SURVIVAL OF PATIENTS WITH HEAD AND NECK CANCER-A RETROSPECTIVE STUDY: A CASE OF THE DAR ES SALAAM OCEAN ROAD CANCER INSTITUTE (ORCI)

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By

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A dissertation Submitted in (partial) Fulfillment of the Requirements for the Degree of Master of Medicine (Clinical Oncology)
Muhimbili University of Health and Allied Sciences

Muhimbili University of Health and Allied Sciences
October, 2013

CERTIFICATION

The undersigned certify that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled ***SURVIVAL OF PATIENTS WITH HEAD AND NECK CANCER-A RETROSPECTIVE STUDY: A CASE OF THE DAR ES SALAAM OCEAN ROAD CANCER INSTITUTE (ORCI)*** in fulfillment of the requirements for the degree of Master of Medicine (Clinical Oncology) of Muhimbili University of Health and Allied Sciences.

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Dr. Khamza Maunda

(Supervisor)

_____

Date

DECLARATION

AND

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DEDICATION

This dissertation is dedicated to

My beloved husband Joseph Batinamani

And our children

Bornaventure and Noella Shenya

ABSTRACT

Background; Worldwide Head and Neck cancer (HNC) is the 6th most frequent cancer, with an estimated world incidence of over 600,000 new cases per year and 300,000 deaths yearly.

In Tanzania there is no population based (community wide) data are available to show the true magnitude and burden of the disease. Data from Ocean Road Cancer Institute show that HNC is the 5th most common malignancy. Tobacco has been implicated as a risk factor for Head and Neck tumour sites; other factor that has been associated with Head and Neck cancer includes Alcohol, Human Papilloma Virus, Epstein Barr virus and hereditary syndromes.

Studies on survival of Head and Neck cancer patients from developed countries showed that Socio demographic factors, clinic pathologic factors and treatment modalities are associated with 3 and 5 year survival rates; however there is no information in Tanzania or at ORCI, the only centre for cancer treatment in Tanzania on survival and its associate factors. The knowledge of these factors for survival in HNC influences the public awareness on the modes of prevention as well as evidence based choice of therapy to be used in Tanzania.

Broad Objective

To determine the survival rate and factors associated with survival of Head and Neck cancer patients at ORCI between Jan 2009 to December 2011.

Methods

This was a Retrospective Descriptive study conducted at ORCI, the only centre for treatment of cancer in Tanzania. A total of 200 random selected files of the patients with diagnosis of Squamous Cell Carcinoma of Head and Neck treated between 1st January, 2009 to 31st December, 2011 were reviewed. A standardised Questionnaire was used to obtain Socio demographic characteristics, clinic pathologic characteristics and different treatment modalities that were used in the treatment of the patients.

Results

The majority of HNC patients studied were above 56 years 43%, of these males were 76.6%. The Overall survival was 59%, factors seen to be associated with survival in this study were Stage at diagnosis with (P value =0.003), Anatomical site of the tumour (P value =0.038) and Total amount of radiation dose given (P value = 0.043).

Conclusion

Early stages of Head and Neck disease, Anatomical sites of the disease and Standard high Radiation doses of >40Gy are associated with longer survival in patients with HNC. The effect of socio demographic characteristics on HNC survival should be considered in the future prospective studies.

TABLE OF CONTENTS

CERTIFICATION ii

DECLARATION ii

DECLARATION AND COPYRIGHT iii

ACKNOWLEDGEMENT iv

DEDICATION v

ABSTRACT vi

TABLE OF CONTENTS viii

LIST OF TABLES xi

LIST OF FIGURES xi

LIST OF ABBREVIATIONS xii

1.0 INTRODUCTION 1

1.1 Background to the Study 1

1.2 LITERATURE REVIEW 4

1.2.1 Socio-demographic factor and survival of head and neck cancers 4

1.2.2 Types of head and neck cancer and histopathological factors association with survival 6

1.2.3 Comorbidities and survival in head and neck cancer. 7

1.2.4 Treatments modalities and survival in head and neck cancers 7

1.3 A STATEMENT OF THE PROBLEM 12

1.4 SIGNIFICANCE OF THE STUDY / JUSTIFICATION OF THE STUDY 13

1.5 OBJECTIVES....14

1.5.1 General Objective .... .14

1.5.2 Specific objectives 14

1.5.3 Null Hypothesis....14

1.5.4 Alternative Hypothesis.... 14

2. STUDY METHODOLOGY .... .15

2.1 Study Design....15

2.2 Study Setting....15

2.3 Study Population....15

2.3.1 Target population 15

2.3.2 Accessible population 15

2.4 Sample Size Determination....16

2.5 Sampling Technique....16

2.6 Data Collection....16

2.7 Data Handling/ Analysis....17

2.8 Ethical Clearance....17

2.9 Dissemination Of Study Findings....17

3 RESULTS 18

3.1 Survival of Head and Neck cancer patients....22

3.2 The association between socio demographic characteristics of study participants and survival.....22

3.3 The association between clinic pathologic characteristics as well as treatment modalities and survival rate..... 22

4 DISCUSSION 27

4.1 Socio- Demographic Factor and Survival of Head and Neck Cancers.....27

4.2 Clinico-Pathologic Factors and Survival of Head and Neck Cancers.....29

4.3 Treatment Modalities and Survival in Head and Neck Cancers.....30

4.4 Overall Survival.....32

5.0 STUDY LIMITATIONS 33

6.0 CONCLUSIONS 34

6.1 RECOMMENDATIONS 34

REFERENCES:..... 35

APPENDICES..... 41

APPENDIX i Staging of Head and Neck Cancer.....41

APPENDIX ii QUESTIONNAIRE.....43

LIST OF TABLES

Table 1: Socio demographic characteristics of the study participants……..……..18
Table 2: The residence of the study population 19
Table 3: Clinico – pathologic characteristics of the study population…….20
Table 4: The treatment modalities given to different Head and Neck cancers.....21
Table 5: Multivariate analysis of factors associated with poor survival outcome among Head and Neck patient at ORCI……..…….…….....26

LIST OF FIGURES

Figure 1: Areas associated with Head and Neck Cancer.....3
Figure 2: Overall survival rate of the study participants…….……..22
Figure 3: The association between stage of the disease and survival rate…….……23
Figure 4: The association between site of the cancer and survival rate……....24
Figure 5: The association between total radiation dose and survival rate……..……..25

LIST OF ABBREVIATIONS

HNC	Head and Neck Cancer
HPV	Human Papilloma Virus
EBV	Epstein Barr Virus
SCCHN	Squmous Cell Carcinoma of Head and Neck
DFS	Disease Free Survival
OS	Overall Survival
ORCI	Ocean Road Cancer Institute
GY	Grays
EBT	External Beam Therapy
5-FU	5-Fluorouracil
SCC	Squamous Cell Carcinoma
PEG	Percutaneous Endoscopic Gastrotomy
WHO	World Health Organization
HP	Histopathology
MUHAS	Muhimbili University of Health and Allied Sciences
IRB	Institution Review Board

1.0 INTRODUCTION

1.1 Background to the Study

Cancer is a leading cause of death worldwide, accounting for 7.6 million deaths (around 13% of all deaths) in 2008. 70% of all cancer deaths in 2008 occurred in low and middle- income countries. Death from cancer worldwide are projected to continue rising, with an estimated 13.1 million deaths in 2030 (1).Tanzania is amongst developing countries which has also been affected with cancer burden this has partly being contributed by change of life styles, increase population size and HIV pandemic

It has been reported that Head and Neck Cancer (HNC) is the 6th most frequent cancer worldwide. The currently estimated world incidence of epithelial malignancies of the mucous membranes is over 600,000 new cases per year; 160,000 laryngeal, 389,000 oral, and 65,000 pharyngeal cancer cases, resulting in 300,000 deaths yearly (2), Thus in 2008, 6.8% percent of the incidence of cancer could be attributed to these neoplasms. Similarly, in the European Union 5% of the cancer burden was caused by oral, pharyngeal, and laryngeal cancer (2, 3).

A high incidence of head and neck cancer is seen in the Indian subcontinent, Australia, France, Brazil, and Southern Africa. The incidence of oral, laryngeal, and other smoking related cancers is declining in North America and Western Europe, primarily because of decreased exposure to carcinogens, especially tobacco (2).

