ESOPHAGEAL CANCER AWARENESS AMONG PATIENTS ATTENDING OUT-PATIENT CLINICS AT KENYATTA NATIONAL HOSPITAL

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H56/40843/2021

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE IN NURSING (ONCOLOGY) OF THE UNIVERSITY OF NAIROBI

DECLARATION

I, **Peter Mutune**, declare that this research report titled, 'A cross-sectional survey on level of awareness of esophageal cancer among patients attending the out-patient clinic at Kenyatta National Hospital' is my original work and has never been submitted for the award of any degrees at any university or any other purpose.

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SUPERVISORS CERTIFICATE OF APPROVAL

We undersigned certify that this thesis has been submitted with our approval as internal supervisors.

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DEDICATION

I wish to dedicate this thesis to my loving wife Grace Rasugu and my children Jesse and Bernice for their support, patience and encouragement while I was undertaking this study and compiling the report.

ACKNOWLEDGEMENT

For the successful completion of this research work, I would like to extend my thanks and gratitude to my research supervisor Dr. **Angeline Chepchirchir (**Senior Lecturer, Department of Nursing Sciences; University of Nairobi) for her continuous guidance and preparation of this thesis. Besides, I am also thankful to my second supervisor **Prof. Miriam C.A. Wagoro (**Professor Department of Nursing Sciences; University of Nairobi) for her guidance and prompt correction response in development of this research project and report findings to ensure I finish on time.

Am grateful to The University of Nairobi and Kenyatta National Hospital management for creating an enabling environment for me to pursue my education, this allowed me to interact with staff and patients during my learning process and through data collection period.

Am thankful to my employer County Government of Machakos through the office of Chief Officer of Public Health and Director of Nursing Services for granting me time-off (study leave) to pursue Master of Science in nursing (oncology).

Lastly, I would like to offer a tribute of love and appreciation to my family, colleagues and friends for encouragement and availing resources to support my schooling and writing this thesis.

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ACRONYMS AND ABBREVIATIONS

AC-	Adenocarcinoma
ANOVA-	Analysis of Variance
AMPATH-	Academic Model Providing Access to Healthcare
EC-	Esophageal Cancer
ERC-	Ethical Research Committee
ESCC –	Esophageal Squamous Cell Carcinoma
GERD-	Gastroesophageal Reflux Disease
GOPC –	Gynecological Outpatient Clinic
HBM -	Health Belief Model
IARC –	International Agency for Research in Cancer
KDHS-	Kenya Demographic Health Survey
KNH –	Kenyatta National Hospital
KENCO-	Kenya Network of Cancer Organization
KESHO-	Kenya Society of Hematology and Oncology
KUTRH-	Kenyatta University Teaching and Referral Hospital
LMIC-	Low and Middle-Income Countries
MTRH -	Moi Teaching and Referral Hospital
MOPC –	Medical Out-patient Clinic
SOPC –	Surgical Outpatient Clinic
SPSS -	Statistical Package for Social Sciences
NCI-K-	National Cancer Institute of Kenya.
NACOSTI-	National Commission for Science, Technology and Innovation
WHO-	World Health Organization

OPERATIONAL DEFINITIONS

Awareness: General understanding and knowledge about health, healthcare and its services, health needs, diseases, and preventive measures.

Cancer: A complex group of diseases characterized by the growth of abnormal cells beyond their usual boundaries that can then invade the adjoining parts of

Cancer Screening- Cancer screening involves applying simple body and/or spread to other parts of the body or organs tests or procedures across a healthy population to identify unrecognized cancer diseases in individuals before they develop any symptoms of cancer.

Health-seeking Behavior- Complex decision-making process instigated by a problem that challenges personal abilities.

Health Literacy- Comprises the skills that determine the motivation and ability of individuals to receive, gain access to and use information that is culturally and linguistically appropriate to promote and maintain good health.

Survivorship- Focuses on the health and life of a person with cancer post-treatment until the end of life. It covers the physical, psychosocial, and economic issues of cancer, beyond the diagnosis and treatment phases

Symptom Recognition: Is a cue used by the patient to indicate the need for a self-care response, including symptom detection and interpretation.

Symptom Appraisal: Leads to perceiving to seek help and consulting with a health care professional.

ABSTRACT

Report by the National Cancer Institute of Kenya (NCI-K 2023) for 2021 and 2022 indicates that esophageal cancer is now the leading cause of all cancer deaths in both men and women accounting for 15.6% of all cancer deaths. Several studies have predicted a 70% increase by the year 2040 in Eastern Rift Valley corridor with majority being in Low and Middle-Income Countries (LMIC). Due to vague nature of esophageal cancer clinical presentation coupled with low level of awareness, poor symptoms appraisal led to delays in seeking healthcare and consequently prompt diagnosis and treatment. Reports indicate that,70% to 80% of patients attending KNH are diagnosed at stage III and IV of disease progression with 90% succumbing to the disease shortly after diagnosis.

The main study objective was to assess the level of awareness of esophageal cancer amongst patient attending outpatients' clinics in KNH, with specific interest focusing on assessing the level of awareness of early warning signs, risk factors, patient's perception of risk factors and common sources of health promotion information.

This is descriptive cross-sectional study where the study population was sampled from patients attending out-patient clinics where a sample size of 344 participants was selected. Data was collected through a structured self-administered questionnaire, coded and entered into an Excel sheet and transferred to SPSS version 28 for analysis. To demonstrate association and comparisons between variables, both regression and chi-square was employed. Descriptive statistics was provided using the mean, percentages, and P-Value to determine the level of significance. Analysis of variance (ANOVA) a statistical formula was used to compare social demographic profile of participants to study objective findings and responses.

Ethical approval was sought at the UoN-KNH Ethical review committee for scientific and ethical approvals, similarly license was obtained from NACOSTI and permission to collect data was also sought from heads of department of medicine and surgery in KNH.

The finding of this research demonstrated changing patient social demographics with improved literacy level and internet access and young respondents, majority being ages of 30 to 40 years. Knowledge gap of warning signs with only difficulty in swallowing at 24.3% with "very likely response", smoking and heavy alcohol consumption identified as most significant risks factors with 50.7% and 42% as "very likely" response, on risk perception participants who don't smoke cigarette or consume alcohol regarded themselves as no risk population for Esophageal Cancer. Despite increased literacy level and internet access of participants, 62% of respondents reported to have heard about esophageal cancer, however, respondents didn't demonstrate fundamental knowledge base of esophageal cancer changing trends and burden as per recently published reports on EC. This finding will be used to inform and develop a literacy program aiming at promoting awareness of symptom recognition, symptom appraisal of EC and health-seeking behavior to the general population and most risk population in developing esophageal cancer for early diagnosis and treatment.

1.0 CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Globally, esophageal cancer (EC) ranks 7th in incidences and 6th in terms of mortality in all cancers. EC increased from 572,034 new cancers and 508,585 deaths in 2018 to 604,100 new cases and 544,076 deaths in 2020 approximately a 5.6% increase in two years (GLOBOCAN 2020). A manuscript published by Cheng (2015) on the incidence of esophageal cancer in Eastern Africa suggests that 80% of mortality happens in low and middle-income countries (LMIC) with an incidence of 9.7 compared with 0.6 and 2.2 in Western and North Africa. They also highlighted increasing age as being associated with a high risk for esophageal (by 75 years the risk of cancer is 18%) given the anticipated growth of the aging population. Squamous cell carcinoma is dominant in histology, with studies compounding the effects of tobacco and alcohol as risk factors (Cheng et al, 2015).

In Africa increasing esophageal cancer burden has been pointed out in the South and East of riff valley countries normally referred to as the Eastern Corridor with high prevalence. The prevalence rate ranges as follows, Malawi leads in incidences per 100,000 populations with 17.5%, Kenya at 12.7%, Uganda at 12.4%, Zimbabwe at 11.3%, and Tanzania at 9.5% (GLOBOCAN 2020). However, no studies have been published on esophageal cancer awareness that could be retrieved in my literature search.

In Kenya, EC was ranked the 3rd most frequent cancer in both sexes with 4380 cases and the leading cause of all cancer deaths with 4351 deaths in 2018 (Odera *et al,* 2017). In addition, esophageal cancer has been reported to be on the rise and in particular in hot spots in the country (Wakhisi, et al, 2015). According to Ferlay (2015), by the time symptoms of esophageal cancer appear, the cancer is often at an advanced stage and has a poor prognosis, emphasizing the significance of prevention and early diagnosis to lower the burden of esophageal cancer (Ferlay et al, 2015).

A study done by Odera (2017) in KNH suggests that there is a need to create enough awareness in the community so that they know the changing dynamic of cancer prevalence in addition to our traditionally already-known priority cancers. The estimated burden of esophageal cancer provides an essential foundation for policymakers to use in determining priorities and developing and accelerating a control program to minimize the current projected burden. Despite the fact that primary prevention is still vital, screening and early diagnosis are important components of esophageal cancer prevention; yet, there is no such guidance in Kenyan policy recommendations. (Morgan et al. 2022).

1.2 Problem Statement

According to a report by the National Cancer Institute of Kenya (NCI-K) covering cancer incidences and mortality between 2021 and 2022, esophageal cancer is now the leading cause of all cancer deaths in both men and women, accounting for 15.6% of all cancer deaths (NCI-K 2023). This data is consistent with other published research that predict a 70% increase in the esophageal cancer burden by 2030, highlighting the importance of setting priorities in legislation and developing and expediting cancer control programs to lower the expected burden. (Makau et al, 2017).

Currently, there are limited studies published on the level of esophageal cancer awareness in Kenya and KNH. However, due to the vague nature of esophageal cancer clinical presentation coupled with the low level of awareness, poor symptoms recognition and appraisal, delays in seeking healthcare affect prompt diagnosis and subsequent treatment (Mwachiro et al, 2016). Studies done in KNH suggest that 70% to 80% of patients diagnosed with esophageal cancer present at a late stage (III and IV) with nine out of ten patients losing their lives shortly after diagnosis (Odero et al, 2017).

Data obtained from Kenya Network of Cancer Organization (KENCO) a major partner in KNH in cancer education for patients and caregivers indicate that, of all webinars done in the last 12 months, none was on esophageal cancer. A quick survey was done on 30 patients in KNH outpatients who responded to two questions of what are top three high burden cancer and the leading killer cancer, patients could not identify esophageal cancer as among the top 3 high cancer burden in Kenya as the leading killer cancer.

1.3 Justification of the Study

There has been an increase in esophageal cancer incidence gradually to the current rating of 3rd most prevalent cancer in Kenya (GLOOCAN 2020). Unpublished data from the KNH information registry demonstrate the same trend from 130 cases in 2017 to 290 cases diagnosed in 2021. Kenya has a uniquely high percentage of young cases (< 30 years of age) and the mean age of patients with esophageal cancer is approximately 50 years compared to 65 years in Western countries (Odera et al, 2017).

KNH is among a few tertiary hospitals offering esophageal cancer diagnosis and treatment. It also serves quite a big population regionally which makes it a suitable site to conduct this study for finding generalizations. Every month an average of 3290 patients are reviewed in KNH, with approximately 12% being new patients and 88% revisiting. Averagely 150 patients are reviewed daily in the clinic 750 patients weekly, who are grouped according to their medical condition and specialty needs per day.

Maintaining coordinated public education and awareness program on cancer prevention is key to promoting responsive healthcare. With the current consumption of online information, belief in non-validated sensational information and myths about esophageal cancer might, be associated with increased anxiety and feeling of helplessness (Hvidberg et al, 2014). According to studies, closing the awareness gap can reduce fear and anxiety and make individuals feel empowered about their potential to minimize their cancer risk by boosting knowledge about causes and risk factors. (Ramamurthy et al. 2022).

1.4 Research Question

What is the level of esophageal cancer awareness among patients attending outpatient clinics at Kenyatta National Hospital?

1.5 Specific Questions

a) What is the level of awareness of early warning signs of esophageal cancer among patients attending Kenyatta National Hospital outpatient clinics?

b) What is the level of knowledge of esophageal cancer risk factors among patients attending Kenyatta National Hospital outpatient clinics?

c) How do patients attending Kenyatta National Hospital outpatient clinics perceive the risk factors of esophageal cancer?

d) Which are the common sources of health information in patients attending Kenyatta National Hospital outpatient clinics?

1.6 Broad Objective

To describe the awareness of esophageal cancer amongst patients attending Kenyatta National Hospital outpatient clinics.

1.7 Specific Objective

a) To assess the level of knowledge on early warning signs of esophageal cancer amongst patients attending outpatient clinics in Kenyatta National Hospital.

b) To determine the level knowledge of esophageal cancer risk factors among patients attending the Kenyatta National Hospital outpatient clinic.

c) To assess risk perception on esophageal cancer amongst patients attending outpatient clinics in Kenyatta National Hospital.

d) To describe common sources of general health information in patients attending Kenyatta National Hospital outpatient clinics.

2.0 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Esophageal cancer is a gastrointestinal tumor, a malignant tumor that occurs in the mucosal epithelium of the esophagus that can be split into esophageal squamous cell carcinoma (ESCC) and esophageal adenocarcinoma, with ESCC being more common in clinical practice. (Short et al, 2017).

Asymptomatic EC or moderate nonspecific symptoms such as heartburn, unusual chest discomfort, or dyspepsia can occur. A patient may also appear with symptoms such as occult blood in the stool or iron deficiency anemia. Mild or intermittent dysphagia (more than 50% luminal blockage), odynophagia, or a foreign body sensation may be reported by the patient. These symptoms, in general, necessitate diagnostic testing, such as upper GI endoscopy and mucosal biopsy. (Huang *et al.,* 2021). Other symptoms, according to Reisi (2013), include weight loss and anorexia, which are frequently associated with more severe disorders, as well as retrosternal or back pain and abscess formation. Hoarseness is commonly related with recurrent laryngeal nerve paralysis. (Reisi et al.2013).

