modality is chemotherapy. The other modalities are available in higher level and more specialized health facilities with specialized personnel. Radiotherapy is only available in one public hospital-KNH in Kenya.

Only 2 HCPs made a follow up to make sure their patients reached hospital and this could be explained by the possibility that they feel helpless and they always want to get rid of the children with cancer because of the challenges they go through while attending to them in a resource limited setting without any cancer management services.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATION

7.1 Conclusions

There was generally good level of knowledge on childhood cancer though the knowledge on clinical presentation among the Medical officers was satisfactory but inadequate among Clinical officers and Nursing officers.

A significant proportion of the healthcare providers portrayed a negative attitude towards childhood cancer.

Less than half of health care providers had ever participated in the management of childhood cancers.

There was significant association between the level of knowledge and study site plus gender but not by carder.

7.2 Recommendations

1. Efforts should be made to improve knowledge on the tell tale signs and symptoms of childhood cancer among all healthcare providers especially the clinical officers and the nursing officers.
2. Educational programs targeted at attitude change should be enhanced.
3. The staff should be provided with opportunities for hands on training on childhood cancer management in established oncology units in order to improve the practice.

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APPENDICES

Appendix 1: Questionnaire Design

I. BACKGROUND INFORMATION

- a. Study number..... b. Date of interview.....
- c. Designation:
- 1) Nursing Officer [] 2) Clinical Officer [] 3) Medical Officer []
- d. Age (in Years).....
- e. Sex :
1. Male [] 2) Female []
- f. Length of practice (in years)
- g. Department(current)
- 1) Pediatrics [] 2) Gynecology and obstetrics [] 3) Outpatient Department []
- 4) Internal medicine [] 5) Surgery [] 6) other
(Specify).....

II. CANCER KNOWLEDGE

A. What is childhood cancer? (*TICK ONE CORRECT ANSWER*)

1. A group of diseases characterized by growth and spread of normal cells []
2. A group of disease characterized by uncontrolled growth and spread of abnormal cells []
3. Cancer is a childhood disease of the skin []
4. Is an autoimmune disease of the muscles []

B. Where did/do you get your information about cancer? (*TICK ALL THAT APPLY*)

- 1) Mass media (Radio, TV, Newspapers) []

- 2) Friends/relatives/peers []
- 3) College []
- 4) Seminars/conferences/CME's []
- 5) Other.....

C. Have you undergone any childhood cancer trainings since you graduated from Medical/Nursing school?

1. YES [] 2. NO []

(If NO, PROCEED TO QUESTION F)

D. If yes to (C) above, how long ago was your last training? (**TICK ONLY ONE THAT APPLIES**)

- 1) Less than 1 year ago [] 2) 1-5 years ago [] 3) 5-10 years ago []
- 4) More than 10 years ago []

E. If yes to question (C) above, how many childhood cancer trainings have you attended in the last 5 years? (**TICK ONE THAT APPLIES**)

- 1) 1-2 [] 3) 2-5 [] 4) More than 5 []

F. What are the **risk factors/causes** of childhood cancer? (**TICK ALL THAT APPLY**)

- | | |
|-------------------------------------|------------------------------------|
| 1) I don't know [] | 2) Being cursed [] |
| 3) Infections e.g. EBV, malaria [] | 4) Inheritance/genetics [] |
| 5) Living in rural areas [] | 6) Radiations [] |
| 7) Sin [] | 8) HIV/AIDS [] |
| 9) Lack of exercises [] | 10) Smoking cigarette [] |
| 11) Unhealthy lifestyles [] | 12) Chromosomal abnormalities e.g. |
| Down's syndrome [] | 13) Certain genetic syndromes e.g. |

Neurofibromatosis []

14. Chemotherapy and radiation treatment

for prior cancer episodes []

G. What type of **childhood cancers do you know? (*TICK ALL THATT APPLY*)**

1) Brain tumors []

2) Breast cancer []

3) Colon cancer []

4) Cancer of the esophagus []

5) Gastric cancer []

6) Kaposi sarcoma []

7) Leukemia []

8) Lymphomas []

9) Nephroblastomas []

10) Neuroblastomas []

11) Prostate cancer []

12) None []