World Health Organization (WHO) projections estimate that, worldwide mortality figures from mouth and oropharyngeal cancer, in 2008 to be 371,000. This is projected to rise to 595,000 in 2030 because of a predicted rise in mortality in South East Asia (182 000 in 2008 to 324,000 in 2030). Modest rises are predicted for Africa, the Americas, and the Middle East, whereas mortality in Europe is expected to remain stable (1). In Tanzania HNC placed in 5th rank according to hospital based report from Ocean Road Cancer Institute. The magnitude increases at alarming rate this has contributed by many factors including double burden of HIV pandemic.

Tobacco abuse has been implicated as a risk factor for all head and neck tumour sites. Cigarette, pipes, cigars, smokeless tobacco, and habitual use of marijuana are all considered to be physical carcinogens; tobacco use increases the risk of developing head and neck cancer more than 25- fold. The risk of oral cancer can be halved within 5 yrs of cessation of smoking (4, 5).

Additionally, the risk of HNC increases in individuals with cancer susceptibility syndromes, such as hereditary non- polyposis colorectal cancer, Li Fraumen syndrome, Fanconi`s anaemia, and ataxia telangiectasia.

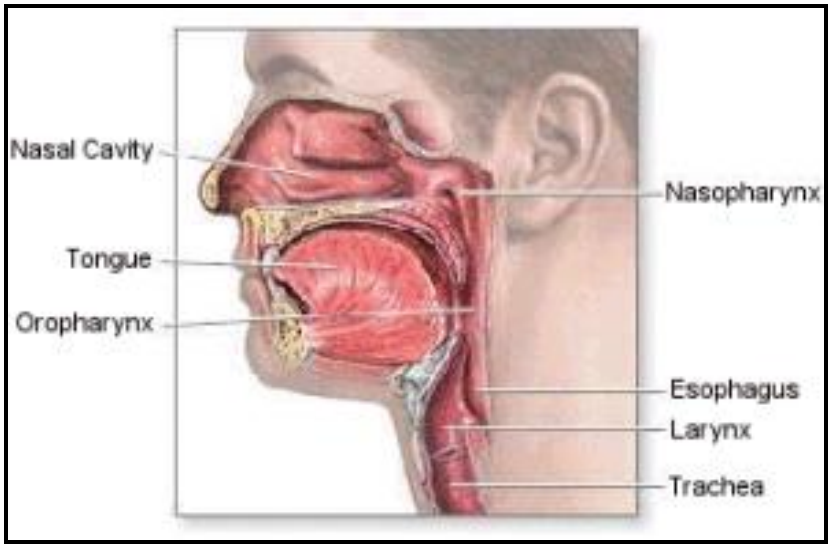
HPV (Human Papilloma Virus) Types 16 and 18 are the main type associated with HNC. Epstein Barr Virus (EBV) is also being associated with Oropharyngeal carcinoma (4).

Head and neck cancer is highly curable if detected early, The disease is a cosmetically, functionally, and economically distressing which lead to the need of multidisciplinary treatment approach, therefore there are three principle modalities that are currently used to control this disease; tobacco/alcohol cessation programs, surgery and radiotherapy for early and local- regional advanced disease and chemotherapy in advanced, recurrent and metastatic disease (6).

Despite successful primary therapy of advanced local and regional disease, 50-60 % of head and neck cancer patients will die from local recurrences, 20 – 30 % will die from distant metastases, and 10 – 40 % will die from second primary tumours (6). Although the patients with early stage disease can be treated effectively with single modality local therapy (surgery or radiotherapy), long term survivors, regardless of disease stage, are subject to the development of second primary tumours. These troubling data reveal the need for effective chemo preventive approaches to increase survival for cured head and neck cancer patients (6).

Head and Neck Cancers usually begin in the squamous cells that line the moist, mucosal surfaces inside the head and neck (for example, inside the mouth, the nose, and the throat). These cancers are often referred to as squamous cell carcinomas of the head and neck and can also begin in the salivary glands but these are relatively uncommon (7, 1, 8)

Figure 1: Areas associated with Head and Neck Cancer



Source:ricancercouncil.org/cancer-info/head-and-neck-cancer-facts.php

Cancers of the head and neck are further categorized by the area of the head or neck in which they begin. Cancers of the brain, the eye, the oesophagus, and the thyroid gland, as well as those of the scalp, skin, muscles, and bones of the head and neck, are not usually classified as head and neck cancers (7, 4).

The majority of head and neck cancers, about 90% are squamous cell carcinomas (9).

The initial patient evaluation should include a thorough history and physical examination, and usually the early stage of the disease is asymptomatic. The time interval from the onset of symptoms to diagnosis may exceed 3 months in 34 – 55% of cases and one year in 7- 10 % of cases (10).

Signs and symptoms depends on the location of the tumour for example, nasopharyngeal carcinoma can present with facial pain, mild trismus, earaches, and headaches which can be confused with benign disorders (10). Others include the presence of neck masses, throat pain, dysphagia, epistaxis, diplopia, unilateral hearing deficit and nasal obstruction. Head and neck cancers often spread to the lymph nodes of the neck, and this is often first (and sometimes only) sign of the disease at the time of diagnosis (10, 5).

Squamous cell cancers of the Head and Neck are staged according to the TNM classification system, where T is the size and configuration of the tumour, N is the presence or absence of distant metastases. The T, N, and M characteristics are combined to produce a "stage" of the cancer, from stage I to stage IVB (11). (Appendix I)

Clinical factors such as functional status, severity of comorbidity, immunocompetence, and symptom severity, which are important for classification, prognostication and evaluation of treatment effectiveness are not yet incorporated into the current TNM (tumour, nodes and metastases) staging system (11,12).

The Overall 5-year relative survival rate in studies done in Europe and America for all patients with head and neck cancers is 57% (13) and in India is about 40.8 %, (13, 14). In these studies they found that the factors for survival in Head and Neck cancers are Age, Sex, Tumor size and stage of the disease, co morbidities (anaemia), type of treatment given and presence or absence of HPV Virus.

Few studies have been done in Africa on Head and Neck cancer (15), because of the poor data handling. In Tanzania, no study has been done to date on head and neck cancer. Therefore the aim of this study was to determine the factors that are associated with survival in patients with head and neck cancers treated at Ocean Road Cancer Institute in Tanzania.

1.2 LITERATURE REVIEW

1.2.1 Socio-demographic factor and survival of head and neck cancers

An analysis of the demographic patterns of new cases of head and neck cancer reveals that there are differences based on geographic location, primary site, age, race and gender throughout the world. Geographic location has a strong influence on reported rates of head and neck cancer. For example looking at different countries, in Korea they comprise almost 14% in men and 10% in women, In India they account for about 30% in men and about 13% in women. In Austria the rates are higher in the urban compared to rural areas. In Italy it is more frequent in the North than its other parts; (12) In Tanzania, no available data showing

geographical differences in occurrence of Squamous Cell Carcinoma of the Head and Neck (SCCHN).

Increase in age confers an increasing risk of head and neck cancer. The majority of patients with head and neck cancer are found in mid to older age groups. Squamous cell carcinoma of the upper aero-digestive tract is rare in patients under the ages of 18 years. A study was done in (16), demonstrated that, the group of patients < 65 years had a significantly better disease-specific survival rate compared to the older patients. However, 40 % of the older patients were alive with no evidence of disease, and therefore suggested that treatment is worthwhile in patients at an advanced age, regarding the disease free survival for SCCHN.

Although another study showed no difference in survival between young and elderly after recieving the same treatment (17).

When it comes to gender in almost every epidemiologic study men have shown a higher rate of being affected than women, and many findings of population based studies have demonstrated that women have better survival than men (18, 19) although the recent trend has shown an increased occurrence in women related to increased use of tobacco and alcohol. A matched paired study was done to see sex related survival disparities among the patients with Head and Neck Cancer (HNC) receiving the same multidisciplinary care and concluded that there was no significant difference between women and men in recurrence-free, disease-specific, or overall survival (20, 21).

A retrospective study was done in India looking at factors for survival in Head and Neck Cancer (HNC) in their hospital and established that 2years survival in males was 37.2% and female 51.2% but this should be interpreted in light of differences in types of tumour and stage at presentation (22).

Economic status has also been found to be important in influencing the incidence of head and neck cancer within the populations. Generally speaking, the disease on one part has been associated with low socio economic status which has been associated with populations with less education and poorer levels of hygiene.

A prospective cohort study of 1909 patients was done trying to explain the effects of socio economic deprivation on survival in patients with head and neck cancers had concluded that

Socio-economic differentials in survival from head and neck cancers are determined by a mixture of risk factors, some of which may be agreeable to targeted earlier detection methods and lifestyle interventions (23); another study looked at Head and Neck cancer- specific survival based on social economic status in Asian and Pacific Islanders established that; High Socio Economic Status was associated with longer disease free survival –DFS, and Overall Survival –OS (24).