Studies in Central China on analysis of living habits risk factors for esophageal cancer suggest that genetic factors contribute only 10% (World Health Organization, 2018). There is a dose-response relationship between alcohol consumption and squamous cell carcinoma of the esophagus. Studies suggest that cigarette smoking together with alcohol increases the risk of squamous cell carcinoma of the esophagus this is evidenced by the majority of the patient who has used them previously. Nutrition; iron, riboflavin, and vitamin A deficiencies have been associated with an increased risk of squamous cell EC (Odera et al. 2017). Ingestion of food at very elevated temperatures (<60 degrees) and the lack of water intake during meals are also contributing factors. According to a study published by Yuan (2023) on risk factors for esophageal cancer, esophageal cancer was generally termed as a disease of low-socioeconomic groups (Yuan et al, 2023).

2.2 Data and Burden

Esophageal cancer is one of the major causes of cancer-related fatalities, having a significant impact on human health around the world. According to GLOBOCAN 2020, there will be an anticipated 0.6 million new instances of esophageal cancer in 2020, with 0.54 million deaths as a result of this disease burden. Eastern Asia, in particular, has the greatest regional age-standardized incidence rates for both males and females, trailed by Eastern Africa, Southern

Africa, South-Central Asia, and Northern Europe. In contrast, Western Asia, Northern Africa, Western Africa, and Central America have the lowest age-standardized incidence rates. (Ilson et al. 2018).

China has the highest rate of esophageal cancer deaths, accounting for more than half of all deaths worldwide, with Malawi (16.7 per 100,000) and Mongolia (16.2 per 100,000) having the highest rates globally. The risk of developing esophageal cancer before the age of 75 years is 18% and the risk of dying from it is 16%. If the current trends continue according to (GLOBOCAN 2020) esophageal cancer cases by 2030 and 2040 are projected to increase by 31.4% and 63.5% respectively, with the highest changes in numbers projected to occur in Africa and lowest in Europe.

In Africa, Malawi leads in incidences per 100,000 populations with 17.5%, Kenya at 12.7%, Uganda at 12.4%, Zimbabwe at 11.3%, and Tanzania at 9.5% as per GLOBOCAN 2020. In Kenya, cancer is the third killer disease after infectious diseases and cardiovascular diseases accounting for 7% of overall national mortality. A report published by the National Cancer Institute of Kenya covering cancer incidences and mortality from 2021 to 2022 showed that esophageal cancer is now the leading cause of cancer deaths in both men and women accounting for 15.6% of all cancer deaths. Breast cancer was leading in incidences with 15,9%, cervical cancer followed with 13.3%, and the coming third was esophageal cancer with 11.8% respectively (NCI-K, 2023 report).

2.3 Global Esophageal Cancer Awareness

A low level of esophageal cancer awareness contributes to delays in seeking medical help and subsequent delays in diagnosis. Poor symptoms recognition, appraisal, and delay in help-seeking behavior results in the dismissal of symptoms which are often interpreted as a mild disease, resulting in multiple consultations before diagnosis (Hvidberg et al.2014)

According to a study by Tentzeris (2016), in the United Kingdom, a low level of awareness of symptoms of esophageal cancer was isolated, however, dysphagia was the most probable symptom that is well understood in the population. Dysphagia in that study was not viewed as a life-threatening complaint in comparison with a breast lump that prompted a fast response in seeking care (Tentzeris et al. 2016). This is even though; dysphagia does not occur until the tumor occupies 80 to 90% of the esophageal circumference. Therefore, since esophageal cancer does not fulfill the criteria for screening, a comprehensive awareness program should be emphasized (Fitzmaurice et al, 2015).

An article published by Peter D. Siersema (2019) reminds us that, globally the month of April is devoted to Esophageal cancer awareness month where the general population is sensitized and accelerated endoscopy screening is done to most at-risk populations to facilitate early diagnoses, however in our setting this has never happened (Peter et al, 2019).

2.4 Esophageal Cancer Awareness in Kenya

There have been few studies on esophageal cancer awareness published in Kenya; however, a retrospective study conducted in Tenwek Hospital of Bomet District in Western Kenya concluded that esophageal cancer was the most common malignancy, with 37% of the 2643 patients presenting to this hospital with cancer between 1999 and 2007. This study also discovered that the majority of patients presented with cancer after feeling symptoms, which is usually suggestive of advanced disease and is associated with a 25% five-year survival probability. (Duron et al. 2014).

A previously published report by Kamau (2018) showed that despite the rising burden of esophageal cancer cases in the country, most health facilities neither offer cancer care nor can screen as demonstrated by the Kenya Harmonized Health Facility Assessment 2018. Few tertiary public hospitals namely MTRH, KUTRH, and KNH have demonstrated the capacity to diagnose and treat patients presenting with esophageal cancer (Kamau et al, 2018).

According to a study published by Odera (2017) on esophageal cancer in Kenya, 70-80% of patients are diagnosed at an advanced stage, which is attributed to a lack of awareness of symptoms and the lack of cancer treatment, a low rate of treatment acceptance and adherence, a low suspicious index by health providers, a deficient diagnostic and treatment infrastructure, a poor referral system, a lack of an effective patient navigation system, and finally direct and indirect costs. (Odera et al, 2017).

The National Cancer Institute of Kenya (NCI-Kenya), is a body that was formed through an act of parliament and mandated with the regulation of information on cancer prevention for early detection and control. This body has a mandate of coordinating all activities, resources, and information related to cancer prevention and control in the country (Cancer Prevention and Control Act No. 15 of 2012). This includes but is not limited to developing and reviewing the national policy and legislative framework and providing strategic guidelines on cancer messaging, communication, and public education is important in cancer management (Buckle *et al.* 2022). This facilitates access to up-to-date information on cancer prevention and control to all institutions, associations, and organizations concerned with the welfare and

treatment of persons with cancer, including those controlled and managed by the National and County Governments (Mwachiro M et al., 2018).

Several recognized non-governmental bodies by the National Cancer Institute of Kenya (NCIK) have partnered with major hospitals namely AMPATH for MTRH, KESHO for KUTRH, and KENCO in KNH to promote cancer advocacy and awareness. However, a review of their program and engagement revealed that they have no structured health program dedicated to awareness creation of esophageal cancer. Nevertheless, they all major in breast and cervical cancer in their day-to-day activities leaving behind esophageal cancer.

2.5 Risk Perception

According to Chen (2016), people are frequently unable to make appropriate decisions about their health and health care, or to exert control over decisions affecting their own and their communities' health. (Chen *et al.* 2016). This challenge is especially apparent among the disadvantaged and excluded, increasing existing disparities. Furthermore, service providers are frequently unaccountable to the populations they serve, resulting in inadequate incentives for health education and health promotion. Health promotion empowers people to take responsibility of their health and enhance it. (Fouladi et al,2013).

Many epidemiological studies show that poor public awareness is a predominant factor of negative health-seeking behaviors hence low screening uptake. Cancer research institutes in the United Kingdom demonstrate that while individuals may identify the most prevalent malignancies in males (prostate) and women (breast), the second and third most common cancers are rarely promoted as such. However, considering that public knowledge of the most common tumors is increasing, (Buckle *et al*, 2022).

Although awareness may not be enough to induce this change, it may have an impact on an individual's lifestyle and behavior. Data from numerous European countries show that different people have a generally low understanding of environmental and lifestyle-related causes of cancer. Previous research has linked cancer awareness to socioeconomic class, ethnicity, and educational level. These investigations also noticed and identified smoking as a leading cause of cancer. Other lifestyle-related risk factors, such as obesity and a lack of fruits and vegetables, are frequently underappreciated. (Rimsha et al. 2022).

2.6 Sources of Health Information

According to Makau-Barasa (2018), there has been a significant increase in misinformation about cancer etiology over the last decade. This could be due to changes in how people obtain

information. People looking for health information are increasingly turning to social media, which is rife with bogus news and disinformation. Mwachiro M., (2016) found that belief in non-validated risk variables was connected with increased anxiety, particularly when they couldn't control or adjust the risk source. As a result, studies have suggested that by better understanding the causes and risk factors, we may be able to lessen fear and anxiety.

Househ (2020) states that social media platforms have been identified in various studies as a potential future channel of health education as a tool to engage and empower the patient. In his study, he found that using a video through social media can have more impact on patient engagement than text-based intervention. He further suggested that social media can be used in community engagement, information collection and sharing, providing health information, engagement of the elderly, autonomy, improved participation, and trust (Househ et al. 2020).

However, various challenges have been identified in using social media, Omurtag (2021) found that it is difficult to have open communication regarding sensitive health information, and the need to keep messages short and fast makes it difficult to conduct more intellectual and detailed educational sessions. Moreover, only a limited audience is reached via social media hence its effectiveness is lacking especially in the general population (Omurtag et al. 2021).

2.7 Summary of the Review

Esophageal cancer is the leading priority cancer globally, in Kenya is third in incidences and leading in mortality. Its vague nature in clinical presentation makes it difficult for early diagnosis or even screening. Dysphagia is the most common warning sign that can provoke a patient to seek medical care, however, this happens when already the disease has advanced to a late stage a precursor for poor prognosis. Current public sensitization majoring in breast and cervical cancers has left behind esophageal cancer which has proven upward trajectory and requires similar intervention.

2.8 Theoretical Framework

The **Health Belief Model (HBM)** is a theoretical framework widely used in health behavior research and interventions. It focuses on individuals' beliefs and perceptions regarding health-related issues and their likelihood to take actions based on those beliefs (Rosenstock et al. 1974). This model can be applied effectively to raise awareness about esophageal cancer and promote preventive behaviors (Rakhshanderou et al. 2020).

Some contextual models take into consideration the interaction between a person and the situation or environment that impacts their behavior as described here; Raising awareness about risk factors such as tobacco and alcohol use, obesity, and gastroesophageal reflux disease (GERD) can help individuals perceive their susceptibility (Hvidberg et al.2014). Similarly, providing information about the potential impact of esophageal cancer, including, its high mortality rate and debilitating treatment options, can enhance perceived severity and motivate individuals to take preventive actions (Fouladi et al. 2013). Likewise, educating individuals about the benefits of adopting a healthy lifestyle, such as maintaining a balanced diet, engaging in regular physical activity, and avoiding tobacco and excessive alcohol consumption, can increase their motivation to prevent esophageal cancer (Buckle et al. 2022). In addition, addressing barriers to accessing care e.g., by providing accurate information, promoting affordable screening options, and addressing fears through educational campaigns can help overcome perceived barriers. Not to mention, utilizing various communication channels such as social media, television, and community outreach programs, can serve as cues to action and encourage individuals to seek information, engage in prevention behaviors, and undergo regular screenings. Finally, enhancing self-efficiency can be achieved by providing skills training, offering social support, and highlighting success stories of individuals who have adopted preventive behaviors (Kamau et al. 2018).

In conclusion, the Health Belief Model provides a comprehensive framework for raising awareness about esophageal cancer. By addressing the constructs of perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficiency, intervention can effectively promote esophageal cancer prevention behaviors. Implementing targeted campaigns and initiatives based on the HBM can increase knowledge, change attitudes, and ultimately reduce the burden of esophageal cancer (Beeker et al. 2020).

2.9 Conceptual Framework

The conceptual model (figure 1) reflects the outcome of the interaction between independent variables that is social demographic variables, health promotion support, information access, and risk perception, and how intervening factors such as existing knowledge, recall bias, responded attitude, myths, and misconception will affect the dependent variable that is the level of esophageal cancer awareness among the population.

See flow chart below

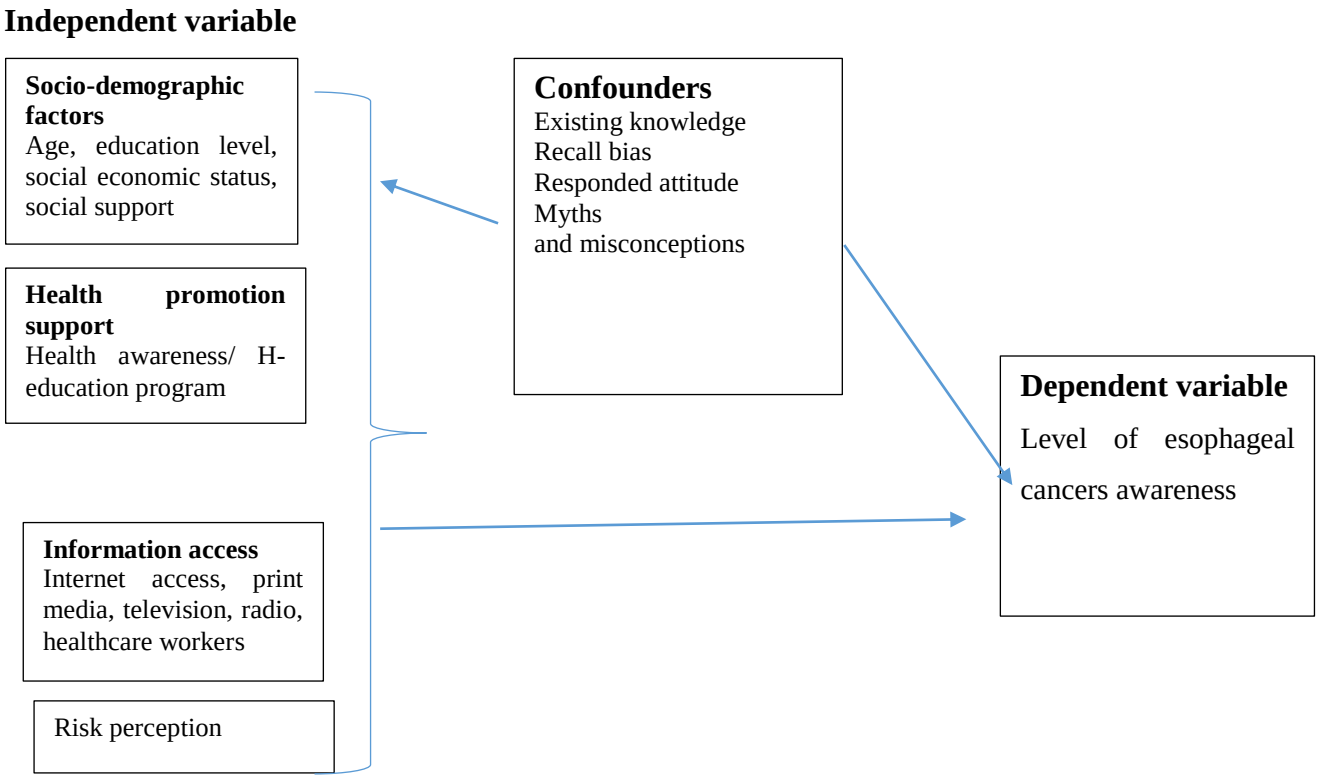

Figure 2. 1 Conceptual Framework

3.0 CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction

This chapter covers the study design and methods that were used in this study. This included the study population, study area, eligibility criteria, data collection, sampling, data analysis, and data presentation.

