



ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF QUALITY OF LIFE AMONG ADULT
GASTROINTESTINAL CANCER PATIENTS IN TIKUR ANBESSA
SPECIALIZED HOSPITAL, ETHIOPIA

BY

HELEN GEBRELIBANOS GEBREGIORGIS (BSc.)

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF
ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN
EPIDEMIOLOGY AND BIOSTATISTICS

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ABBREVIATIONS AND ACRONYMS

AAU	Addis Ababa University
CF	Cognitive Function
CR	Colorectal
EF	Emotional Function
EORTC QLQ C-30 V 3.0	European organization for research and treatment of cancer quality of life questionnaire core 30 version 3.0
FMOH	Federal Ministry of Health
GI	Gastrointestinal
H. Pylori	Helico pylori
HBV	Hepatitis B Virus
HCC	Hepatoma Cellular Carcinoma
HCV	Hepatitis C Virus
HRQOL	Health-related quality of life
IQR	Inter-quartile range
NCD	Non-communicable diseases
PF	Physical function
QOL	Quality of life / Global Health Status
QLQ CR	Quality of life questioner for colorectal cancer
QLQ HCC	Quality of Life questioner for hepatocellular cancer
QLQ OES	Quality of Life questioner for esophageal cancer
QLQ STO	Quality of life questioner for gastric cancer
RF	Role function
RS	Raw Score
SD	Standard deviation
SF	Social function

ABSTRACT

Background- Non-communicable diseases are now accountable for the majority of global deaths and cancer is anticipated to rank as the leading cause of death and one of the threats to escalating life expectancy in every country of the world in the 21st century. Cancer is recognized to reduce the quality of life, thus has a negative impact not only on physiological symptoms but also on the psychological functioning of the individual. The objective of the study was to assess the quality of life among adult Gastro-Intestinal Cancer patients in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2019.

Method- Institution based cross-sectional study was done in Tikur Anbessa specialized hospital from February to April 2019 on adult Gastrointestinal (GI) cancer patients. All consecutive GI cancer patients were included, a total of 250 participants. The validated Amharic version questionnaire of the European organization for research and treatment of cancer core 30 and disease-specific questionnaire for each of GI cancers was used. The dependent variable Global health status (QOL) was dichotomized with a cutoff point above and below 50 for interpretation. Association between each variable with QOL was examined using binary logistic regression. Variables with p-value of <0.2 on bi-variate were candidate for multivariable logistic regression analysis.

Result- A total of 250 study participants were in the study period, among them 159 were colorectal cancer, 40 esophageal cancer, 39 gastric cancer, and 12 hepatocellular cancer. The response rate was 95.7%. The mean $\pm$ SD score of QOL of CRC, esophageal cancer, gastric cancer and HCC was 52.8 ± 21.02 , 37.2 ± 17.29 , 47.4 ± 20.9 and 30.5 ± 18.57 respectively. Sex (AOR=6.3 95%CI=1.83-22.12), occupational status (AOR=0.06 95%CI=0.01-0.3), clinical-stage (AOR=4.98 95%CI=1.51-16.4), physical functioning (AOR=1.04 95% CI=1.01-1.06), social functioning (AOR=1.02 95%CI=1.01-1.06), financial difficulty (AOR=0.975 95%CI=0.959-0.99), stoma presence (AOR=7.98 95%CI=1.51-16.45), blood and mucus in stool (AOR=0.93 95%CI=0.90-0.96) had an association with QOL for CRC patients.

Conclusion and recommendation- Quality of life of Gastrointestinal cancer patients were very poor. The focus should have to be given for their respective symptom scales by responsible stakeholders. **Key Words-** Gastro-intestinal cancer, Quality of life, TASH, Ethiopia

1. INTRODUCTION

1.1. Background

Quality of life (QOL) is individuals' insight of their position in life in the setting of the culture and value systems in which they live and concerning their goals, expectations, standards, and concerns. QOL is a multi-dimensional concept that was developed and is extensively used as an outcome measure for cancer patients(1).

The majority of global deaths nowadays are due to non-communicable diseases (NCD) (2). Among NCDs cancer is expected to be the leading cause of death and make it hard for human beings in the 21st century to increase their life expectancy. Cancer is the first or second cause of death before the age of 70 in very high Human development index (HDI) countries and third or fourth in medium HDI countries and fifth up to tenth in low HDI countries (3).

The gastrointestinal tract is an organ system that supplies the human body with water, electrolytes and nutrients movement of food through alimentary tract, secretion of digestive juices and digestion of food, absorption of water, essential electrolytes and nutrients, by circulating blood through gastrointestinal organs to carry away absorbed substance(4).GI cancer includes esophageal cancer, gastric cancer, hepatobiliary cancer, pancreatic cancer, and colorectal cancer(5).