It is clear that socio-demographic factors are part and parcel of the determinant of survival of head and neck cancer and associated with other risk factors as noted from different publications. It is with this reason that this study will also analyse and use socio-demographic factors reach the conclusions of the study with respect to the patients treated at the ORCI.

1.2.2 Types of head and neck cancer and histopathological factors association with survival

Head and neck cancers are grouped according to the location and the histological type of the primary tumour and the extent of the disease (25). Studies shows that 5 – year survival rate substantially differed by site and histological findings (26). Histopathology reporting for Head and Neck Cancer is helpful in determining the prognosis, and the histopathology should include the following;

1. Tumour grade- this can determine prognosis i.e. a higher grade meaning poorer prognosis 2. Tumour - Stage meaning maximum tumour dimension and presence or absence of invasion of adjacent structures, higher stage correlates with poorer prognosis.

3. The depth of invasion i.e. > 4mm for big tumours meaning worse prognosis. Also, the pathologist should report on the cut margin since this predicts future local recurrence (11, 27).

The anatomical site of the tumour also can predict survival for example supraglottis tumours have worse prognosis than glottis tumours and hypo pharynx is worse than larynx (28). There is a strong colleration between stage at diagnosis and relative survival, with cancers that tend to be diagnosed at more localized stages having higher relative survival for example; Cancer of the lip mostly diagnosed at stage I (83 %) which has highest survival at 100%- 1 year, 99% - 3 years, and 96% 5 years after diagnosis. Alternatively, diagnosis of hypo pharyngeal

carcinoma occur at stage I only 10 % of time, and these are among with the lowest relative survival rates of head and neck cancers (13).

1.2.3 Comorbidities and survival in head and neck cancer.

Patients with cancer often have other medical conditions or illness, referred to as co morbidities. As result of alcohol and tobacco use, patients with head and neck cancers are likely to have comorbid health conditions. These can change the diagnosis, prognosis and treatment of patients with cancer. A Study was done (29) on prevalence and incidence of acute and chronic comorbidity in patients with Squamous Cell Carcinoma of Head and Neck cancer mentioned that, Cardiovascular (41%) and respiratory diseases (12%) were the most prevalent co morbidities (29, 30).

The presence of co morbid conditions has a significant impact on tumour- and treatment-specific outcomes. Although the presence of advanced co morbid conditions is not associated with an increase in the rate of treatment-associated complications, complications tend to be more severe in this population (31).

More importantly, advanced co morbidity has a detrimental effect on the disease-free interval and tumour-specific survival in patients with head and neck cancer, independent of other factors. This suggests that co morbidity may impact on tumour behaviour, presumably by altering the host's response to cancer. Accordingly, to be more predictive and reliable, the current staging system for head and neck cancer should include a description of the patient's co morbidity.

Looking at the above contributions from different publications on the effect of survival on histology, stage and co morbidities and types of head and neck cancers, therefore this study has analysed and uses the above factors to reach the conclusion of the study.

1.2.4 Treatments modalities and survival in head and neck cancers

The modalities often used in the treatment of head and neck cancer are surgery, radiation, and systemic chemotherapy. Treatment depends on the extent of the disease and the patient’s condition. The treatment should be a multidisciplinary team (12, 25).

i. Surgery

During surgery, the doctor performs an operation to remove the cancerous tumour and some of the healthy tissue around it (called a margin). The goal of surgery is to remove the entire tumour and leave negative margins (no trace of cancer in the healthy tissue) (32). This can be a treatment of choice in early-stage disease whereby a primary tumour can be excised with an appropriate margin of normal tissue and should not result in significant morbidity or long-term anatomic or functional compromise. It has the advantage of determining the microscopic extent of the disease (25).

Surgery for head and neck cancer is based upon the concept that Squamous cell carcinoma of the upper aero digestive tract originates as a local disease and spreads in an orderly fashion from the primary site to regional lymph nodes and , subsequently, to distant metastatic sites.

The surgical procedure with the highest theoretical chance for cure is designed to remove and block the primary and the regional lymph nodes including the intervening lymphatics. Surgery offers the advantages of full resectability and access to histopathology of the primary tumour while eradicating occult and clinically evident regional disease (12, 25).

Traditional treatment of early head and neck cancer is surgery or radiation therapy as a single mode of treatment. While advanced stage (III and IV) are combination therapies which are surgery and radiation therapy (10).

Appropriate surgical procedures should be considered for palliation of a particular symptom e.g. Tracheostomy, laser debulking, embolisation, Percutaneous Endoscopic gastrotomy (PEG), Tube insertion and nerve block; these have a role in managing specific problems like; airway obstruction, debridement of fungating malodorous tumours, haemorrhage, dysphagia and pain

(33, 34).

Side effects of surgery depend on the type and location of the surgery, Common side effects from head and neck surgery include temporary or permanent loss of normal voice or impaired speech; difficulty chewing or swallowing, which may require a tube inserted in the stomach for feeding purposes; hearing loss; or decreased functioning of the thyroid gland, either after a total laryngectomy or radiation therapy (10).

Another potential side effect is swelling of the mouth and throat area, making it difficult to breathe. In such cases, patients may receive a temporary tracheostomy to make breathing easier. Meanwhile, some people experience facial disfigurement from surgery. Reconstructive surgery may be required to maintain appearance or body functions, such as chewing, swallowing, or breathing (32).

ii. Radiation Therapy

Radiation therapy is the use of high-energy x-rays or other particles to kill cancer cells. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time. It can be the main treatment for head and neck cancer, or it can be used after surgery to destroy small pockets of cancer that cannot be removed surgically (32).

Radiation therapy can be delivered as External beam therapy (EBT), a method for delivering a beam of high – energy x-rays to the location of the tumour, or by directly implanting Radioactive sources within the tumour. (Brach therapy).Typically, EBT is fractionated, meaning the total dose is delivered overtime in smaller doses or fractions (34, 35).

Dose of radiation that can be delivered to a tumour is limited by the tolerance of the surrounding normal tissue; which are unavoidably irradiated during treatment. Radiotherapy can be delivered with curative intent for the purpose of improving local control following surgery i.e. adjuvant Radiotherapy, or to provide symptomatic relief only (Palliative Radiotherapy) (34)

Usually the treatment is given in single daily fractions of 1.8 – 2 GY for 5 days per week, the accumulate dose of approximately 10 GY (Grays) per week. It has been shown that 72GY in 6 weeks using concomitant boost technique results in improvement in loco regional control (36). There is evidence suggesting signs of better survival when chemotherapy is given concurrently with radiation therapy (36, 37).

Patients at high risk of loco regional recurrence following surgery are often treated with adjuvant Radiotherapy to improve local control and survival. A Study (38) has suggested that adjuvant radiotherapy improves local control, disease free and overall survival at 5years in patients with extra capsular lymph node spread and / or positive margins (< 1mm) after radical surgery (32, 38). Post operative radiotherapy should be conventionally fractionated and not

less than 54 – 60 GY in 27 -30 fractions and nodes at risk with a boost to 66GY in 33 fractions over 6.5 weeks to areas of very high risk (38).

Radiation therapy can have both acute and long term sequelae, and these occur largely because of the loss of parenchymal cells. The most common acute side effects are mucositis, odynophagia, dysphagia, hoarseness, xerostomia, dermatitis, and weight loss, and these effects resolve as cells are replaced; (25, 39)

In addition, radiation therapy to the head and neck may cause redness or skin irritation in the treated area, swelling, dry mouth or thickened saliva from damage to salivary glands, bone pain, nausea, fatigue, mouth sores, and/or sore throat. Changes in voice because of swelling or scarring; loss of appetite, due to a change in sense of taste; hearing loss, due to build up of fluid in the middle ear; build up of earwax that dries out because of the radiation therapy's effect on the ear canal, and fibrosis. Radiation therapy also may cause a condition called hypothyroidism in which the thyroid gland slows down and causes the patient to feel tired and sluggish (25, 32).

iii. Chemotherapy

Chemotherapy is the use of drugs to kill cancer cells, usually by stopping the cancer cells' ability to grow and divide. A chemotherapy regimen (schedule) usually consists of a specific number of cycles given over a set period of time. A patient may receive one drug at a time or combinations of different drugs at the same time (32).