3.2 Study Design

This was a cross-sectional survey, where a structured questionnaire was used to collect quantitative data that described the level of esophageal cancer awareness amongst adult patients attending outpatient clinics in Kenyatta National Hospital. The patients sought treatment, review, and care that was unrelated to cancer.

3.3 Study Area

Kenyatta National Hospital is the country's oldest hospital. It serves as a tertiary referral hospital for the Ministry of Health, as well as a teaching hospital for the University of Nairobi College of Health Sciences and other schools of higher learning. Furthermore, with 1800 beds, it is the largest hospital in the country and East Africa. It's the biggest public cancer treatment center with other all other different specializations available to meet Kenya's specialized health needs, with a large diverse population catchment in the region according to their data registry, this will help generalize the data obtained to a larger population to inform and improve practice. The following pie chart shows the regional patient catchment and distribution of patients admitted in KNH year 2021.

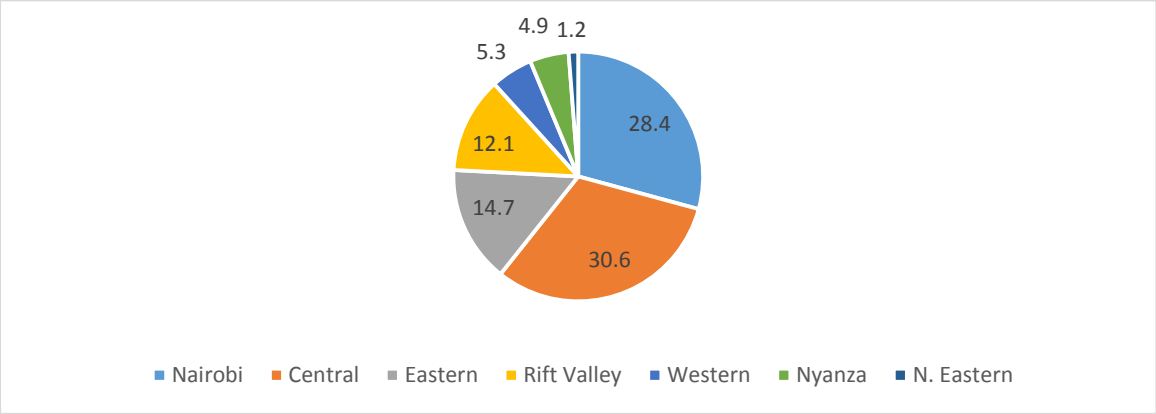

Figure 2. 2 Distribution of KNH catchment regions

Unpublished data from the Kenyatta health record and Information Department

3.4 Study Population

This study was conducted at outpatient clinics in KNH, due to the large number of patients who present daily in KNH this department gave a representative study population where sample size was determined. This was selected to reduce the bias of participants who may have been sensitized through lived experiences or nursed such a patient. Every month an average of 3290 patients are reviewed with approximately 12% being new patients and 88% being revisited. Averagely 150 patients are reviewed daily in the clinic 750 patients weekly, who are grouped according to their medical condition and specialty needs per day. This clinic's booking is spread along the year according to patient needs and available time as per clinic schedule and capacity, with the majority attending after every three months for review unless the patient's condition warrants a more immediate review.

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria

- All patients with performance scores of less than three (Ambulatory and capable of all self-care, up and about more than 50% of waking hours)
- Patients who voluntarily consent to participate in the study.

3.5.2 Exclusion Criteria

- Patients in vulnerable populations (mentally sick, refugees, prisoners)
- Patients with lived experiences on Esophageal Cancer.

3.6 Variables

3.6.1 Independent Variable

This included social-demographic variables, health system support, information access, and perceived risk in the general population.

3.6.1 Confounding Variable

Anticipated confounders of the study included existing knowledge, re-call bias, respondent’s attitude, myths, and misconceptions concerning esophageal cancer

3.6.2 Dependent Variable

Level of esophageal cancer awareness

3.7 Sample Size Determination

The sample size was determined using the Fishers *formulae Bolarinwa (2020)* method found in Mugenda and Mugenda (2004). The number of clients reached with awareness messages on esophageal cancer in the hospital was unknown. It was calculated as follows:

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n = the required sample size (where population >10,000).

Z = standard normal deviation at the required confidence level (z- score of 1.96).

p = since the number of clients reached with awareness messages on esophageal cancer in the hospital was not known, we used 50% (0.5)

= is 0.5 (1-0.5)

d = margin of error of 5%

$$n = \frac{(1.96)\ 2 \times 0.5 \times 0.5}{(0.05)2}$$

$$= \frac{3.8416 \times 0.5 \times 0.5}{0.0025}$$

$$= \frac{0.9604}{0.0025}$$

= 384 Respondents

Since the number of patients seen on average per month at the outpatient clinics at Kenyatta national hospital is 3290 this is per unpublished data accessed in department records and health information in KNH which is less than ten thousand (10,000). Yamane formula (1967) was used in sample adjustment.

$$nf \frac{n}{1 \times \frac{n}{N}}$$

Where

nf = the desired sample size for a population <10,000

n= required sample size when the population is >10,000

N= estimate of the study population i.e. patients attended the outpatient clinics (monthly estimated at 3290).

Nf =N/ (1+N/n)

= 384

1+384/3290

Nf =N/ (1+N/n)

= 384

1+384/3290

= **344 Respondents**

3.8 Sampling Technique

Simple random sampling was used; this gave every participant in the study population an equal chance of being selected until the determined sample size of 344 subjects was exhausted. This was done in clinic 16 (MOPC), and clinic 24 (SOPC) on every clinic day (Monday through Friday) study participants was selected with a target of 18 participants a day. To achieve the total number of participants in sample size data collection was distributed for four weeks to ensure enough coverage.

3.9 Data Collection Tool

The researcher used a modified tool on cancer awareness measurement (CAM) borrowed from Stubbings who developed it to assess public cancer awareness (Stubbings *et al*, 2009). The tool has been applied in several studies including the Pakistani cancer awareness measure and mythical causes scale score in the Pakistani population (Rimsha et al, 2022). This structured tool contained four sections that collected social demographic data, early warning signs, signs and symptoms of esophageal cancer, risk perception, and finally common sources of health information to the general population. Approximately 30 minutes was needed to administer the questionnaire to one study subject hence two research assistants were recruited for data collection.

3.10 Validity and Authenticity Of The Study Instruments

A pretest of the questionnaire was done at Kangundo Sub-County Hospital, one week before the actual data collection date to check the reliability and validity of the instrument. A sample of 34 patients (10% of study sample size of 344) was selected for a pre-test response to the questionnaire. Generally, the questionnaire was fairly easy to administer, though a majority of questions where technical and Likert scale score was challenging therefore assistance was sought for clarity and completeness by respondents. Participants were able to respond to once they were explained to, hence the need for assistance in administering questionnaire.

3.11 Recruitment and Training of Research Assistants

The principal researcher recruited two research assistants with medical background who also demonstrated understanding of the subject. The selected research assistants were trained by the principal investigator with oversight of supervisors who have training in research ethics, clinical bioethics, medical law and human rights. Training also involved expected procedures like, consent explanation, administration of questionnaire, communication and soft skill was also emphasized. Additionally, the research supervisors oversaw the conduct of research processes and consideration of research ethical requirements during data collection, handling, transport and storage of the filled questionnaires.

3.12 Data Collection Procedure

The questionnaire was administered to the study participants in the waiting bay of the clinic 16 (MOPC) and clinic 24 (SOPC) to clients/patients who met the inclusion criteria. Key questions focused on exploring the level of awareness of early warning signs of esophageal cancer, risk factors for esophageal cancer, risk perception, and common sources of health information to the general population. Data was collected every day Monday to Friday as different days are normally booked for different medical clinics for four weeks. Participants who meet the inclusion criteria were sampled by the lead researcher and talked about the purpose of the study. Confidentiality, anonymity, and voluntary involvement following informed consent was observed, and individuals interested to engage in the study signed a consent form before responding to the questions, the instruction was emphasized to ensure that they grasp what the lead investigator intended of them.

3.13 Dissemination Plan

Upon completion of the research report, the findings of this study will be presented to the Department of Nursing, College of Health Sciences at the University of Nairobi, Kenyatta National Hospital, and the National Cancer Institute of Kenya and published on peer reviewed journals under open access.

3.14 Study Limitations and Delimitations

There is a probability that the researcher experienced dishonest responses and other confounders, however, the participants were encouraged to give honest information to the best of their understanding.

3.15 Data management, Analysis, and Presentation of Results

Questionnaires with completed data was securely held under lock and key where only the lead researcher was the keeper. The collected data was coded and transferred into an Excel sheet before being imported to SPSS version 28 for analysis. The quantitative evidence was examined using both regression (to test the relationship between variables) and the chi-square test (to compare the dependent and independent variables). Means, percentages, and standard deviations were used to present descriptive statistics. Analysis of variance (ANOVA) statistical formula was used to compare social demographics and other findings as per objectives of the study to determine level of significance. The findings were presented using tables, charts, and graphs.

3.16 Ethical Considerations

Ethical approval was sought from the UON-KNH Ethical review committee for scientific and ethical approvals, NACOSTI and head of departments of medicine and surgery in KNH.

Informed consent was sought from all the participants after explaining the purpose of the study and that participants voluntarily participated with knowledge that they could withdraw from the study anytime without necessarily giving a reason for withdrawal. Besides, their refusal to participate would not affect services they were entitled to receive.

Just like any other medical research, this research had a potential to introduce psychological and emotional distress, however, efforts were put in place to minimize such. This included interviewing them in private where possible and all participants who exhibit psychosocial symptom of distress were handed over to patient clinical navigator or counselors for psychotherapy.

Kenyatta National Hospital outpatient clinic 16 (MOPC) and clinic 24 (SOPC) clinics has wide regional catchment which gave the researcher a proper representation of study population, hence the study finding may be extrapolated to other populations. All participants were treated equally, and were given an equal chance to participate in this study, their opinions were respected and put into account. The data collected was kept in a computer and protected by a password only known to the principal investigator

4.0 CHAPTER FOUR: RESULTS

4.1 Introduction

This section summarizes the research's findings about the study objectives. The study targeted at patients attending Kenyatta National Hospital's on awareness of early warning symptoms, risk factors, risk perception, and access to health promotion and education programs with regard to esophageal cancer. Among the 344 participants recruited, 331 questionnaires were completed and returned for analysis, giving a 96% response rate. 13 questionnaires were incomplete because participants dropped out of the study and were thus not considered for analysis.

4.2 Social Demographic Characteristics

The table below summarizes the participants' socio demographic characteristics. Females made up 51.7% of the participants (n= 171). The bulk of participants (29.9%) were between the ages of 30 and 40. In terms of socio-economic position, the majority of the patients (56.2%) regarded themselves as average income earners. The majority of patients (n=54.7%) were pleased with the social assistance they received from family and friends during days of illness. Forty-nine percent of the patients had a college education as their greatest level of schooling.

From figure 4.1, the majority of participants (29.9%) were between the ages of 30 and 40 (refer Fig.4.1).