H. What is the association between childhood cancer and HIV/AIDS?(*TICK ALL THAT APPLY*)

1. HIV decreases chances of developing childhood cancer []

2. HIV has No impact on development of childhood cancer []

3. HIV increases chances of developing childhood cancer []

I. In general, how do various types of childhood cancer present?(*TICK ALL THAT APPLY*)

1) Anemia []

2) Abdominal distention []

3) Diarrhea []

4) Difficulty in breathing []

5) Easy bruisability []

6) Fever []

7) Headache []

8) Hemiplegic []

9) Blood in stool []

10) Swollen glands []

11) Proptosis []

12) Swellings/masses []

13) Vomiting []

14) Weight loss []

15) White eye reflex (leukocoria) []

16) No symptoms []

J. In general, how are the various types of childhood cancer diagnosed? (*TICK ALL THAT APPLY*)

1) Biopsy for histology []

2) Colonoscopy []

3) FNA for cytology []

4) History and physical exam []

5) Mammography []

6) Sputum analysis []

7) Imaging e.g. X-ray, ultrasound, CT scan, MRI []

8) Lab tests e.g. Full hemogram with Peripheral Blood Film []

9) I don't know []

K. In general, what treatment options are available for the various types of childhood cancer in Kenya? (**TICK ALL THAT APPLY**)

1) Chemotherapy [] 2) Herbal medication [] 3) Hormonal therapy []

4) Prayers [] 5) Radiotherapy [] 6) Surgery [] 7) There is no treatment available []

L. Do you know of any centers that offer childhood cancer treatment services in Western Kenya?[**TICK ALL THAT APPLY**]

1) Kitale District Hospital [] 2) Moi Teaching and Referral Hospital []

3) Mt. Elgon Sub-District Hospital [] 4) New Nyanza Provincial General Hospital []

5) Webuye District Hospital [] 6) None []

M. What childhood cancer prevention techniques do you know of? [**TICK ALL THAT APPLY**]

1) Avoidance of exposure to radiations []

2) Avoidance of cigarette smoking []

4) Avoiding exposure to carcinogens e.g. pesticides []

5) Genetic counseling []

6) Prayers []

7) Regular medical check-ups []

8) Seeking early treatment []

9) Use of herbal medications []

10) None []

III CANCER ATTITUDES

(SA=Strongly Agree, A=Agree, NS=Not Sure, D=Disagree, SD=Strongly Disagree)

	SA	A	NS	D	SD
A patients attitude influences course of cancer disease					
The supportive attitudes of family and friends can favorably influence the course of childhood cancer disease					
The family's reaction plays a large part in prolonging the life of a child with cancer					
Childhood cancer is witchcraft/curse					
It is important to test a child with symptoms suggestive of cancer.					
Childhood cancer can be transmitted from person to person by contact					
Cancer is a disease of adults only					
A child with cancer should be sent back home since there is no treatment?					
Surgery on childhood cancer spreads the disease more to other parts of the body					
Childhood cancer is curable if diagnosed and treated early					
Herbal medicine is better than conventional treatment in treatment of childhood cancer					
Chemotherapy makes children more miserable					
Childhood cancer treatment is long and protracted					
No need to refer a child with cancer because cancer					

treatment is expensive					
Early referral of a child with cancer improves outcome					
Almost all the children with cancer will definitely die					
Childhood cancer is a burden to healthcare in the country					
It is not always important that healthcare workers deal with children's emotional responses to cancer					
I tend to feel pessimistic about the outcome of childhood cancer disease , given the present treatment methods					
I personally would prefer to die of heart disease than cancer					
Children with cancer patients managed on an outpatient basis are as productive and capable in their daily activities					
It is important to convey a caring manner to children with cancer					

IV. CANCER PRACTICES

A. Have you ever participated in the management of a child with cancer?

(Management in this context entails participation in; cancer diagnosis, treatment, counseling and referral)

1. YES []

2. NO []

(IF NO, THEN DO NOT PROCEED)

B. In which of the following aspects of management of childhood cancer have you participated in: *(TICK ALL THAT APPLY)*

1) Diagnosis only []

2) Treatment only []

3) Counseling []

3) Both Diagnosis and treatment of cancer []

4) Referral []

C. Among the childhood cancers that you have participated in their management in your practice, which ones are common around here? [**TICK ALL THAT APPLY**]