No evidence has been found to support the use of chemotherapy alone as a curative treatment for Squamous Cell Carcinoma in Head and Neck cancer. Chemotherapy is delivered in combination as;

1: Neoadjuvant- delivered in weeks before surgery or radiotherapy

2: Adjuvant – delivered following surgery or radiotherapy

3: Concurrent with Radiotherapy – delivered during the course of radiotherapy. Routine use of neoadjuvant chemotherapy is not recommended.

It has been proved that additional of chemotherapy to loco regional treatment for patient with non- metastatic SCCHN i.e. locally advanced stage III and I V disease improves survival with

benefit of 5% at 2 and 5 years. When given neodjuvantly, cisplatin and 5-Fu (5- Fluorouracil) results in significant survival benefit compared to loco regional radiotherapy alone (40).

Also chemotherapy when given concurrently with radiotherapy, in resectable and non resectable disease there is absolute overall survival benefit of 8% with chemotherapy at 5 years. The absolute survival benefit at 5 years for concurrent single agent cisplatin as opposed to other drugs is 11%. Therefore single agent cisplatin is recommended as chemotherapeutic agent of choice in concurrent chemoradiation (40).

The side effects of chemotherapy depend on the individual and the dose used, but they can include fatigue, risk of infection due to bone marrow suppression, nausea and vomiting, loss of appetite, and diarrhoea. These side effects usually go away once treatment is finished. In addition to physical side effects, there may be psychosocial (emotional and social) effects as well. For many patients, a diagnosis of head and neck cancer is stressful and can bring difficult emotions. Patients and their families are encouraged to share their feelings with a member of their health care team, who can help with coping strategies (25, 32).

In conclusion this study intends to determine the factors that are associated with survival in patients with head and neck cancers treated at Ocean Road Cancer Institute in Tanzania.

1.3 STATEMENT OF THE PROBLEM

Cancer is one of the major health issues throughout the world. According to the World Health Organization figures, cancer generally affects approximately 9 million people while killing 5 million people annually. (3)

Head and neck cancers (HNC) alone constitute 5–6% of all cancers globally, and 5–8% of total body cancers in Europe and America. In India, HNC constitutes about 30% of all cancers. It is difficult to assess the problem of cancers in African countries due to the fact that most available studies are hospital-based. Specifically for Tanzania, there are no systematic community based or population based database for assessing burden of cancer in the country.

The Ocean Road Cancer Institute (ORCI) receives patients with different types of cancers from all over the country. Head and Neck cancers being among of them and it is the 5th most common cancer at the Institute with about 200 to 250 new patients being received each year and the trend tends to be increasing. Most of the patients come to the facility with advanced stages of the disease in which treatment is largely palliative and not curative. This certainly carries poor prognosis which indicates poor survival.

However, despite knowing that few patients receive curative treatment, no study has assessed the outcome of these treatments. Hence, this particular study aimed at finding out factors that contributes to the survival of the patients treated at ORCI so that they can be addressed to improve the survival of the patients.

1.4 SIGNIFICANCE OF THE STUDY / JUSTIFICATION OF THE STUDY

World Health Organization (WHO) estimates that there were approximately 21,000 new cancer patients in Tanzania; 10,080 men and 10,920 women for the year 2002. Currently ORCI attends to only 10% of the WHO estimate of new cancer patients per year in Tanzania.

Head and Neck Cancer is among the three commonest cancers preceded by Kaposi's sarcoma and cancer of Oesophagus in men at ORCI. According to the data from ORCI the incidence of HNC is increasing from 200 in 1999 to 350 in 2009.

Most of the cancer patients in Tanzania face a problem of delay in diagnosis and majority of them die within first year after diagnosis. When comparing treatment modalities, western world prefers surgery as their most common modality of treatment because of the early presentation and early diagnosis while in developing countries radiation therapy is the preferred therapy because of late presentations and lack of adequate resources to make diagnosis especially in a rural setting or district hospitals. Again there is lack of proper record keeping and follow up mechanisms which has made it difficult to track down what happens after treatment to most of the patients of HNC at ORCI.

No study has been done at this Institution on how our patients are surviving after treatment; therefore there is a need to do a study on the survival of the HNC patients treated at ORCI and to describe the association between socio-demographic factors, clinic-pathologic factors, treatment modalities and survival of the patients with HNC at ORCI.

To conduct this study at this Institution will provide an insight on the survival of the HNC patients at ORCI, findings from this study will be a challenge to Oncologist, pathologist, surgeons and other medical community at large, to find it necessary to study more on HNC, so that to improve the outcome and prognosis of the patients.

1.5 OBJECTIVES

1.5.1 General Objective

To determine the survival rate and factors associated with survival of Head and Neck cancer patients at the Ocean Road Cancer Institute Jan 2009 to Dec 2011.

1.5.2 Specific objectives

The study will further be guided by the following specific objectives:

1. To determine the socio-demographic and disease characteristics of the patients with Head and Neck cancer treated at ORCI in the period of 2009 -2011.
2. To determine the treatment modalities of patients with Head and Neck cancer treated at ORCI.
3. To evaluate the relationship between socio-demographic and clinic-pathologic characteristics and survival of Head and Neck cancer patients treated at ORCI in the period of 2009 – 2011.

1.5.3 Null Hypothesis

There is no difference in survival of patients with HNC with regard to socio-demographic characteristics, clinic-pathological factors and treatment modalities

1.5.4 Alternative Hypothesis

There is a difference in survival of patients with HNC with regard to socio-demographic characteristics, clinic-pathologic factors and treatment modalities.

2. STUDY METHODOLOGY

2.1 Study Design

This was a retrospective descriptive study; whereby the patients' files of Head and Neck cancer treated at ORCI in the period of 1st January 2009 and 31st December 2011 (3years) were reviewed.

2.2 Study Setting

The study was conducted at the Ocean Road Cancer Institute (ORCI) health facility located in Dar es Salaam, Tanzania which is one of the oldest health facilities in Tanzania found in 1895 by the German colonial government. The Institution receives patients with histological diagnosis of cancer from all over the country including head and neck cancers. Modalities of cancer treatment at ORCI are Chemotherapy, Radiation therapy which includes External Beam Radiation and Brachytherapy; and Nuclear medicine. Treatment is free for all cancer patients. ORCI receives about 3000 new patients in a year and approximately 10% of those patients are Head and Neck cancer.

2.3 Study Population

2.3.1 Target population

All head and Neck cancer patient attended at Ocean Road Cancer Institute

2.3.2 Accessible population

The study reviewed 200 files of Head and Neck cancer patients treated at ORCI in the period from 1st January 2009 and 31st December 2011, after all the exclusion criteria have been ruled out.

Inclusion Criteria;

Confirmed Squamous Cell Carcinoma (SCC) of HNC, Patients with no history of prior cancer treatment, and treated with chemotherapy, radiation therapy, surgery or any combination of these modalities, and those with contact information in the file.

Exclusion criteria;

HNC Patients with histologies other than squamous cell carcinoma; head and neck cancers of the thyroid gland, parathyroid gland, ocular cancers, skin cancers, lymphomas and brain cancers.

2.4 Sample Size Determination

The sample size was derived based on estimated Hazard rates of 0.4 and 0.7 respectively among SCC Head and Neck Cancer patients. Using a double sided test, P = 0.05 and Power of 90%; and duration of study of three (3) years, a sample size of 178 Head and Neck Cancer patients was needed. In order to take care of loss to follow up then the sample size was increased to 200.

2.5 Sampling Technique

A special register was made by the principle investigator by registering all the patients' files from the registry from Jan 2009- Dec 2011 with SCC of Head and Neck

A Table of random numbers was used to randomly select 200 patients' files from estimated number of 750 patients seen at Ocean Road Cancer Institute between 1st Jan, 2009 – 31st Dec, 2011.

2.6 Data Collection

Basically, due to the retrospective nature of the study, standardized questionnaires addressing the objectives of the study was used to extract relevant information of the patients (***attached as appendix ii***). It included a number of questions on socio-demographic factors (age, gender, education, place of residence); Clinical pathologic factors (histology type, primary site, stage of the disease and co morbidity); Management includes (Intention of the treatment) Curative or Palliative (Type, dosage) and the outcome (dead, alive or loss to follow up).

2.7 Data Handling/ Analysis

-All questionnaires were daily checked for completeness and accuracy by the investigator,

Filled questionnaires were given an identification number and coded before entering into the computer using statistical package for social science (SPSS).

-Data cleaning was done by consistence checks. Statistical analysis was done by SPSS Version 16. Frequency distribution and two way tables were used to summarize the data.