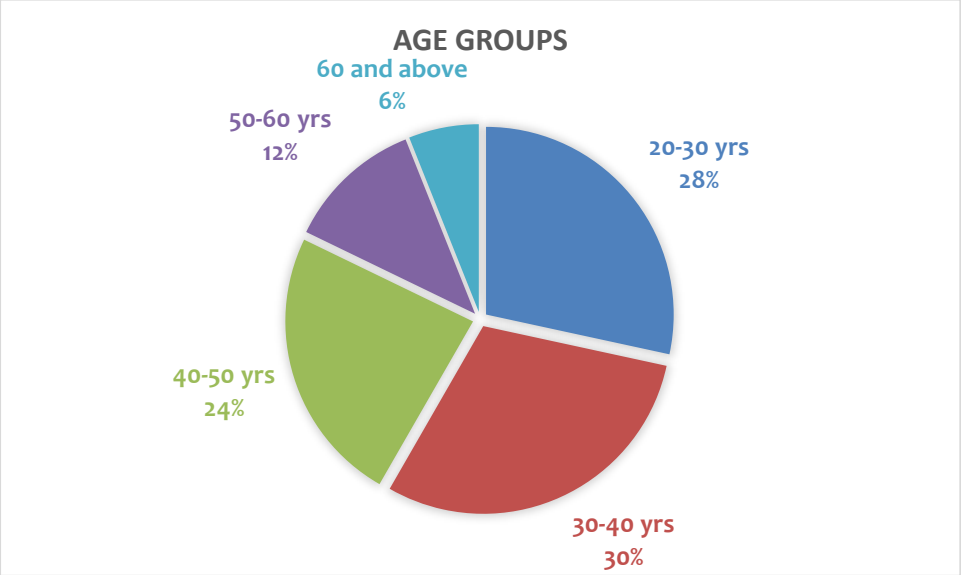

Figure 4. 1: Distribution of age groups of participants'

From figure 4.2, females made up the majority of the participants at 51.7% (n= 171) refer. Fig.4.3

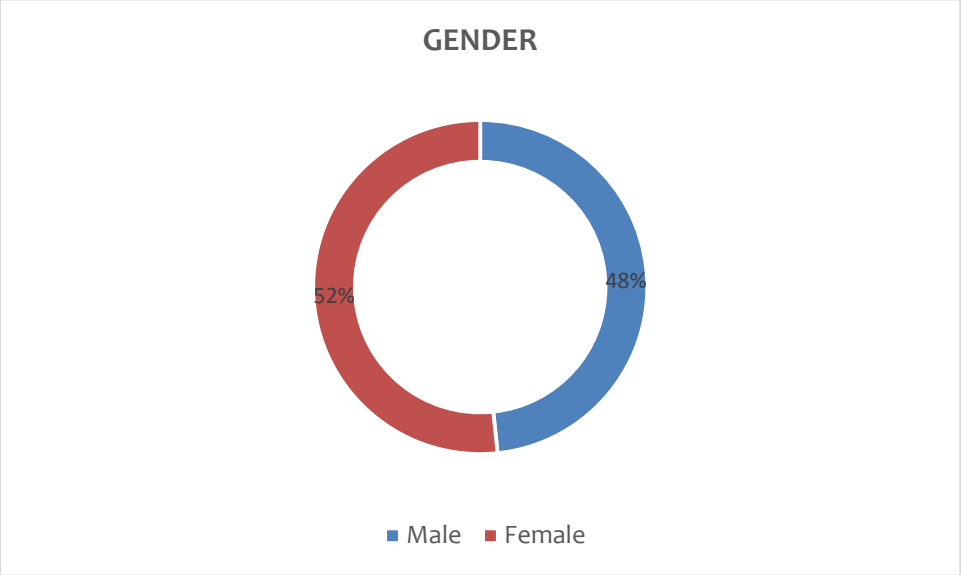

Figure 4. 2: Participants' gender distribution

From figure 4.3, the majority of the patients (56.2%) regarded themselves as average income earner. (refer. Fig. 4.3)

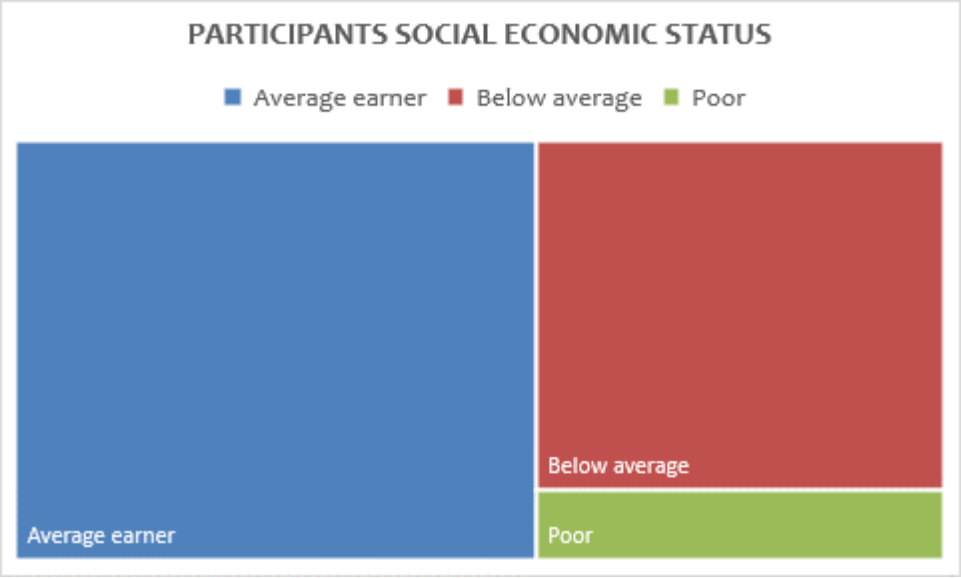

Figure 4. 3 Distribution of participants Social Economic Status

From figure 4.4, the majority of patients (n=54.7%) were pleased with the social assistance they received from family and friends. (refer Fig 4.4)

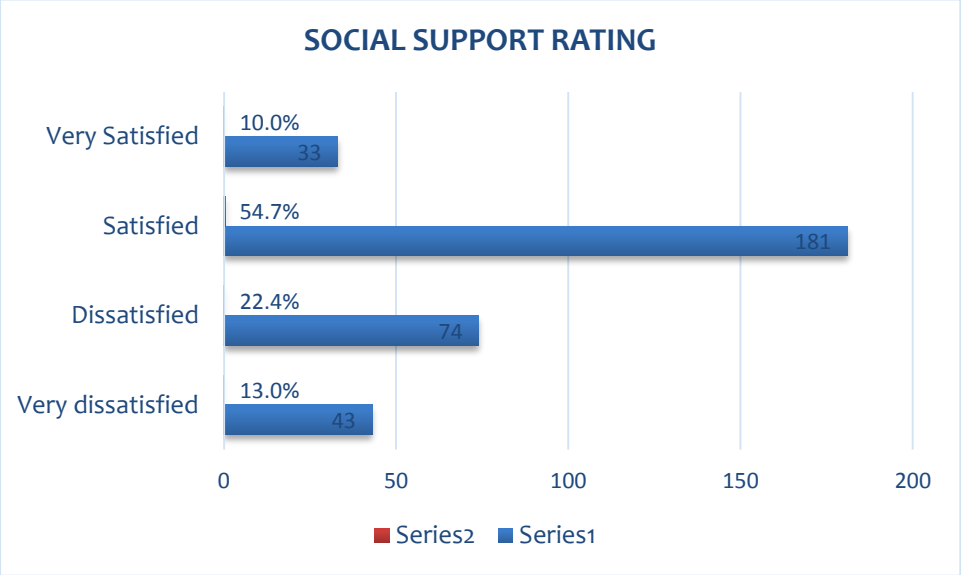

Figure 4. 4 Participants' distribution on Social Support Rating

From figure 4.5; forty-nine percent (49%) of the patients had a college education as their greatest level of schooling. (refer Fig 4.5)

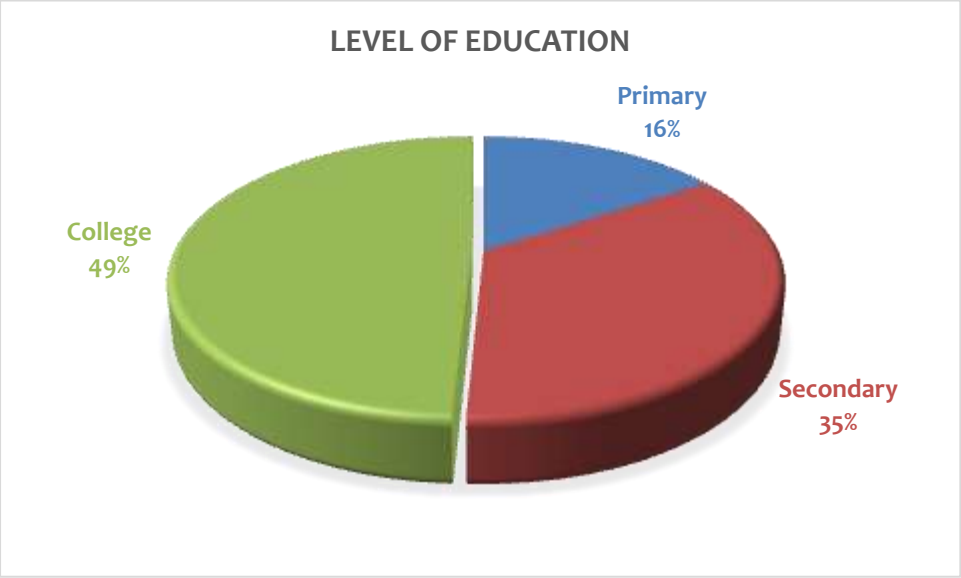

Figure 4. 5 Participants' distribution on Level of Education

4.3 Participants' Level of Awareness of Early Warning Signs

In this section, information collected on the level of awareness among respondents regarding early warning signs of esophageal cancer was analyzed.

From all the 'very likely' response, it was observed that difficulty in swallowing (dysphagia) at 24.3% (n=89) was the most likely early warning sign of esophageal cancer. Conversely, from all the 'very unlikely' response, coughing or hoarseness at 23.5% (n=39) was seen to be the most unlikely early warning sign of esophageal cancer.

Refer to the figure below.

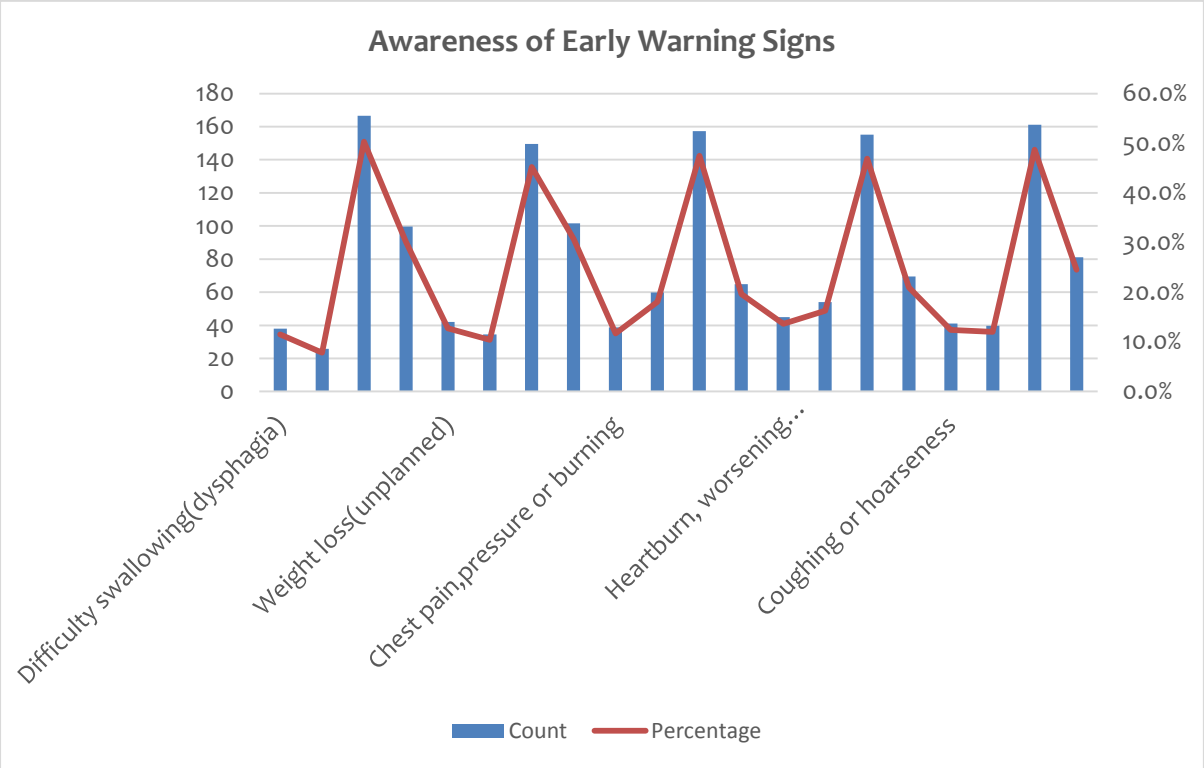

Figure 4. 6 Participants' level awareness of early warning signs

Analysis of the early warning signs using descriptive statistics was summarized in the table below.

Table 4. 1 Participants level of awareness of early warning signs

		Count	Percentage
Difficulty swallowing(dysphagia)	Very unlikely	38	11.5%
	Unlikely	26	7.8%
	Likely	163	49.1%
	Very likely	102	30.7%
Weight loss(unplanned)	Very unlikely	42	12.7%
	Unlikely	34	10.4%
	Likely	153	46.2%
	Very likely	100	30.1%
Chest pain, pressure or burning	Very unlikely	39	11.7%
	Unlikely	60	18.1%
	Likely	157	47.5%
	Very likely	65	19.6%
Heartburn, worsening indigestion/reflux	Very unlikely	41	12.4%
	Unlikely	54	16.3%
	Likely	155	46.9%
	Very likely	75	22.7%
Coughing or hoarseness	Very unlikely	45	13.6%
	Unlikely	40	12.0%
	Likely	161	48.7%
	Very likely	81	24.5%

4.4 Participants' Awareness of Risk Factors of Esophageal Cancer.

In this section, we investigated the respondents' awareness of risk factors associated with esophageal cancer. Smoking was the most likely risk factor for esophageal cancer, accounting for 24.0% (n=148) of all 'very likely' responses. In contrast, among all of the 'very unlikely' responses, being obese with a BMI more than 25kg/m2 was identified as the most unlikely risk factor for esophageal cancer at 18.6% (n=81).

(Refer to the figure 4.7).