- | | |
|-------------------------------|-------------------------------------|
| 1) Bone tumors [] | 2) Acute lymphoblastic Leukemia [] |
| 3) Non-Hodgkin's Lymphoma [] | 4) Hodgkin's lymphoma [] |
| 5) Nephroblastomas [] | 6) Neuroblastoma [] |
| 7) Retinoblastoma [] | 8) Brain tumors [] |

D. In the diagnosis of childhood cancer which diagnostic techniques have you participated in? (**TICK ALL THAT APPLY**)

- | | |
|--|-----------------------------|
| 1) Biopsy for Histology [] | 2) Bone Marrow Aspirate [] |
| 3) Colonoscopy [] | 4) FNA for cytology [] |
| 5) History and physical exam [] | 6) Mammography [] |
| 7) Imaging e.g. X-ray, Ultrasound CT scans, MRIs [] | 8) Sputum analysis [] |
| 9) Lab investigations e.g. Full haemogram with peripheral blood film [] | |
| 10) I have never diagnosed/ helped in diagnosis of any cancer [] | |

E. Do you explain to your patients the common causes/risk factors of the cancer they are suffering from?

1. YES [] 2. NO []

F. Do you counsel children or parents of children diagnosed/suspected with cancer on the available modes of treatment?

1. YES [] 2. NO []

G. Do you counsel the parents on the prognosis of the cancers affecting their children?

1. YES [] 2. NO []

H. Have you ever treated/participated in the treatment of a child with cancer?

- 1) YES] 2) [NO]

(IF NO, PROCEED TO QUESTION J)

I. If yes to above, how did you participate? ***(TICK ALL THAT APPLY)***

- 1) Administering Chemotherapy [] 2) Administering Immunotherapy []
3) Radiotherapy [] 4) Surgery [] 5) Supportive []

J. Have you ever participated in referring a child with suspected/confirmed cancer for further management? (***TICK WHERE APPLICABLE***)

1. YES [] 2. NO []

(IF NO, PROCEED TO QUESTION P)

K. If yes to above, where do you refer them to? ***(LIST)***

1.
2.
3.
4.

L. Do you make a follow-up to make sure they arrive at the facility on time?

1. YES [] 2. NO []

M. Is it important to refer a child suspected or diagnosed with cancer immediately?

1. YES [] 2. NO []

N. Do you encounter any challenges referring children with suspected/confirmed cancer?

1. YES [] 2. NO []

(IF NO, PROCEED TO QUESTION P)

O. If yes to above, which ones (**TICK ALL THAT APPLY**)

1. Lack of Transport []
2. Unwillingness of the guardians to refer the patient []
3. Communication problems with the receiving facility []
4. Lack of proper referral structures []
5. Others

(specify).....

P. Do you counsel the guardian/parent of a child with cancer on the importance of timely referral of their children to cancer treatment centers?

1. NO []
2. YES []

Q. Do you advice your patients to get NHIF?

1. YES []
2. NO []

R. Do you counsel parent/caretakers of children on how childhood cancer can be prevented?

1. YES []
2. NO []

Appendix 2: Attitude Results

	Strongly agree	agree	Not sure	disagree	Strongly Disagree
1) A patients attitude influences course of cancer disease	71 (29.8)	69 (29)	17 (7.1)	32(13.4)	49 (20.6)
2) The supportive attitudes of family and friends can favorably influence the course of childhood cancer disease	95 (39.9)	62(26.1)	18 (7.6)	22 (9.2)	41 (17.2)
3) The family's reaction plays a large part in prolonging the life of a child with cancer	123(51.7)	77(32.4)	14 (5.9)	9 (3.8)	15 (6.3)
4) Childhood cancer is witchcraft/curse	23 (9.7)	10 (4.2)	8 (3.4)	20 (8.4)	177(74.4)
5) It is important to test a child with symptoms suggestive of cancer.	122(51.3)	58(24.4)	8 (3.4)	16 (6.7)	34 (14.3)
6) Childhood cancer can be transmitted from person to person by contact	19 (8)	10 (4.2)	7 (2.9)	39(16.4)	163(68.5)