-Chi square and Kaplan's Meyer tests were used to determine the association between independent and dependent categorical variables. P value of <0.05 was considered statistically significant. During analysis, anatomic site was categorised as pharynx, larynx, nasal cavity + paranasal sinuses and oral cavity.

2.8 Ethical Clearance

Ethical clearance was sought from Ethical Clearance Board (IRB) of the Muhimbili University of Health and Allied Sciences (MUHAS)

Permission to conduct the study was sought from Ocean Road Cancer Institute to use the patient's files for the extraction of the information for the study.

Confidentiality was observed when extracting information from the files and even after the study period.

2.9 Dissemination Of Study Findings

i. The findings will be disseminated to appropriate bodies which include;

ii. MUHAS school of postgraduate studies

iii. Clinical Oncology Department

iv. Submitted for publication in local and international journals.

3 RESULTS

A total of 200 patients files included into the study. These files were randomly selected from a total of 384 files of patients who had Head and Neck cancer treated at ORCI from January 2009 to December 2011. Those files which could not meet the inclusive criteria were excluded and a replacement patient's file was obtained. This was done in order to achieve a sample size of 200 files.

Table 1: Socio demographic characteristics of the study participants

Variable		Frequency	Percentage
Age			
	16 -35	39	19.5
	36 -55	62	31.0
	56 – 75	86	43.0
	>76	13	6.5
Sex			
	Male	153	76.6
	Female	47	23.4
Marital status	Single	20	10
	Married	169	84.5
	Divorced	6	3.0
	Widowed	5	2.5
Education level			
	Primary or none	76	38
	Secondary	90	45
	University	34	17
Ever Tobacco use			
	Yes	149	74.5
	No	51	25.5
Ever Alcohol use			
	Yes	145	72.5
	No	55	27.5

Table 1 on the previous page, shows Socio - Demographic characteristics of the study population. Participants' age ranged from 17 to 88 years with majority of participants in the age category of 56 and above years. There were more males than female in the study population (Table 1). Majority of the study participants were married (84.5%). The education level of the study participants was equally distributed in the categories of primary or none, secondary and university categories. Most of the participants had ever used tobacco (74.5%) as well as alcohol (72.5%).

Table 2: The residence of the study population (n=200)

Residence zones	**frequency**	**Percentage**
Eastern	82	41
Lake	21	10.5
Southern highland	6.0	6.0
Southern	9	4.5
Northern	51	25.5
Western	14	7.0
Others		
(Zanzibar and Mombasa)	11	5.5

Table 2 above shows Residential distribution of the patients in the study population. Most patients were from the Eastern Zone of Tanzania (41%), followed by the Northern zone (25.5%). There are also few patients who were from outside the mainland Tanzania.

Table 3; Clinico – pathologic characteristics of the study population

Variable	Frequency	Percentage
Haemoglobin level		
<11	85	42.5%
≥11	115	57.5%
Stage		
One	27	13.5
Two	28	14.0
Three	31	15.5
Four	75	37.5
Unstaged	39	19.5
Anatomical site		
Nasopharynx	34	17.0
Oropharynx	8	4.0
Orocavity	83	41.5
Hypophaynx	11	5.5
Larynx	48	24.0
Nasal cavity and Paranasal sinuses	16	8.0

Table 3 above, shows Clinico – pathologic characteristics of study population. The mean (Standard Deviation) haemoglobin level before starting treatment at Ocean Road Cancer Institute was 11.27(1.67) g/dl. About 57.6% of the patients have haemoglobin level of equal or more than 11g/dl. The majority of the patients had slightly advanced Head and Neck cancer

when combining TNM stage three and four disease 53%. Some of the patient's files had no documentation on the staging.

Most of the patients had oral cavity cancers 83(41.5%) which includes cancers of the lower lip, tonsils, gingival, mandible, retromolar, tongue, soft palate , hard palate, floor of the mouth, lower jaw and buccal mucosa.

Table 4: The treatment modalities given to different Head and Neck cancers.

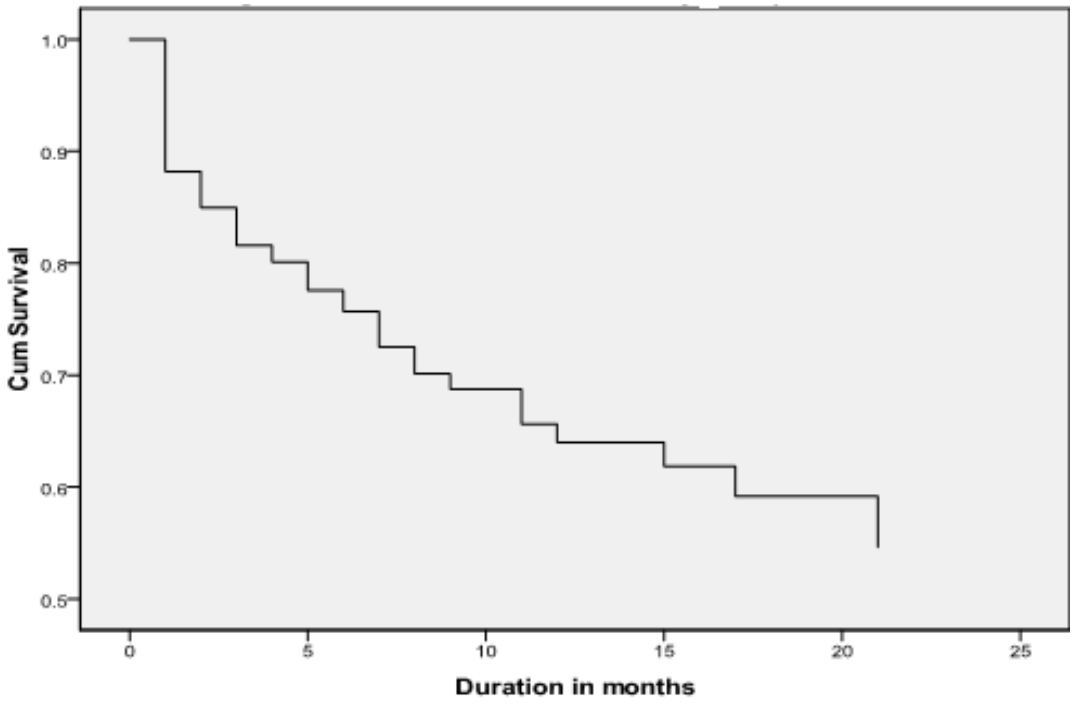
Variable	Surgery	Chemoradiation	Radiation alone
Nasopharynx (n=34)	2 (5.8%)	22 (64.7%)	9 (26.5%)
Oropharynx (n=8)	0 (0%)	6 (75%)	2 (25%)
Orocavity (n=83)	2 (2.4%)	23 (27.7%)	57 (68.7%)
Hypopharynx (n=11)	7 (63.6%)	4 (36.4%)	7 (63.6%)
Larynx (n=48)	12 (25%)	16 (33.3%)	32 (66.7%)
Nasal & PNS* (n=16)	2 (12.5%)	2 (12.5%)	14 (87.5%)

*PNS: Para nasal Sinuses

According to Table 4 above, most patients with Head and Neck cancers do not undergo surgical procedures, except for patients with hypopharynx in which 63.6% had surgery. Chemoradiation was largely given to patients with Nasopharynx and Oropharynx cancers (64.7% and 75% respectively). Most patients with cancers of the Orocavity, hypopharynx, larynx and nasal and paranasal sinus received radiotherapy alone as the modality of treatment.