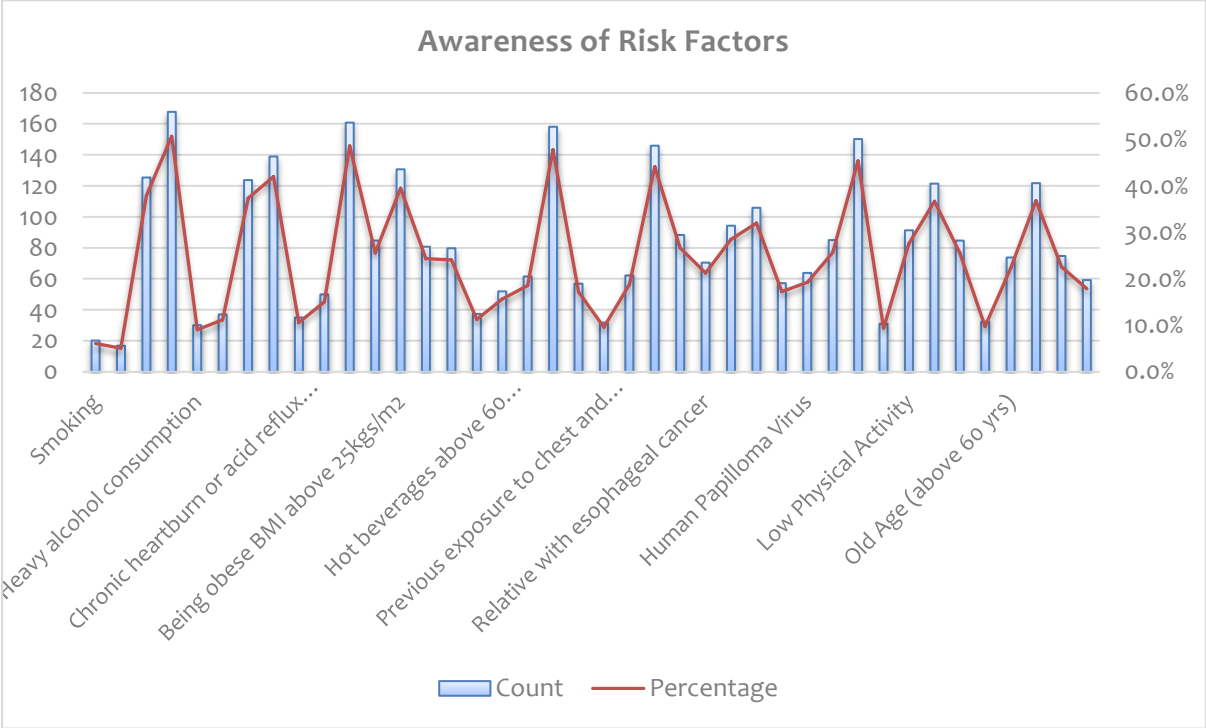

Figure 4. 7: Participants' awareness of risk factors of esophageal cancer

The results of proportions of participant responses on risk factors is given in (table 4.2)

Table 4. 2 Participants' awareness of risk factors of esophageal cancer

		Count	Percentage
Smoking	Very unlikely	20	6.1%
	Unlikely	17	5.1%
	Likely	125	37.9%
	Very likely	168	50.7%
Heavy alcohol consumption	Very unlikely	30	9.1%
	Unlikely	37	11.2%
	Likely	124	37.4%
	Very likely	139	42.0%
Chronic heartburn or acid reflux GERD	Very unlikely	35	10.6%
	Unlikely	50	15.1%
	Likely	161	48.6%
	Very likely	85	25.6%
Being obese BMI above 25kgs/m2	Very unlikely	131	39.5%
	Unlikely	81	24.4%
	Likely	80	24.1%
	Very likely	37	11.3%
Hot beverages above 60 degrees Celsius	Very unlikely	52	15.7%

	Unlikely	62	18.6%
	Likely	158	47.8%
	Very likely	57	17.2%
Previous exposure to chest and neck radiation	Very unlikely	32	9.6%
	Unlikely	62	18.8%
	Likely	146	44.1%
	Very likely	88	26.7%
Relative with esophageal cancer	Very unlikely	71	21.3%
	Unlikely	94	28.5%
	Likely	106	32.0%
	Very likely	57	17.3%
Human Papilloma Virus	Very unlikely	64	19.3%
	Unlikely	85	25.7%
	Likely	150	45.4%
	Very likely	31	9.4%
Low Physical Activity	Very unlikely	91	27.6%
	Unlikely	121	36.7%
	Likely	85	25.6%
	Very likely	32	9.8%
Old Age (above 60 years)	Very unlikely	74	22.3%
	Unlikely	122	36.8%
	Likely	75	22.6%
	Very likely	59	17.9%

Notably, smoking having a 50.7% very likely response to be risk factor, an inferential statistic was done to measure its correlation to the socio demographics.

There was however no significance (p=0.822) relating smoking to the socio demographics.

4.5 Participants' Esophageal Cancer Risk Perception

In this section, we assessed the respondents' perception of their own risk of developing esophageal cancer. From all the 'strongly agree' responses, it can be seen most patients perceive both active and passive smoking predispose one to esophageal cancer at 33.1% (n=104). Conversely, from all the 'strongly disagree' responses most patients didn't view reduced intake of vitamins (reduced fruit and vegetable daily servings) would predispose one to esophageal cancer at 26.1% (n=80).

Refer to the figure below.

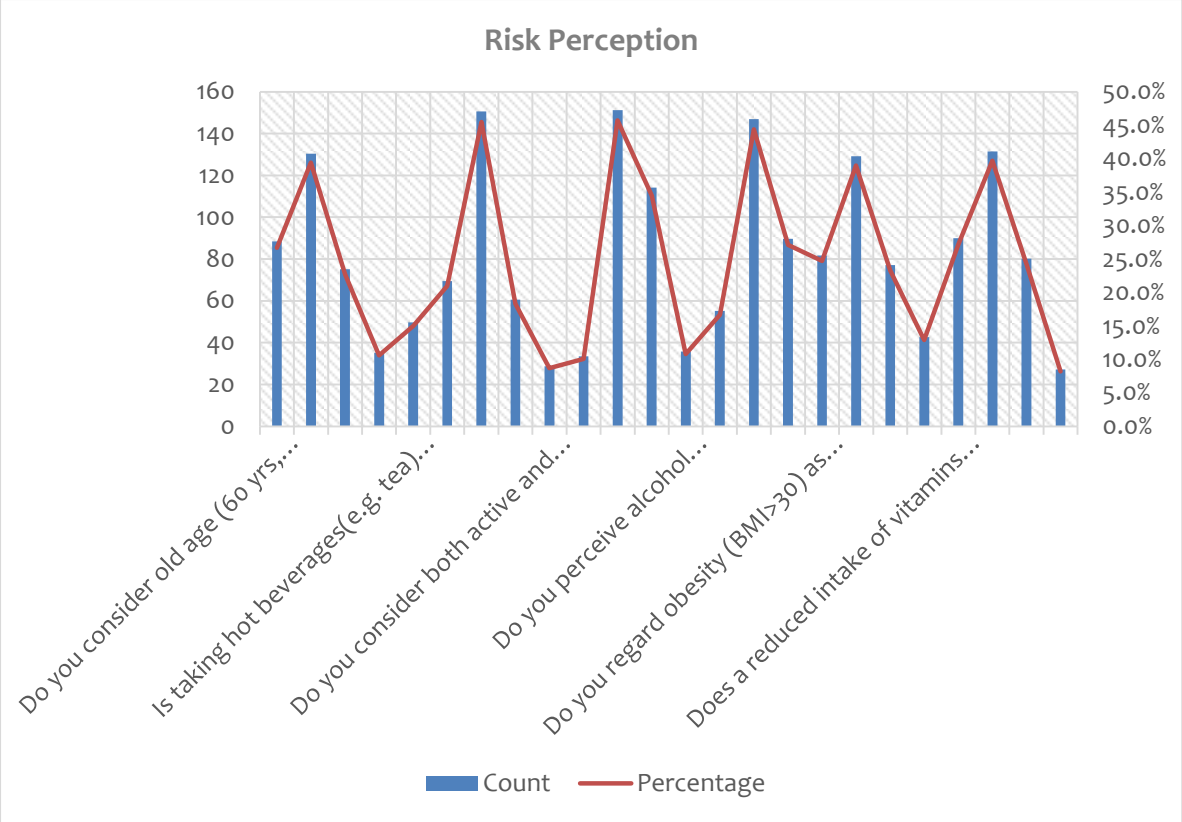

Figure 4. 8 Participants' esophageal cancer risk perception.

Also refer to the table below for more on the descriptive statistics.

Table 4. 3 Participants esophageal cancer risk perception

		Count	Percentage
Do you consider old age (60 years, and above) a risk factor for EC?	Strongly disagree	88	26.7%
	Disagree	130	39.4%
	Agree	75	22.7%
	Strongly agree	35	10.6%
Is taking hot beverages (e.g. tea) temp above 60 degrees Celsius risk factor for EC?	Strongly disagree	50	15.0%
	Disagree	70	21.0%
	Agree	151	45.5%
	Strongly agree	61	18.3%

Do you consider both active and passive smoking predispose one to EC?	Strongly disagree	29	8.7%
	Disagree	33	10.1%
	Agree	151	45.7%
	Strongly agree	114	34.5%
Do you perceive alcohol consumption as a risk factor for EC?	Strongly disagree	36	10.8%
	Disagree	55	16.7%
	Agree	147	44.4%
	Strongly agree	90	27.1%
Do you regard obesity (BMI>30) as a risk factor for EC?	Strongly disagree	82	24.7%
	Disagree	129	39.0%
	Agree	77	23.3%
	Strongly agree	43	12.9%
Does a reduced intake of vitamins (reduced fruit and vegetable daily servings) predispose one to EC?	Strongly disagree	90	27.2%
	Disagree	131	39.7%
	Agree	80	24.2%
	Strongly agree	27	8.2%

Participants' access to health promotion and education messages

In this section, we explored different platforms respondents accessed health promotion and education messages related to general health and their response were as follows.

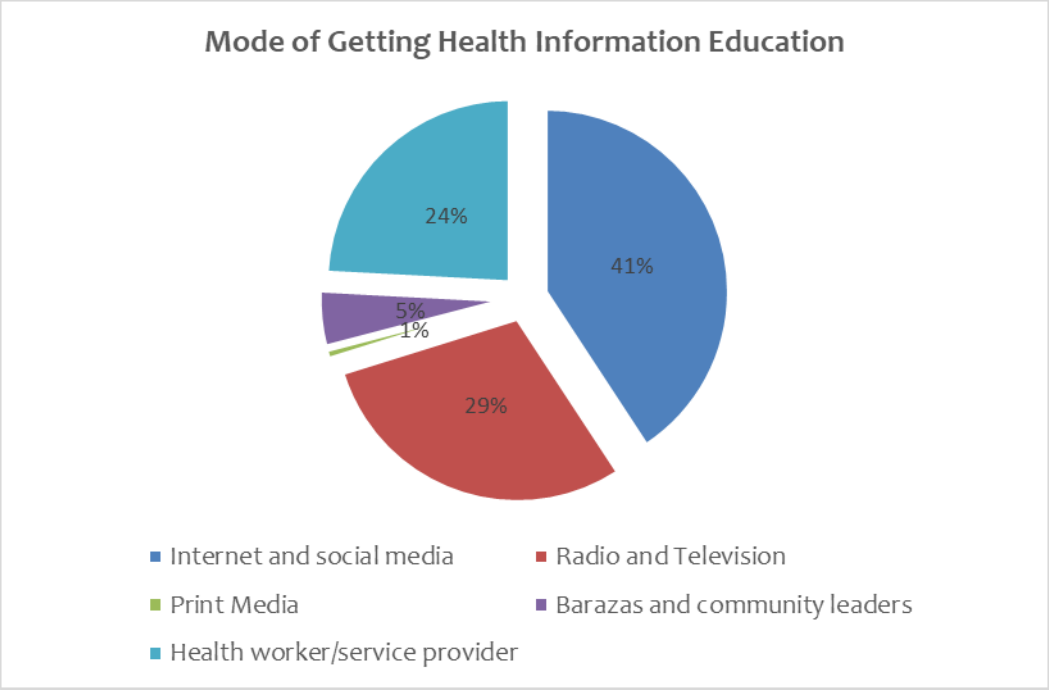

Figure 4. 9 Participants' mode of getting health information education

From the figure above, it is notable that most patients prefer internet and social media (41%) as their preferred mode of getting health promotion information followed by radio or television and health care worker with 29% and 24% respectively. An inferential statistic was also done to measure the level of correlation between socio demographics and the mode of getting these health information educations.

There was a positive significance between these variable ($p<0.018$) however there was no significance between the individual independent variables and the dependent variables as shows in the table below.

Table 4. 4 Coefficients of Mode of Getting Health Information Education

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.207	0.652		3.385	0.001
	Age?	0.168	0.086	0.124	1.949	0.052
	What is your gender?	-0.071	0.2	-0.022	-0.357	0.721
	How would you rate your social economic status	0.273	0.17	0.102	1.607	0.109
	Highest level of education qualification	-0.194	0.158	-0.081	-1.226	0.221
a Dependent Variable: What is your most preferred and convenient mode of getting health information education and communication?						