7) Cancer is a disease of adults only	8 (3.4)	8 (3.4)	6 (2.5)	25(10.5)	191(80.3)
8) A child with cancer should be sent back home since there is no treatment?	14 (5.9)	11 (4.6)	9 (3.8)	22 (9.2)	182(76.5)
9) Surgery on childhood cancer spreads the disease more to other parts of the body	35 (14.7)	40(16.8)	26(10.9)	68(28.6)	69(29)
10) Childhood cancer is curable if diagnosed and treated early	89 (37.4)	78(32.8)	19 (8)	21 (8.8)	31 (13)
11) Herbal medicine is better than conventional treatment in treatment of childhood cancer	22 (9.2)	26(10.9)	20 (8.4)	56(23.5)	114(47.9)
12) Chemotherapy makes children more miserable	13 (5.5)	42(17.6)	31 (13)	76(31.9)	76 (31.9)
13) Childhood cancer treatment is long and protracted	28 (11.8)	44(18.5)	30(12.6)	85(35.7)	51 (21.4)
14) No need to refer a child with cancer because cancer treatment	24 (10.1)	22 (9.2)	11 (4.6)	51(21.4)	130(54.6)

is expensive					
15) Early referral of a child with cancer improves outcome	112(47.1)	49(20.6)	12 (5)	30(12.6)	35 (14.7)
16) Almost all the children with cancer will definitely die	86 (36.1)	68(28.6)	18 (7.6)	30(12.6)	36 (15.1)
17) Childhood cancer is a burden to healthcare in the country	64 (26.9)	54(22.7)	15 (6.3)	66(27.7)	39 (16.4)
18) It is not always important that healthcare workers deal with children's emotional responses to cancer	21 (8.8)	33(13.9)	23 (9.7)	64(26.9)	97 (40.8)
19) I tend to feel pessimistic about the outcome of childhood cancer disease , given the present treatment methods	39(16.4)	61(25.6)	47(19.7)	57(23.9)	34 (14.3)
20) I personally would prefer to die of heart disease than cancer	59(24.8)	45(18.9)	40(16.8)	50 (21)	44 (18.5)

<p>21) Children with cancer patients managed on an outpatient basis are as productive and capable in their daily activities</p>	65(27.3)	86(36.1)	26(10.9)	30(12.6)	31 (13)
<p>22) It is important to convey a caring manner to children with cancer</p>	121(50.8)	79(33.2)	14 (5.9)	12 (5)	12 (5)

Appendix 3: Consent Form for the Healthcare Worker Involved in the Assessment of Knowledge Attitude and Practice towards cancer study.

We are conducting a study titled: *Assessment of Knowledge, Attitude and Practice of Healthcare Workers towards Childhood cancer in Level 4 hospitals in Western Kenya*

This study involves getting information from the healthcare worker by use of Questionnaires about the understanding of cancer, attitude towards cancer and the practice of cancer management. No laboratory tests will be carried out on any of the participants.

We intend to compare the findings from this study and possibly influence future policies on training of Healthcare Workers on cancer management. There is no direct benefit for participating in this study.

We therefore request your permission to involve you in the study. Refusing to participate in this study will have no consequences whatsoever.

If you have any questions which you feel the investigator explaining to you has not handled or you would want another opinion, feel free to contact the **Principal**

Investigator, Dr. Ronoh, Evans Cheruiyot on 0700749999

I have understood the explanation given to me about this study and hereby give consent to take part in it'

Name: Signature..... Date

Investigator:


Name..... Signature.....

Date.....


Annex 4: List of the twelve Level 4 Hospitals in Western Kenya

1. Mt. Elgon
2. Webuye
3. Bungoma
4. Makungu
5. Butere
6. Kocholia
7. Malava
8. Lumakanda
9. Busia
10. Iguhu
11. Kimilili
12. Vihiga

Annex 5: IREC Approval



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30th August, 2012

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

Reference: IREC/2012/167
Approval Number: 000881

Dr. Evans Ronoh Cheruiyot,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

Dear Dr. Ronoh,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee have reviewed your research proposal titled:


"Assessment of Knowledge, Attitude and Practice of Healthcare Providers towards Childhood Cancer in Level Four Hospitals in Western Kenya."

Your proposal has been granted a Formal Approval Number: **FAN: IREC 000881** on 30th August, 2012. You are therefore permitted to begin your investigations.


Note that this approval is for 1 year; it will thus expire on 29th August, 2013. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Yours Sincerely,



PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE



cc: Director - MTRH
 Principal - CHS
 Dean - SOM
 Dean - SPH
 Dean - SON
 Dean - SOD