3.1 Survival of Head and Neck cancer patients

Figure 2: Overall survival rate of the study participants



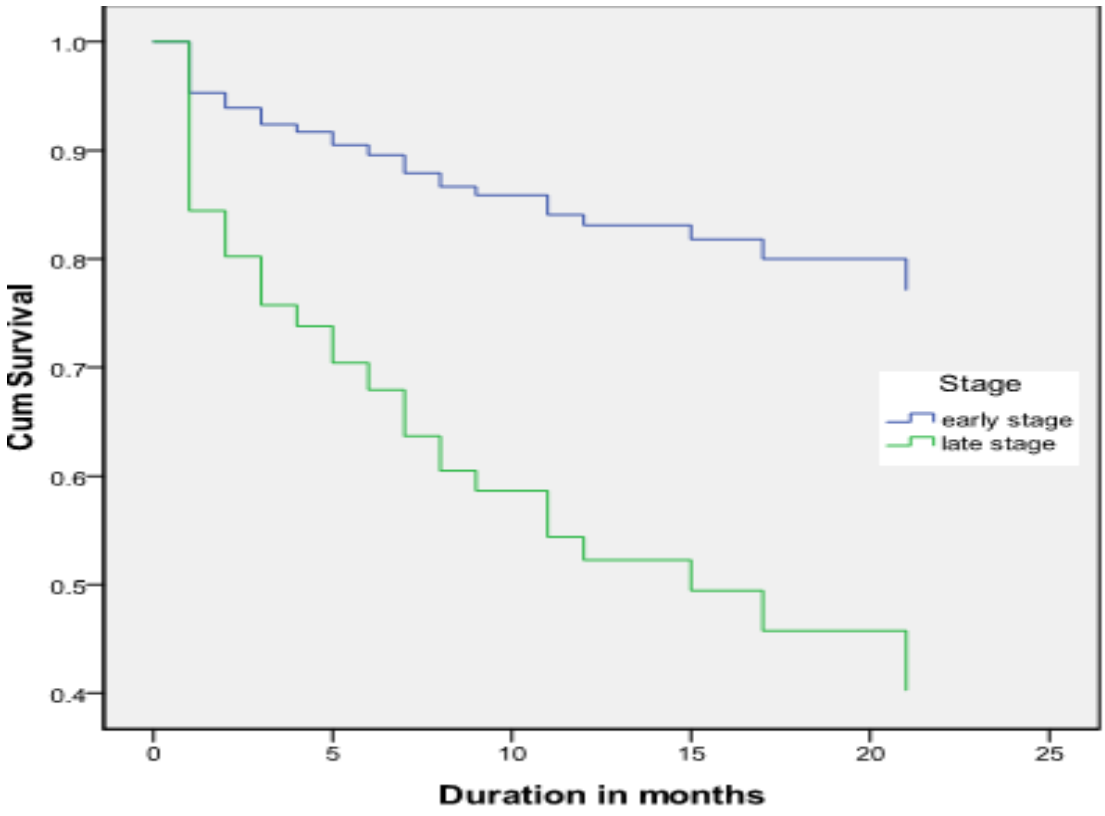
According to figure 2, The overall median survival duration was 6 month and ranged 1 to 36 months. At the end of the 3 year follow up period, the overall survival rate was 59%

3.2 The association between socio demographic characteristics of study participants and survival

Using cox regression analysis, there was no significant associations found between Age categories, Sex, Education level, Marital status, or ever use of Tobacco well as Alcohol and survival rate (data not shown).

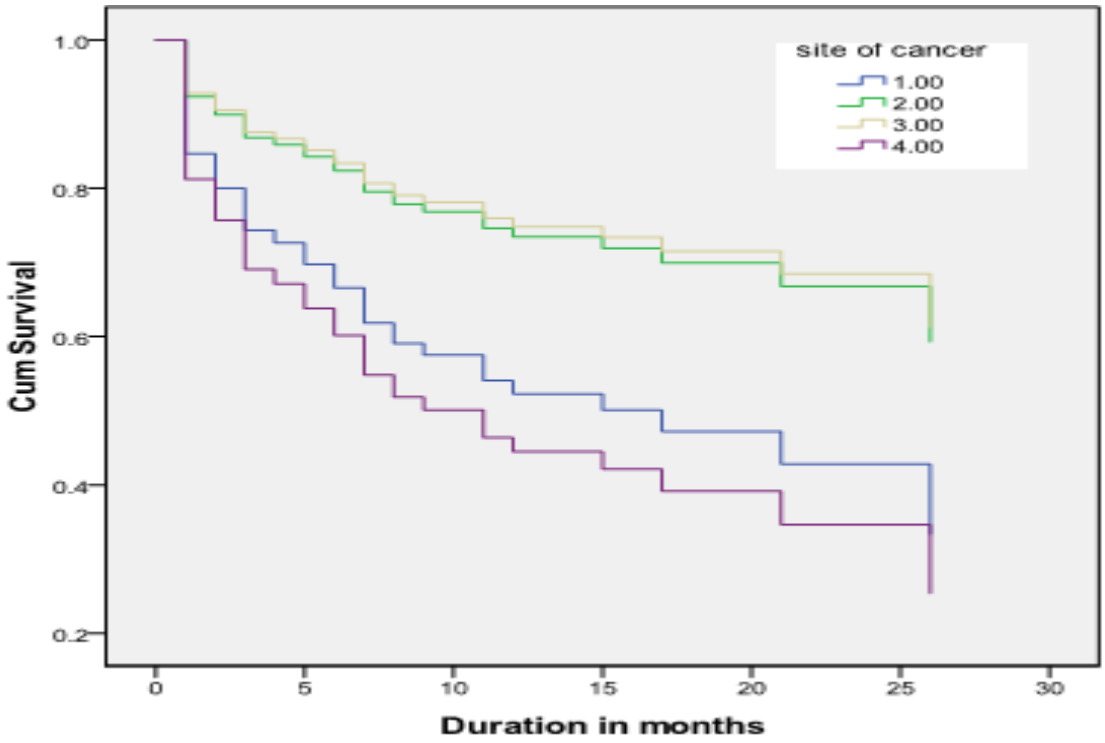
3.3 The association between clinic pathologic characteristics as well as treatment modalities and survival rate

Figure 3: The association between stage of the disease and survival rate



During analysis of the association between stage of the disease and survival rate, we combined stage one and two as early stage, and three and four as late stage. Those who were not staged were omitted in the analysis. It was found that there was a significant association between stage categories and survival rate, early stage patients survived more than late stage patients by 70.9% versus 57.5% respectively, $p<0.0001$ (figure 3).

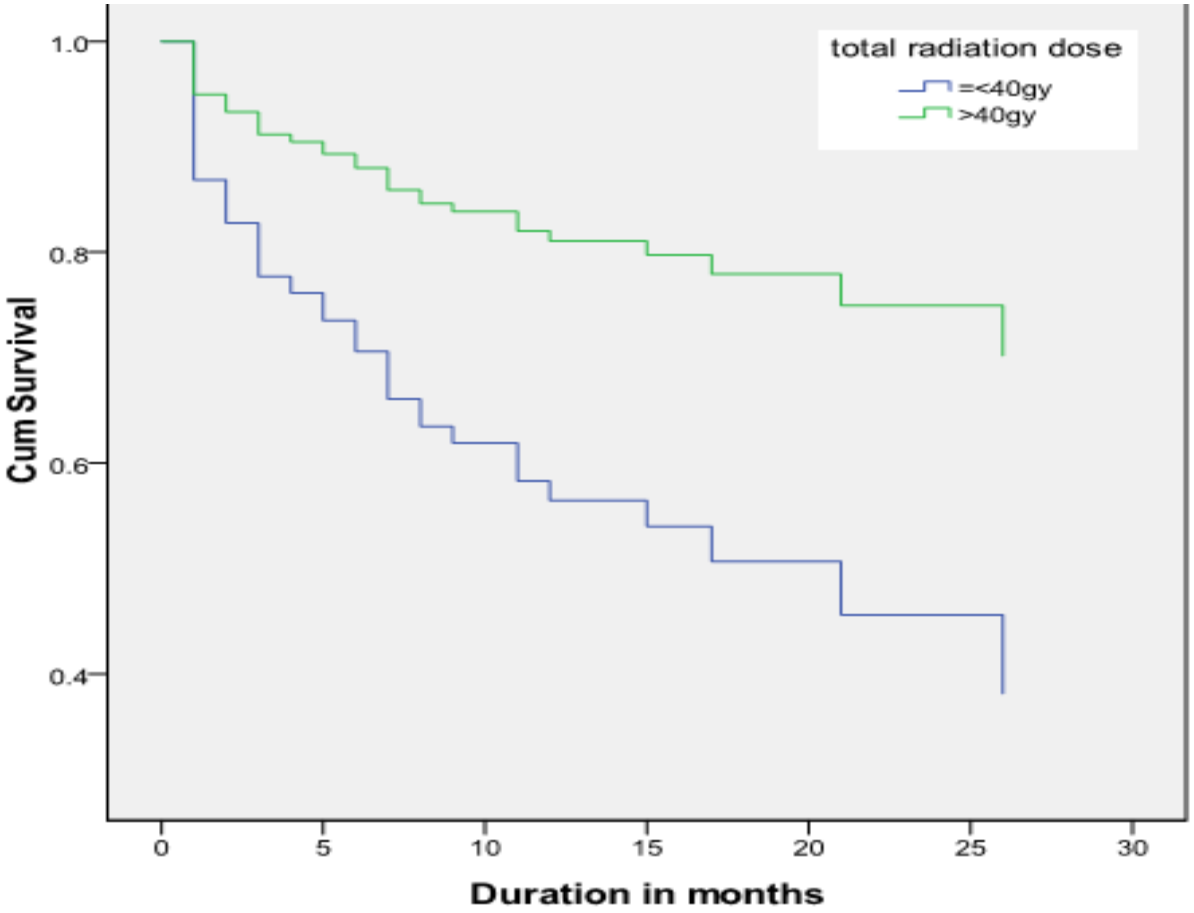
Figure 4: The association between site of the cancer and survival rate



During analysis of the association between site of cancer and survival, patients with Oropharynx, Hypopharynx and Nasopharynx were grouped together as pharyngeal cancer and other groups were Orocavity, Laryngeal and Nasal cavity/Paranasal sinuses.