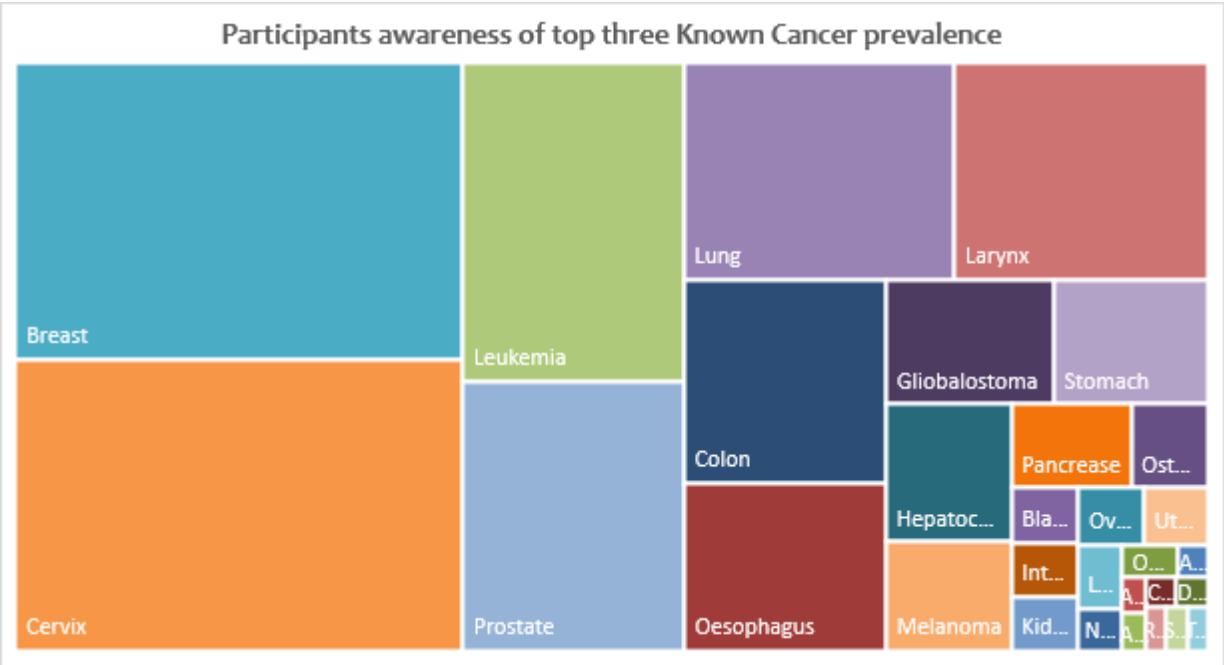

Figure 4. 10 Participants awareness of top three (3) known cancer prevalence

From the figure above, most patients alluded to the fact they have mostly heard about breast, cervical and leukemia as the top three cancer diagnoses simultaneously. In comparison, esophageal cancer came in 8th position of the most know cancer diagnosis.

Notably, of the patients interviewed, 62.2% responses show that the majority had heard of esophageal cancer before. From this, a linear regression analysis (Pearson's Correlation) was done to measure the significance of independent variables; age, gender, social economic status and level of education to the dependent variable; 'Have you ever heard about esophageal cancer?'

Comparing social demographics parameters (age, gender, social economic status and level of education) as independent variable with dependent variable; Have you ever heard of esophageal cancer?

Table 4. 5 ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.827	4	.707	3.876	**.004[b]**
	Residual	49.419	271	.182		
	Total	52.246	275			

a. Dependent Variable: Have you ever heard of esophageal cancer?

b. Predictors: (Constant), Highest level of education qualification, what is your gender? Age? How would you rate your social economic status

The result of this analysis shows that generally, the predictors have a positive significance ($p<0.004$) to the dependent variable, e.g. the higher the level of education the greater the chance of a patient having heard of esophageal cancer.

However, each predictor was subjected to a more in-depth examination to establish their impact on the dependent variable.

From the table below, it is notable that only two predictors 'Age' ($p<0.035$) and 'How would you rate your social economic status?' ($p<0.026$) are significant to the dependent variable e.g., this indicates that higher social economic status the greater the chance of a patient having heard of esophageal cancer.

This finding is further supported by descriptive statistics showing most patients were average income earners at 56.2% (n=186) compared to below average (36.6%) and poor (7.3%).

Even though age is significant, the results are not so conclusive because of the negative 95.0% Confidence Interval for B.

Table 4.6 shows these results.

Table 4. 6 Coefficients of Participants' familiarity to esophageal cancer

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.499	0.164		9.117	0	1.175	1.823
	Age	-0.048	0.023	-0.13	-2.122	**0.035**	-0.092	-0.003
	What is your gender?	-0.06	0.052	-0.069	-1.141	0.255	-0.163	0.043
	How would you rate your social economic status?	0.098	0.044	0.138	2.239	**0.026**	0.012	0.185
	Highest level of education qualification	-0.078	0.04	-0.124	-1.953	0.052	-0.157	0.001
a Dependent Variable: Have you ever heard of esophageal cancer?								

From table 4.7 below, most patients 'strongly agree' (34.5%) that recently published reports showing 70 to 80 % patients present at Stages III and IV to be true. Conversely, most patients 'strongly disagree' (35.7%) that reports projecting there will be more than 70% increase in esophageal cancer.

Table 4. 7 Recently Published Reports on Esophageal Cancer

		Count	%
EC is 3rd in most prevalent cancer in Kenya	Strongly disagree	17	5.1%
	Disagree	49	14.8%
	Agree	145	43.8%
	Strongly agree	41	12.4%
70 to 80 % patients present at Stages III and IV	Strongly disagree	11	3.3%
	Disagree	26	7.9%
	Agree	143	43.2%
	Strongly agree	68	20.5%
EC is leading in mortality of all prevalent cancers	Strongly disagree	26	7.9%
	Disagree	96	29.0%
	Agree	86	26.0%
	Strongly agree	44	13.3%
It is projected that by 2030 EC will increase (more than 70%)	Strongly disagree	30	9.1%
	Disagree	70	21.1%
	Agree	107	32.3%
	Strongly agree	44	13.3%

5.0 CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

This chapter reviews the findings of this study while relating them to the overall aim of the study which was to determine the level of esophageal cancer awareness among patients attending KNH outpatient clinics. The finding of this study has been compared with other studies carried out elsewhere in other institutions and countries to determine the similarities and differences in the contribution of esophageal cancer awareness. The discussion has been organized into sociodemographic factors, awareness of early warning signs, risk awareness and perception and finally common sources of health promotion messages.

5.1.1 Social Demographic Characteristic

The respondents were made up of a total of (344) participants, of whom the age group between 30 to 40 years made the majority of respondents, this is of significance in that the average age of diagnosis of most chronic illnesses is made in this age bracket with a mean age of esophageal cancer in Kenya reported being 50 years (Odera et al, 2017). Female and males were 48% and 52% respectively in addition, the majority of the respondents (49%) reported at least a college education and as average income earner scoring (56.2 %), those who were satisfied with the social support they received from family and relatives were (54%). The significance of social support is that from an individual appraisal of signs and symptoms of an illness and the process of deciding whether or not to seek health care intervention is influenced by their position and role in the family and the social support and encouragement they receive from those who surround them (Makau-Barasa et al. 2018).

These demographic parameters agree with the Kenya Demographic Health Survey Report (2022) which demonstrated growth among the Kenyan population in terms of gender balance, increase in literacy level and economic status as portrayed in the study (KDHS 2022). This makes it possible for the majority of the general population to process health promotion information from simple to complex, hence people will be able to make appropriate decisions about their health and to exert control over decisions affecting their own communities' health (Chen et al. 2016).

5.1.2 Awareness of Early Warning Signs

Difficulty in swallowing was the most likely early warning sign of esophageal cancer that resonated with the study respondents, this agrees with a study done in the United Kingdom by Tenzeris (2016) a low level of awareness of symptoms of esophageal cancer was isolated, however, dysphagia was the most probable symptom that was well understood by the population (Tenzeris et al. 2016). This is even though, dysphagia does not occur until the tumor occupies 80% to 90% of esophageal lumen (Fitzmaurice et al, 2015). Other parameters included weight loss, chest pain pressure or burning, GERD and coughing or hoarseness which received a fairly higher likely response underscoring why poor symptom appraisal results in delay in help-seeking behavior and dismissal of symptoms (Hvidberg et al 2014). This places the need for sensitization of the general population and accelerated endoscopy screening for the most at-risk population to facilitate early diagnosis (Peter et al. 2019).

5.1.3 Awareness of Risk Factors and Risk Perception

Smoking, alcohol consumption and consumption of hot beverages scored the highest with 50.7%, 42%, and 47% respectively as the known risk factors among the respondents. This refutes previous findings by a study conducted in Bomet, where 35% of the respondents thought that esophageal cancer is caused by contagious viral infection (Duron et al. 2014). These findings agree with a study conducted in China by WHO (2018) that there is a dose-response relationship between alcohol consumption and squamous cell carcinoma of the esophagus. Other studies further suggested that cigarette smoking together with alcohol increases the risk of squamous cell carcinoma of the esophagus. Moreover, other risk factors include nutritional deficiencies and consumption of hot beverages at temperatures above 60 degrees Celsius (Yuan et al 2023). From all the “strongly agree” responses, respondents perceive that those who smoke actively and passively (34.4%) are more at risk for esophageal cancer followed by those who consume alcohol at 27% while other risk factors scored relatively low.

According to the health belief model developed by Hochbaum, (1974), it can be understood that respondents who neither smoke nor drink alcohol exclude themselves from the risks of esophageal cancer assuming other probable risk factors that are of significance to esophageal cancer (Rimsha et al. 2022). Health education programs could positively affect cancer-preventative behaviors of individuals by improving their knowledge level and leaving positive effects on perceived susceptibility and severity as well as considering the perceived barriers, benefits and health motivations (Maryam et al 2016). Cancer institutes in the United

Kingdom demonstrate that while individuals may identify the most prevalent malignancies in male prostate and female cancer of cervix and breast cancer, the second and third most common cancers are rarely promoted as such (Buckle et al 2022). Although awareness may not be enough to induce change, it may have an impact on an individual's lifestyle and behavior.

5.1.4 Access to Health Promotion and Education Messages

Respondents preferred platforms for health promotion and education messages were internet and social media pages at 41%, followed by radio and television at 29%, then healthcare worker/ service provider at 24%. This informs policymakers and other stakeholders on the best platforms that can help deliver health promotion messages effectively to the larger population. This finding agrees with Househ (2020) that social media platforms have been identified in various studies as potential future channels of health education to engage and empower the population (Househ et al. 2020).

As much as 62.2% of the study participants showed that they had heard esophageal cancer before, however on request to list the top three most prevalent cancers, their responses were as follows; cancers in priority breast, cervical and leukemia respectively. In comparison, esophageal cancer that came eighth (8th) in respect to participants' own opinions in contrast to actual and current trends at third (3rd) according to GLOBOCAN (2022).

This finding was further embodiment by access to the currently published report on esophageal cancer where respondents fairly agreed with the current trend and findings of esophageal cancer while 35% "strongly disagreed" on future projection of esophageal cancer. This agrees with a study by Omurtag (2021) that in as much a general population have access to the internet and social media pages, there is a need for effort to be directed to the masses to get facts and dispel myths and misinformation (Omurtag et al. 2021). Mwachiro (2016) found that, belief in non-validated risk variables was connected with increased anxiety, particularly when one cannot control or adjust the risk source. Nonetheless, studies have suggested that by better understanding the causes and risk factors, we may lessen the fear and anxiety (Mwachiro et al, 2016).

5.2 Conclusions

The findings from this baseline survey provide valuable insights into the level of awareness of esophageal cancer among patients attending Kenyatta National Hospital. The concluding points are highlighted.

- **Social Demographic Characteristics** - Socioeconomic status can influence access to healthcare and health information, so efforts to raise awareness should be mindful of economic disparities. Patients with lower incomes may require additional support and resources to access information about esophageal cancer.
- **Awareness of Early Warning Signs** - Difficulty in swallowing (dysphagia) was identified as the most likely early warning sign of esophageal cancer, with 24.3% of respondents recognizing it as such.
- **Awareness of Risk Factors** – Cigarette smoking and alcohol consumption was identified as the most likely risk factor for esophageal cancer that resonates with study participants, with 24.0% of respondents recognizing its significance.
- **Perception of Personal Risk** – Participants who don't smoke a cigarette or consume alcohol didn't consider themselves as a risk population assuming other significant risk factors.
- **Preferred Information Sources/platforms** - The fact that 41% of patients prefer the Internet and social media as their preferred mode of getting health information education underscores the importance of utilizing digital platforms for disseminating information about esophageal cancer.

5.3 Recommendations

Based on the findings of this baseline survey, several recommendations are hereby made to enhance awareness of esophageal cancer among patients and the general population to the National Cancer Institute of Kenya (NCI-K), County Government Health Committee, KNH, The University of Nairobi and other stakeholders.

- **Information Education and Communication materials** – development of IEC packages for esophageal cancer health promotion by mandated health institutions and dissemination to the public through effective channels and platforms for public consumption. These packages should address the early warning signs, risk factors, risk perception and prevention strategies related to esophageal cancer and be available for public consumption.

- ***Utilize Digital Platforms*** – for effectiveness and efficiency, leverage on Internet and social media platforms for disseminating educational materials, videos, and infographics about esophageal cancer. Create engaging and informative content to reach a wider audience.
- ***Community Engagement*** - Collaborate with community organizations that are already promoting cancer awareness to include esophageal cancer as a disease of concern and local leaders to organize awareness events, workshops, and screenings for esophageal cancer for the most at-risk population. Engaging with communities can help raise awareness and encourage early detection.
- ***Tailor Information to Age and Socioeconomic Status*** - Recognize that age and socioeconomic status are predictors of awareness. Customize educational materials and outreach strategies to address the unique needs of different age groups and socioeconomic backgrounds.
- ***Continued Monitoring*** - Conduct follow-up surveys and assessments to track changes in awareness levels over time. This will help evaluate the effectiveness of awareness campaigns and adjust strategies as needed. Collaboration with Healthcare Providers Collaborate closely with healthcare providers to ensure that patients receive information about esophageal cancer during their visits. Provide healthcare professionals with updated materials to share with their patients.

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APPENDICES

Appendix I: Participant Information and Consent Form

PARTICIPANT INFORMATION AND CONSENT FORM

Title of Study: Level of esophageal cancer Awareness among Patients attending Outpatient clinics at Kenyatta National Hospital

Principal Investigator/and institutional affiliation: Peter Mutune, a registered nurse officer and a student of Master of Science in Nursing (Oncology) at the University of Nairobi.

Supervisors

1. **Dr. Angeline Chepchirchir (PhD, MSc, BScN, FAB, FCARTA),**
   Lecturer, Department of Nursing Sciences, University of Nairobi.
2. **Prof. Miriam C.A. Wagoro,**
   Professor Department of Nursing Sciences,
   University of Nairobi.

Introduction:

I Peter Mutune would like to inform and involve you in a study that am conducting on esophageal cancer awareness. The purpose of this consent form is to give you the information that you will need to help you decide whether or not to be a participant in the study. Feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. If you agree to be in the study, I will request you to sign your name on this form. You should understand the general principles which apply to all participants in medical research:

i) Your decision to participate is entirely voluntary

ii) You may withdraw from the study at any time without necessarily giving a reason for your withdrawal

iii) Refusal to participate in the research will not affect the services you are entitled to in this health facility. We will give you a copy of this form for your records.

May I continue? YES / NO

This study has been approval by The Kenyatta National Hospital-University of Nairobi Ethics and Research Committee Protocol No. P523/06/2023

The purpose of the study: The main purpose of this study is to determine the level of awareness of esophageal cancer among patients attending KNH. The researchers will be administering questionnaires to individuals who consent, and are above 18 years and attending outpatient clinics here and lastly with the ability to respond appropriately to questions asked. Participants in this research study will be asked questions about awareness of early warning signs, risk factors, perception of risk factors and lastly familiar sources of health information. There will be approximately 384 participants in this study who will be randomly chosen. We are asking for your consent to consider participating in this study.

Procedure

If you agree to participate in this study, the following undertakings will happen: You will be guided to respond to a structured questionnaire by a trained researcher or assistant researcher in a private environment where you feel comfortable doing so. The administration of the questionnaire will last approximately 30 minutes. The researcher will cover topics such as awareness of early warning signs, risk factors, risk perception and common channels of access to health promotion and health education messages.

After the administration of the questionnaire participants will be briefed on the current trend of esophageal cancer and clarification will be made where necessary.

Risks, harms discomforts associated with this study

This research has the potential to introduce psychological and emotional distress, however, efforts will be put in place to minimise such. This will include privacy and interviewing participants in their preferred environments during questionnaire administration. Outpatient clinics have clinical patient navigators and counsellors who support patients with information, support and linkages that help patients navigate treatment. All participants who exhibit signs of distress will be discontinued from the interview and handed over to the patient's clinical navigator or counsellors for psychotherapy and support.

In the event, answering questions in the questionnaire makes you uncomfortable, you have the right to refuse to respond to such questions in the questionnaire. We will keep data obtained from you confidential and only accessible to the research team. Codes will be used to maintain confidentiality while publishing the findings report and recommendation.

Benefits of being in this study

There is no monetary benefit in participating in this study, however, health education and clarification of issues concerning esophageal cancer will be done. Also, the information you provide will help us better understand health education gaps or lack of it on esophageal cancer awareness. Additionally, this will help us in packaging health information for public sensitization, education and also policy making.

Cost of participation in the study

Participation in this study will be free of charge, however, we will need your time approximately 30 minutes to respond to the questionnaire. This will be done after the patient has been reviewed in the clinic to ensure that client is settled, relaxed and clinically patient to be stable.

If you have questions in future

If you have further questions or concerns about participating in this study, please call or send a text message to the study staff at the number provided at the bottom of this page.

For more information about your rights as a research participant, you may contact the Secretary/Chairperson, Kenyatta National Hospital-University of Nairobi Ethics and Research Committee Telephone No. 2726300 Ext—44102 email uonknh_erc@uonbi.ac.ke.

For more information, contact

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CONSENT FORM (STATEMENT OF CONSENT)

Participant's statement

I have read this consent form or had the information read to me. I have had the chance to discuss this research study with the researcher. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me.

I understand that my participation in this study is voluntary and that I may choose to withdraw at any time. I freely agree to participate in this research study. I understand that all efforts will be made to keep information regarding my identity confidential.

By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.

I agree to participate in this research study: Yes, No

Participant Name: _____

Participant signature / Thumb stamp _____ **Date**

_____

Researcher's statement

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has willingly and freely given his/her consent.

Researcher 's Name: _____ Date: _____

Signature

_____

Witness

Name _____

Signature /Thumb stamp: _____ **Date;**

_____

IDHINI YA HABARI YA MSHIRIKI

Kichwa chautafiti: kiwango cha uhasishaji wa saratani ya umio miongoni wa wangonjwa wa nje katika hosipitali ya titaifa ya Kenyatta.

Mpelelezi mkuu / na uhusiano wa kitaasisi; Peter Mutune, afisa muunguzi aliyesajiliwa na mwanafunzi wa shahada ya uzamili ya sayansi katika uuguzi (oncology) katika Chuo Kikuu cha Nairobi.

Wasimamizi

1. **Dr. Angeline Chepchirchir (PhD, MSc, BScN, FAB, FCARTA),**
   Lecturer, Department of Nursing Sciences, University of Nairobi.
2. **Prof. Miriam C.A. Wagoro,**
   Professor Department of Nursing Sciences,
   University of Nairobi.

Utangulizi

Mimi Peter Mutune ningependa kukuarifu na kukushirikisha katika utafiti ninaofanya kuhusu ufahamu wa saratani ya umio. Madhumuni ya formu hizi za idhini ni kukupa taarifa utakayohitaji ili kukusaidia kuamua kama utashiriki au kutoshiriki katika utafiti. Jisikie huru kuuliza maswali yoyoyte kuhusu madhumuni ya utafift, nini kinatokea ukishiriki , hatari na manufaa yanayoweza kutokea, haki zako kama mtu wa kujitolea na jambo linguine lolote kuhusu utafiti kwenye fomu hii ambalo haliko wazi. Wakati tumejibu maswali yako yote kwa kuridhika kwako, unaweza kuamua kuwa katika utafiti au la. Ikiwa unakubali kuwa katika utafiti, nitakuomba utie sahihi jina lako kwenye formu hii. Pia, unapaswa kuelewa kanuni za jumla zinazotumika kwa washiriki wote katika utafiti wa matibabu kama ifuatavyo;

i) Uamuzi wako wa kushiriki ni wa hiari kabisa.
ii) Unaweza kujiondoa kwenye utafiti wakati wowote bila kutoa sababu ya kujiondoa.
iii) Kukataa kushiriki katika utafiti hakutaathiri huduma unazostahiki katika kituo hiki cha afya na tutakupa nakala ya fomu hii kwa kumbukumbu zako

Naweza kuendela NDIO / LA

Utafiti huu umeidhinishwa na kamati ya maadili na utafiti ya Hospitali ya Kenyatta na chuo kikuu cha Nairobi; numbari ya itifaki PS23/06/2023

Kusudi

Madhumuni ya utafiti huo ni kutathmin kiwango cha ufahamu wa saratani ya umio miongoni mwa wagonjwa wanaoudhuria KNH. Mtafiti atakua akitoa dodoso kwa watu wanaokbali, na Zaidi ya miaka 18 kuhudhuria kiliniki za wangonjwa wa nje hapa, na mwishowe awe na uwezo wa kujibu ipasavyo maswali yalioyoulizwa. Washiriki katika utafiti hu wataulizwa maswali kuhusu ufahamu wa dalili za mapema, sababu za hatari, mtazamo wa hatari na mwisho vyanzo vya kawaida vya habari za afya. Kutakuwa na takriban washiriki 384 katika utafiti huu ambao bila mpangilio. Tunaomba ridhaa yako ili kufikiria kushiriki katika utafiti huu.

Utaratibu

Ukikubali kushiriki katika utafiti huu, mambo yafuatayo yatafanyika; utaongozwa kujibu dodoso lililoundwa na mtafiti au msaidizi wa mtafiti aliyefunzwa katika eneo la faragha ambapo unahisi vizuri kafanya hivyo. Usimamizi na majibu ya dodoso itachukua takriban dakika 30. Mtafiti atashughulikia mada kama vile ufahamu wa dalili za mapema, sababu za hatari, matazamo wa hatari na njia za kawaida za kupata taarifa za afya.

Baada ya majibu ya dodoso, washiriki watafahamishwa kuhusu mwenendo wa sasa wa saratani ya umio na ufafanuzi utatolewa pale inapobidi.

Hatari, hudhuru, usumbufu unaohusishwa na utafiti huu

Utafiti una uwezo wa kutambulisha dhiki ya kisaikolojia na kihisisa, hata hivyo juhudi zitawekwa ili kupunguza hali hiyo. Utafiti uajumuishafaragha na washiriki wanaohoji katika mazingira wanayopendelea wakati wa kujaza dodoso. Kliniki za wangonjwa wa nje zina waongozaji wanaosaidia wangonjwa kwa maelezo, usaidizi na miunganisho inayowasaidia wagonjwa kupata matibabu. Wasiriki wote ambao wataonyesha dalili za dhiki wataondolewa kwenye mahojiano na kukabidhiwa kwa waongozaji na washauri kwa ushauri wa kisaikolojia na usaidizi.

Katika tukio hilo, kujibu maswali katika dodoso kunakufanya usiwe na wasiwasi, una haki ya kukataa kjibu swali kam hilo kwenye dodoso. Tutaweka data iliyopatikana kwa usiri na kupatikana kwa timu ya utafiti pekee. Misimbo itatumika kudumisha usiri wakati wa kuchapisha riporti ya matokeo na mapendekezo.

Faida za kuwa katika utafiti huu

Hakuna faida ya kifedha katika kushiriki katika utafiti huu, hata hivyo, elimu ya afya na ufafanuzi wa masuala yanayohusu saratani ya umio itafanywa. Pia, maelezo utakayotoa yatatusaidia kuelewa vyema mapengo ya elimu ya afya au ukosefu wake kuhusu ufahamu wa saratani ya umio. Zaidi ya hayo, hii itasusaidia katika kufungasha taarifa za afya kwa ajili ya

Gharama ya kushiriki katika utafiti

Kushiriki katika utafiti huu kutakuwa bila malipo, hata hivyo, tunahitaji muda wako takriban dakika 30. Hii itafanywa baada ya wagonjwa kukaguliwa katika kliniki ili kuhakikisha kuwa mteja ametulia, amepumzika na kuthibitishwa kwa na dakitari kuwa yu dhabiti.

Ikiwa una maswali katika siku zijazo

Ikiwa una maswali Zaidi au wasiwasi kuhusu kushiriki katika utafiti huu, tafadhali piga simu au tuma ujumbe mfupi wa maandishi kwa wafanyikazi wa utafiti kwa nambari iliyotolewa chini ya ukurasa huu.

Kwa maelezo Zaidi kuhusu haki zako kama mshiriki wa utafiti, unaweza kuwasiliana na katibu/mwenyekiti, Hosipitali ya Kenyatta- Chuo kikuu cha Nairobi, kamati ya maadili na utafiti ya Nairobi. Nambari ya simu 2726300 Ext—44102, barua pepe uonknh erc@uonbi.ac.ke.

Kwa habari Zaidi, wasiliana

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Chairperson, KNH-UoN ERC

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Email uonknh_erc@uonbi.ac.ke.

FOMU YA IDHINI (TAARIFA YA RIDHAA)

Kauli ya mshiriki

Nimesoma fomu hii ya ridhaa au nimesomewa maelezo, nimepata nafasi ya kujadili utafiti huu na mtafiti. Nimejibiwa maswali yangu kwa lugha ninayoelewa, hatari na manufaa niliyoelezwa.

Ninaelewa kuwa ushiriki wangu katika utafiti huu ni wa hiari na kwamba ninaweza kuchangua kujiondoa wakati wowote, ninakubali kwa huru kushiriki katika utafiti huu. Ninaelewa kuwa, juhudi zitafanywa ili kuweka taarifa kuhusu utambulisho wangu kuwa siri.

Kwa kutia saini fomu hii ya idhini, sijaacha haki zozote za kisheria nilizo nazo kama mshiriki katika utafiti.

Ninakubali kushiriki katika utafiti huu; NDIYO/ HAPANA

Majina ya mshiriki_____

Saini ya mshiriki/ uchapishaji wa kidole gumba_____

Tarehe_____

Kauli ya mtafiti

Mimi, waliotia saini hapa chini, nimeeleza kikamilifu maelezo muhimu ya utafiti huu kwa mshiriki aliyetajwa hapa juu na ninaamini kuwa mshiriki ameelewa na ametoa ridhaa yake kwa hiari na kwa uhuru.

Majina ya mtafiti _____tarehe_____

Saini _____

Shahidi

Majina_____

Saini_____ tarehe_____

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Appendix II: Questionnaire

Code .....

TITLE; BASELINE SURVEY ON LEVEL OF AWARENESS OF ESOPHAGEAL CANCER AMONG OUTPATIENTS ATTENDING KNH.

Do not write your name or signature on this paper that can be used to identify you

SECTION 1: SOCIAL DEMOGRAPHIC CHARACTERISTICS

Tick only where appropriate to your response/ weka tiki inapofaa tu kwa jibu

I. Age/umri…

a)20-30 yrs	b)30-40yrs	c)40-50yrs	d)50-60yrs	e)60 and above

II. Gender/ jinsia ……

a) (Male/mwanaune)

b) (Female/kike).

c) Others/wengineo (Specify)……

III. How can you rate your social economic status/ unawezaje kukadiria hali yako ya kijamii na kiuchumi?

a) (average earner/mpokeaji wastani)

b) (below average earner/mpokeaji wa chini ya wastani)

c) (poor/ maskini)

IV. How do you rate social support you are receiving from family and friends/Je, unakadiria vipi usaidizi wako wa kijamii unaopokea kwa familia na marafiki?

a) Very dissatisfied / sijaridhika sana	b) Dissatisfied/ sijaridhika	c) Satisfied/ nimeridhika	d) very satisfied/ nimeridhika sana.

V. Highest level education qualification/kiwango cha juu cha sifa za elimu?

a) primary education/shule ya msingi	b) secondary education/ elimu ya secondari	c)college/university/ chuo kikuu	d)others specify/ wengine bainisha

Section II; Awareness of Early Warning Signs

Rate the following warning signs of esophageal cancer/kadiria dalili za onyo zifuatazo za saratani ya umio?.