A significant association was found between site of the cancer and the survival rate (p=0.025). Patients with the Orocavity and Larynx cancers seem to survive more than patients with pharyngeal and nasal cancers (figure 4).

Figure 5: The association between total radiation dose and survival rate



Patients who had total radiation dose of more than 40Gy survived more than patients with dose of less than 40Gy (figure 5; P=0.001).

There was no association between survival rate and modality of treatment (data not shown)

Table 5: Multivariate analysis of factors associated poor survival outcome among Head and Neck Cancer patient at ORCI

	Covariates	B	SE	*P*	95% CI
Poor survival	Constant	1.39	0.50	0.007	0.39, 2.40
outcome	Stage of disease	0.24	0.11	0.004	0.46, 1.02
	Tumour site	0.34	0.14	0.018	0.62, -0.06
	Not receiving treatment	0.51	0.20	0.015	0.10, 0.91
	Smoking	0.53	0. 63	0.12	-0.46, 1.02
	Alcohol consumption	1.22	0.71	0.07	-0.42, 3.45

The table above shows the multiple regression analysis with stage of the disease, Tumor site, not receiving treatment, alcohol consumption and smoking cigarette. No significant association has been demonstrated by other factors with poor survival.

4 DISCUSSION

This study reports Overall survival rate of 200 diagnosed HNC patients treated at ORCI, between 2009- 2011, looking at the socio demographic, clinical characteristics, treatment and survival. The Overall survival rate was found by 59% with the median survival of 6months.

4.1 Socio- Demographic Factor and Survival of Head and Neck Cancers

In this study findings do not differ with other studies done in other different parts of the world, increase in the age confers an increased risk of head and neck cancers. 74% of the patients with head and neck cancers were found in mid to older age groups, with this 50% of the patients who were more than 56 years were alive at the end of the study period.

These findings do not differ with other studies in (16, 17) whereby the majority of the patients were found in mid to older age groups. Although in the study in (16) showed better survival in patients with <65 years compared to older patients, however 40% of the older patients were alive with no evidence of the disease.

Even though this study showed no statistical difference in survival between young and adults after receiving different modalities of treatment but this shows the advantage of the treatment in advanced age regardless of the disease free survival.

When it comes to gender, majority of the study participants were male 76.6%, while 23.4% were female. However women showed better survival by 65.9% than men 56.8%. But the overall survival was not significantly different. These findings agrees to the majority of the Epidemiologic studies which shows that men are being more affected than women, and many findings of population based studies have demonstrated that women have better survival rate than men (18,19).

Another retrospective study was done in India looking at the factors for survival in Head and Neck cancer in their hospital. The study found out that two years survival was 37.2% in males and 51.2% in female, but this should be interpreted in the light of differences in types of

tumour and stage at presentation, because the type of tumour, site and stage contributes in the analysis of the survival of the patients in the Head and Neck cancers (22).

In our study, there was no survival difference between patients with none or primary education to highly educated patients. This may be due to the lack of detailed information as in any other registry based studies whereby (Chu K.P et al, 2011) found out that neighborhood level Socio-economic Status is significantly associated with disease specific survival and overall survival. This association may reflect a lack of preventive care in the lower Socio-economic Status populations, as well as barriers to healthcare that may delay treatment after diagnosis. Future studies on Head and Neck cancer management should control for the disparity in Socio-economic Status. More importantly, future education efforts on Head and Neck cancer risk and management should target lower Socio-economic Status patients to improve overall outcome of this debilitating cancer.

While tobacco and alcohol use are primary risk factors for all Head and Neck cancers, our results indicates that there was no survival difference between the patients who were smoking and drinking alcohol and those who were not. Although a study done in (41) examining smoking and second primary tumour prevention found out that smoking pre and post diagnosis increases the risk of dying during the follow up period. Also, smoking and drinking pre diagnosis has previously been linked with poorer survival in patients with Head and Neck cancer, (42). But the study had no follow up information on alcohol consumption or smoking after cancer diagnosis. In our study we could not get the association, reason could be the information was extracted from files therefore we do not know how much alcohol was taken or how many packets of cigarette were smoked by an individual like it was done in other studies.

The concordance of results regarding smoking and prevention of second primary tumours and prevention of total mortality emphasizes the critical role for tobacco cessation interventions in Head and Neck cancer patients.

4.2 Clinico-Pathologic Factors and Survival of Head and Neck Cancers

In general, a strong correlation existed between stage at diagnosis and relative survival, with cancers that tend to be diagnosed at more localized stages having higher relative survival. In our study participants with early disease i.e. stage one and two, their survival rate was (70.9%) compared to those with stage three and four diseases (57.5%), and their difference was statistically significant, P=0.0001. In a retrospective study of over 3000 mucosal cancers agrees to this, whereby, 5 years survival rates were 91% for stage I disease, 77% for stage II, 61% for stage III, 32% for stage IVa, 25% for stage IVb and less than 4% for stage IVc disease (43).

Majority of the patients were stage 3&4 this is because of the late presentation to the hospital, and if they present early still majority of the medical professionals in Tanzania have lack of knowledge on cancer diseases which leads to the late diagnosis and hence an advanced stage. Moreover, there is also a lack of human and technical resources i.e. few pathologists for cytological or histological diagnosis and pathological staging, lack of CT Scan or MRI imaging which are very important in the staging of the HNC.

The anatomical site of the tumour can also predict survival of HNC (28). In our study, patients with Orocavity cancers which includes cancers of the lower lip, Tonsils, Gingival, Mandible, Retromolar, tongue,soft palate, hard palate, Floor Of the Mouth, lower jaw and Buccal mucosal were found to survive more than patients with pharyngeal cancers (oropharynx, Nasopharynx, and hypopharynx) P=0.025. This has also been shown by (13) whereby Oral cavity cancers have shown to survive more leaded by cancer of the lips 99%. 3 year survival with hypo pharyngeal cancers have the lowest relative survival rates in HNC, reason being Oral cavity cancers can easily being detected, accessible and diagnosed at early stages while hypo pharyngeal cancers are hidden (Anatomically) and not easily accessible therefore only 10% can be diagnosed accidentally at stage I Disease.

4.3 Treatment Modalities and Survival in Head and Neck Cancers

The mainstays of treatment for early stage disease are either radiotherapy or surgery. Advanced diseases are treated either by surgery with postoperative radiotherapy or by definitive radiotherapy, with surgery in reserve for salvage if necessary (10).

In our retrospective study done at ORCI surgery was done to very few patients 25/200 in which the majority were hypopharyngeal and laryngeal cancers. Tracheostomy was the commonest Palliative surgical procedure done, this is because advanced stages of these diseases can lead to tracheal obstruction hence failure to breath. Tracheotomy was given to relieve the symptoms from the obstruction. Other surgeries were performed on the Oral cavity, nasal and paranasal sinuses cancers involving debulking of the tumour mass. No curative surgery was performed. There was no survival advantage between those having palliative surgery and those who did not. This agrees with the study (44) whereby the two groups of patients with imminent airway obstruction had their airways managed either by Tracheostomy or emergency Laryngectomy. There was no survival advantage between the two groups.

Also study (33) insisted that, appropriate surgical procedures should be considered for palliation of a particular sysmptom e.g. tracheostomy, laser debulking, embolisation which have a role in managing specific problems like airway obstruction, debridement of fungating malodorous tumours, haemorrhage, dysphagia and pain.

Combination of chemotherapy and radiation therapy was given to 73 patients, while 3 patients received chemotherapy only. Majority of the patients with Oropharyngeal and Nasopharyngeal cancers received combination therapy with cisplatin 75% and 64.7% respectively. There was no survival benefit to the study participants who received concurrent chemoradiation. Our results do not agree with other studies done, whereby in recent years randomised trials and meta-analysis have confirmed the survival benefit of adding chemotherapy to radiotherapy in a number of different settings, cisplatin based regimens have been identified as the most active and are now standard treatment of choices, which has shown survival benefit at 5 years by 11% compared to other drugs (40), also to locally advanced diseases it improves survival with benefit of 5% at 2 and 5 years (40). To add on this, Bourhis et al showed that among 87 trials, the use of chemotherapy was associated with a survival advantage of 5% at 5 years (45). This

benefit was confined mainly to the use of concurrent Chemotherapy and Radiotherapy which was shown to give 8% survival advantage at 5 years.

The difference of the results between our study and previous ones could be due to mode of delivering of the cisplatin and dose prescribed. In our study participants received cisplatin 50mgs/m^2 or 100mgs/m^2 weekly for 6 cycles with Radiotherapy. While in other studies, cisplatin was given concurrent with Radiotherapy 100mgs/m^2 3 weekly for 3 cycles (46).

In our study done at ORCI, majority of the patients received radiotherapy alone 121(60.5%), which is usually given in single daily fractions of 1.8 – 2Gy for 5 days per week. There was no survival difference in patients who received radiotherapy alone, but the difference was seen on the amount of the total dose of the radiotherapy prescribed, whereby those who received a total dose of >40Gy seems to survive longer than those received a total dose of <40Gy (p=0.001). Majority of the patients who received a total dose of <40Gy were because of the advancement of the disease hence being given Palliative Radiotherapy; Patients with old age that could not tolerate higher doses of Radiotherapy, also due to limitation of the tolerances doses of normal organs at risk like spinal cord in which the dose should not exceed 45Gy on a 2D treatment planning which we are using at ORCI.

This agrees with (34) that the dose of radiation that can be delivered to a tumour is limited by the tolerance of the surrounding normal tissues which are unavoidably irradiated during treatment. Radiotherapy can be delivered with curative intent for the purpose of improving local control following surgery i.e. Adjuvant Radiotherapy improves local control following surgery i.e. adjuvant radiotherapy or to provide symptomatic relief only (Palliative Radiotherapy). A study done (38) also agrees with our results that adjuvant radiotherapy improves local control of the disease free and overall survival at 5 years. Post surgery Radiotherapy should be conventionally fractioned and not less than 54 – 60Gy in 27 – 30 fractions and nodes at risk with a boost to 66Gy in 33 fractions over 6.5 weeks to areas of high risk.

4.4 Overall Survival

The overall survival in this study done at ORCI was 59% with median survival of 6 months, this was not much difference from what was found in (13), that 3year and 5year relative survival rate was 64% and 57%respectively. In other studies done in Europe and America for all patients with head and neck cancers, overall 5 year relative survival rate was 57% while in India it is about 40.8% (14). Poor survival rates are because of the outcome of late cancer treatment when it is in its fourth stage or last stage, tumour site, not receiving proper treatment, smoking and consumption of alcohol in excess for over a long period of time, poverty, age and gender.

4 STUDY LIMITATIONS

- ✓ The fact that this was a retrospective study done at the referral hospital, might not be a true representative of the population
- ✓ Due to the retrospective nature of the study the data collection was from the files, and most of the factors needed for analysis were not recorded hence difficult to assess these factors.
- ✓ There was no proper data recording on the files, which lead to a lot of missed information.

6.0 CONCLUSIONS

This study showed that, the Overall survival of Head and Neck cancers was 59% with the Median survival of 6 months. It was supported by the facts that clinic pathologic and treatment factors affects the survival of the patients with Head and Neck cancers.

The results of this study strengthen the recommendations of doing proper data recording, importance of adding advanced radiological imaging like CT scan while doing baseline staging tests. Most of the patients had locally advanced HNC disease on arrival at ORCI hence high chances of poor local control of the disease and survival especially when given Low radiation therapy doses.

6.1 RECOMMENDATIONS

- More study involving large sample size
- A prospective study which will catch up all the factors that have been documented to affect survival of HNC patients
- Proper record keeping which makes possible for Retrospective studies to be done
- Use of advanced Radiological imaging e.g. CT scan for staging of Head and Neck cancers
- Ministry of Health and Social Welfare should ensure that facilities for treatment of Head and Neck cancers i.e. use of 3D treatment planning systems are put in place.
- Early diagnosis and treatment of HNC improves survival
- Higher radiotherapy doses should be prescribed even in Palliative cases for better tumour control and survival

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APPENDICES

APPENDIX i Staging of Head and Neck Cancer

T categories for oral cavity, oropharyngeal and hypopharyngeal cancers from UICC:TNM Classification of Malignant Tumours4

Stage

TX Primary tumour cannot be assessed

T0 No evidence of primary tumour

Tis Carcinoma in situ

Oral cavity

T1 ≤2 cm

T2 >2 cm to 4 cm

T3 >4 cm

T4a Through cortical bone, deep/extrinsic muscle of tongue, maxillary sinus, skin

T4b Masticator space, pterygoid plates, skull base, internal carotid artery

Oropharynx

T1 ≤2 cm

T2 >2 cm to 4 cm

T3 >4 cm

T4a Larynx, deep/extrinsic muscle of tongue, medial pterygoid, hard palate, mandible

T4b Lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, skull base, carotid artery

Hypopharynx

T1 ≤2 cm and limited to one subsite

T2 >2 cm to 4 cm or more than one subsite

T3 >4 cm or with hemilarynx fixation

T4a Thyroid/cricoid cartilage, hyoid bone, thyroid gland, oesophagus, central compartment soft tissue

T4b Prevertebral fascia, carotid artery, mediastinal structures

N categories for oral cavity, oropharyngeal, hypopharyngeal and laryngeal and cancers from UICC:TNM Classification of Malignant Tumours

NX Regional lymph nodes cannot be assessed

N0 No regional lymph nodes metastasis

N1 Ipsilateral single ≤3 cm

N2 a. Ipsilateral single > 3 to 6 cm

b. Ipsilateral multiple ≤6 cm

c. Bilateral, contralateral≤6 cm

N3 >6 cm

M categories for oral cavity, oropharyngeal, hypopharyngeal and laryngeal and cancers from UICC:TNM Classification of Malignant Tumours4

MX Distant metastasis cannot be assessed

M0 No distant metastasis

M1 Distant metastasis

Stage grouping for oral cavity, oropharyngeal, hypopharyngeal and laryngeal and cancers from UICC:TNM Classification of Malignant Tumours

Stage 0 Tis N0 M0

Stage I T1 N0 M0

Stage II T2 N0 M0

Stage III T1, T2 N1 M0

T3 N0, N1 M0

Stage IVA T1, T2, T3 N2 M0

T4a N0, N1, N2 M0

Stage IVB T4b Any N M0

Any T N3 M0

Stage IVC Any T Any N M1

APPENDIX ii QUESTIONNAIRE

1:0 DERMOGRAPHIC DATA

1:1 HOSPITAL FILE NUMBER: .....

1:2 AGE.....

1:3 GENDER: MALE:..... FEMALE:.....

1:4 MARITAL STATUS: SINGLE:..... MARRIED:..... DIVORCED:..... WIDOWED:.....

1:5 EDUCATION LEVEL:

PRIMARY:..... SECONDARY:..... UNIVERSITY:..... OTHERS:.....

1:6 PLACE OF RESIDENCE:.....

1:7 TOBACCO USE: YES..... NO.....

1:8 ALCHOHOL USE: YES..... NO.....

2:0 DISEASE CHARACTERISTICS;

2:1 HISTOLOGY TYPE:.....

2:2 STAGE: TNM Staging.....

2:3 ANATOMICAL SITE:.....

2:4 COMORBIDITIES

Hb level……., HIV STATUS……

3:0 TREATMENTS

3:1 SURGERY; YES:..... NO:.....

3:2 GIVEN COMBINATION THERAPY (chemoradiation); YES;..... NO;.....

TREATMENT INTENT;

-Currative Intent:.....

-Palliative Intent:.....

3:4 RADIATION THERAPIES

-TECHNIQUE:.....

-DAILY DOSE:.....

-TOTAL DOSE:.....

3:5 CHEMOTHERAPY

-Combination:.....

-Single Drug:.....

DRUGS PRESCRIBED

Name of Drug	Dose prescribed	No. Cycles.
.....	.....	.....

4:0 STATUS AT CLOSING DATE

ALIVE…….. DEAD……..

RECCURENCE……

THE END