	Very unlikely/haiwezekani sana	Unlikely/haiwezekani	Likely /yawezekana	Very Likely/yawezekana sana
a) Difficulty swallowing(dysphagia)/ugumu wa kumeza	1	2	3	4
b) Weight loss (unplanned)/kupungua uzito	1	2	3	4
c) Chest pain, pressure, or burning/maumivu ya kifua/shinikizo	1	2	3	4
d) Heartburn, worsening indigestion/reflux ya asidi ya muda mrefu	1	2	3	4
e) Coughing or hoarseness/kukohoa	1	2	3	4

Section III; Awareness of Risk Factors

Rate the following probable risk factor for cancer of the esophagus/kadiri sababu zifuatazo zinazowezekana za hatari kwa saratani ya umio.

	Very unlikely/ haiwezekani sana	Unlikely/ haiwezekani	Likely /yawezekana	Very Likely/yawezekana sana
a) Smoking /kuvuta sigara	1	2	3	4
b) Heavy alcohol consumption/unywaji mkubwa wa pombe	1	2	3	4
c) Chronic heartburn or acid reflux GERD/reflux ya aside ya muda mrefu	1	2	3	4
d) Being obese BMI above 25kgs/m2/kuwa mnene kupita kiasi	1	2	3	4
e) Hot beverages above 60 degrees Celsius/matumizi ya vinywaji vya moto	1	2	3	4
f) Previous exposure to the chest and neck radiation/mfiduo uliopita kwa kifua na mionzi ya shingo.	1	2	3	4
g) Relative with esophageal cancer/jamaa na saratani ya umio	1	2	3	4
h) Human papilloma virus/ virusi vya papilloma ya binadamu	1	2	3	4
i) Low physical activity/shughuli ya chini ya kimwili	1	2	3	4
j) Old age (above 60 years)/uzee Zaidi ya miaka 60	1	2	3	4

Section IV: Risk Perception

Rate the following risk perception/kadiri mitazamo ifuatayo ya hatari

	Strongly disagree/sikubaliani kabisa	Disagree/ sikubaliani	Agree / nakubali	Strongly Agree / kubali kabisa
a) Do you consider old age (60 yrs. and above) a risk factor for EC?/ je,unachukulia uzee wa Zaidi ya miaka 60 kuwa sababu ya hatari kwa saratani?	1	2	3	4
b) Is taking hot beverages (e.g. tea) temp above 60 degrees Celsius risk factor for EC/inakunywa vinywaji vyenye joto Zaidi ya nyuzi joto 60 sababu hatarishi?	1	2	3	4
c) Do you consider both active and passive smoking predispose one to EC/ je unazingatia uvutaji sigara hai na wa kupita kiasi ili kuhatarisha mtu kupata saratani ya umio?	1	2	3	4
d) Do you perceive alcohol consumption as risk factor for esophageal cancer/je, unaona unywaji wa pombe kama sababu ya hatari kwa saratani ya umio?	1	2	3	4
e) Do you regard obesity (BMI >30) as a risk factor for EC/je,unaona fetma kama sababu ya hatari kwa saratani ya umio?	1	2	3	4
f) Does a reduced intake of vitamins (reduced fruit and vegetable daily servings) predispose one to EC/ je kupungua kwa ulaji wa vitamin husababisha mtu kupata saratani ya umio?	1	2	3	4

Section V: Access to Health Promotion and Education Messages

I. What is your most preferred and convenient mode of getting health information education and communication/ ni njia gani unayopendelea zaidi na inayofaa ya kupata habari za afya, elimu na mawasiliano?

a. (internet and social media/mtandao na mitandao ya kijamii)
b. (Radio & Television/redio na televisheni)
c. (print media/chapisha media)
d. (Barazas and community leaders/baraza na viongozi wa jumuiya)
e. (Healthcare worker/ service providers/watoa huduma za afya)

II. List three top most common cancers you know/orodhesha saratani tatu maarufu Zaidi unazozijua.

a) .....
b) .....
c) .....

III. Have you ever heard about esophageal cancer/je, umewahi kusikia kuhusu saratani ya umio?

a) (Yes/ndio)
b) (No/hapana)

IV. Do you agree with the following recently published reports on esophageal cancer/je, unakubaliana na ripoti zifuatazo zilizochapishwa hivi majuzi kuhusu saratani ya umio?

	Strongly disagree/sikubalia ni kabisa	Disagree/ sikubaliani	Agree /kubali	Strongly Agree/ kubali kabisa
a) EC is 3rd in most prevalent cancer in Kenya/saratani ya umio ni ya 3 kwa wingi nchini	1	2	3	4
b) 70 to 80% of EC patients present at stages III and IV/ 70% hadi 80% ya wangojwa wa saratani ya umio hujilikana katika hatua ya 3 and 4.	1	2	3	4
c) EC is leading in mortality of all prevalent cancers/saratani ya umio inaongoza kwa vifo vya saratani zote zilizoenea.	1	2	3	4
d) It is projected that by 2030 EC will increase (more than 70%)/inakadiriwa kuwa hadi mwaka wa 2030 saratani ya umio itaongezeka kwa 70%.	1	2	3	4

Thanks for Your Participation/ Asante Kwa Ushiriki Wako.

Appendix III: Approval Letter

UNIVERSITY OF NAIROBI
FACULTY OF HEALTH SCIENCES
P O BOX 19676 Code 00202
TELEGRAMS: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/455

24th August, 2023

KENYATTA NATIONAL HOSPITAL APPROVED 24 AUG 2023 KNH/UoN-ERC P.O. Box 20723 - 00202 NAIROBI

Peter Mutune
Reg. No. H56/40843/2021
Dept. of Nursing Sciences
Faculty of Health Sciences
University of Nairobi

Dear Peter,

ETHICAL APPROVAL-RESEARCH PROPOSAL: LEVEL OF ESOPHAGEAL CANCER AWARENESS AMONG PATIENTS ATTENDING OUTPATIENT CLINICS AT KENYATTA NATIONAL HOSPITAL (P523/06/2023)

This is to inform you that KNH-UoN ERC has reviewed and approved your above research proposal. Your application approval number is **P523/06/2023.** The approval period is 24th August 2023 –23rd August 2024.

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by KNH-UoN ERC.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KNH-UoN ERC 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH-UoN ERC within 72 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to KNH-UoN ERC.

Protect to discover

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

PROF. BEATRICE K.M. AMUGUNE
SECRETARY, KNH- UoN ERC

c.c. The Dean, Faculty of Health Sciences, UoN
The Senior Director, CS, KNH
The Chairperson, KNH- UoN ERC
The Assistant Director, Health Information Dept., KNH
The Chair, Dept. of Nursing Sciences, UoN
Supervisors: Dr. Angeline Chepchirchir, Dept. of Nursing Sciences, UoN
Prof. Miriam C.A. Wagoro, Dept. of Nursing Sciences, UoN

Appendix IV: KNH Department of Medicine Approval

KENYATTA NATIONAL HOSPITAL
P.O. BOX 20723, 00202 Nairobi

Tel.: 2726300/2726450/2726550
Fax: 2725272
Email: knhadmin@knh.or.ke

Ref: KNH/HOD-MED/31/VOL.II

Date: 30th August 2023

Peter Mutune
Reg.No.H56/40843/2021
Dept. of Nursing Sciences
Faculty of Health Sciences
University of Nairobi

Dear Peter

RE: APPROVAL TO CONDUCT A STUDY AT THE KNH MEDICINE DEPARTMENT

Following approval by the KNH/UON-Ethics & Research Committee for your research proposal and subsequent filing of the study registration certificate, this is to inform you that authority has been granted to collect data in Medicine Department, on your study titled *"Level of Esophageal cancer awareness among patients attending outpatient clinics at Kenyatta National Hospital."*

By a copy of this letter, DCN- Medical Services is informed and requested to facilitate.

You will also be required to submit a report of your study findings to the office of the undersigned after completion of your study.

30 AUG 2023

Dr. Kinoti Ndege
HOD, MEDICINE

DCN - Medical Services

Appendix V: KNH Department of Surgery Approval

KENYATTA NATIONAL HOSPITAL
P. O. Box 20723, 00202 Nairobi

Tel: 2726300/2726450/2726550
Fax: 2725272
Email: knhadmin@knh.or.ke

Ref: KNH/HOD/GEN-SURG/7/VOL.I

Date: 7th September, 2023

Peter Mutune
Reg. No. H56/40843/2021
Dept. of Nursing Sciences
Faculty of Health Sciences
University of Nairobi

Dear Mr. Mutune

RE: APPROVAL TO COLLECT DATA FROM GENERAL SURGERY DEPARTMENT AT KNH

We acknowledge your request on the above, together with a study registration form and a KNH/UON ERC approval letter on the study titled "**Level of Esophageal cancer awareness among Patients attending outpatient clinics** " at Kenyatta National Hospital (P523/06/2023).

Approval has been granted for you to collect data from General Surgery at the Kenyatta National Hospital. Kindly liaise with the SACN In-charge of General Surgery.

Note, we would like you to forward a copy of the study report to the undersigned after completion of the study.

Dr. Gibson Musila
HOD GENERAL SURGERY

Copy to: SACN General Surgery
ACN Clinic 24

Appendix VI: Research License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **283086**

Date of Issue: **27/September/2023**

RESEARCH LICENSE

This is to Certify that Mr.. Peter Mutune Mutune of University of Nairobi, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: LEVEL OF ESOPHAGEAL CANCER AWARENESS AMONG PATIENTS ATTENDING OUT-PATIENT CLINICS IN KENYATTA NATIONAL HOSPITAL for the period ending : 27/September/2024.

License No: **NACOSTI/P/23/29764**

283086

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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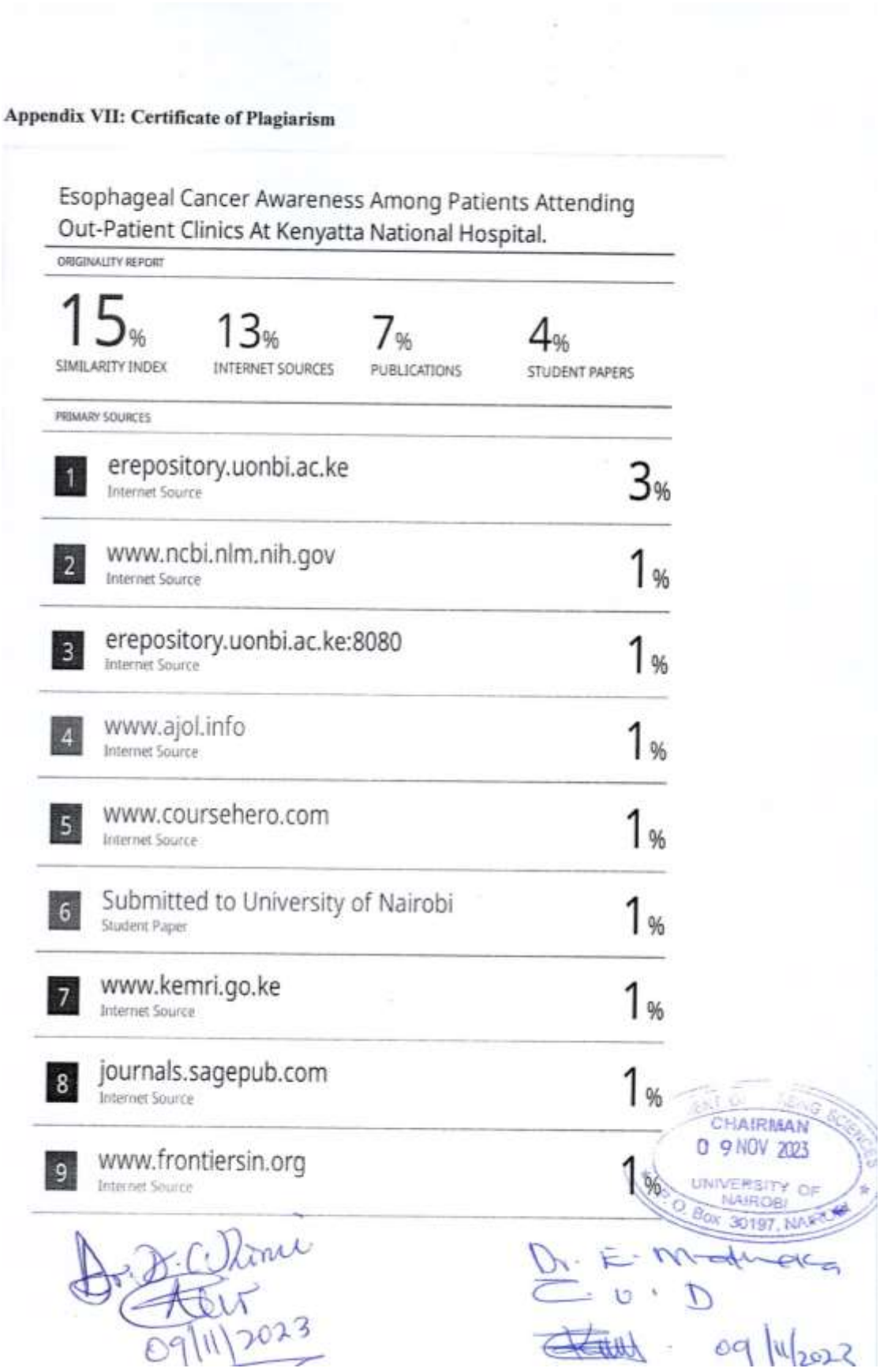
See overleaf for conditions

Appendix VII: Certificate of Plagiarism



Appendix VII: Certificate of Plagiarism

Esophageal Cancer Awareness Among Patients Attending Out-Patient Clinics At Kenyatta National Hospital.

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UNIVERSITY OF NAIROBI
P.O. Box 30197, NAIROBI

09/11/2023

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