In the context of a bio-psychosocial medical model, patients' QoL is evolving into a key issue in modern cancer research and clinical practice. QoL outcomes provide information about patients' subjective feelings of physical and psychosocial health as well as indications of prognosis (6, 7). QoL measures with survival and mortality data reflect curative effects on malignancies and rehabilitation, inform treatment choices, and improve doctor-patient communication (8).

QoL is a flourishing area of research in cancer patients related to the effect of disease and its treatment on patients' outcomes. There are different studies done in colorectal, esophageal, HCC from clinical trials up to descriptive studies(9, 10). The assessment of the quality of life is done by using standardized Questioner - European organization for research and treatment of cancer quality of life questionnaire core 30 (EORTC QLQ C-30), it contains nine multi-item; which has five

functional scales (physical, role, cognitive, emotional, social functioning) and three symptom scale (fatigue, pain, nausea) and six single-item scales (dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties components (11).

1.2. Statement of the problem

Among the Gastro-intestinal cancers; worldwide colorectal cancer (CRC) is the third most common cancer in men (746,000 cases, 10.0% of the total) and the second in women (614,000 cases, 9.2% of the total). Stomach cancer (cardia and non-cardia gastric cancer united) remains important cancer worldwide and is responsible for over 1,000,000 new cases in 2018 and an estimated 783,000 deaths (same as to 1 in every 12 deaths globally), making it the fifth most frequently diagnosed cancer and the third leading cause of cancer death. Liver cancer is expected to be the sixth most commonly diagnosed cancer and the fourth leading cause of cancer death worldwide in 2018, with about 841,000 new cases and 782,000 deaths annually. Esophageal cancer ranks seventh in terms of incidence (572,000 new cases) and sixth in mortality (509,000 deaths), it shows that it will be responsible for an estimated 1 in every 20 cancer deaths in 2018(3). Low survival rate and rapid progression are the main features of these cancers (12, 13).

Worldwide in the past two decades (1990's and 2000's), cancer has been the peak cause of death. Cancer is rising as a frightening challenge in low-income countries that have limited logistics to protect the health of citizens. Around 42% of all NCD deaths globally happened premature death; 48% of NCD deaths in low and middle-income countries and 28% in high-income countries were in individuals aged under 70 years (14).

In developing countries, the burden of cancer overlaps with the magnitude of infectious diseases including HIV/AIDS, tuberculosis, hepatitis virus, and human papillomavirus which can contribute to the pathogenesis of cancer. Also, Africa's population life expectancy and experiencing western lifestyle (drinking, smoking, obesity, physical inactivity, and others) is increasing had also its role in the burden of cancer. Inadequacy of early detection materials and not getting the treatment would make the situation in these nations worse (15, 16).

Even though there is an increase in the burden of cancer it doesn't get enough attention from the responsible sectors mainly because of a limited resource, infectious disease burden and general

lack of awareness by policymakers, society and the health sector about the current and future problem that will happen (15).

In Ethiopia, cancer belongs to the second most common NCD disease only next to cardiovascular disorders. FMOH (Federal Ministry of Health Ethiopia) estimated that there could be more than 150,000 cancer cases in Ethiopia each year though available data was limited. A report from IARC estimated the number of cancer cases in Ethiopia in 2012 was 60,749. From the report, digestive organ cancers were leading cancer in males (17).

Addis Ababa cancer registry had registered a total number of 8449 cancer cases in Addis Ababa city from 2012-2015. Females account for 67% of the cases, breast cancer was the leading followed by cervical and colorectal cancer. In men, colorectal cancer was the leading cancer site. Comprehensive cancer registration and population-based measurement of cancer burden are yet to need to be done in Ethiopia (18).

Intestinal ostomies are intended to temporarily or permanently avert the fecal stream to an opening of the abdominal wall(stoma); they commonly incorporate the ileum or colon. There is a bad relationship seen between treatment side effects and patients' social, private life due to permanent or temporary stoma examples in colorectal cancer patients. The type of treatment they experience is responsible for emotional disturbance from depression up to suicidal thought, a socio-economic problem that has a direct effect on treatment outcome, survival, and QoL of patients (19, 20).

GI cancer patients are suffering from cancer itself and treatment-related side effects. The most common ones are Chemotherapy-induced peripheral neuropathy (CIPN) and cachexia (16) (Cancer cachexia is also characterized by mass wasting of adipose and muscle, asthenia, fatigue, hypothalamic and appetite control modification, intestinal mal-absorption, nausea, profound endocrine alteration, and metabolic chaos are frequently reported in patients with cancer which have a direct effect on their QoL. GI cancer patients experience physical and functional impairment even before the start of treatment. CIPN results in postural impairment and balance disorder (16). Many studies show a negative impact of neuropathy on daily activities and QOL in patients with cancer treated with chemotherapy (21).

GI cancer patients need to make a nutritional adjustment because of the different kinds of treatment and site of the tumor growth. Those who have Poor MNA score is related to malnutrition as

described by some studies (22), it was associated with increased mortality risk and reduction of expected palliative chemotherapy cycles and tolerance to chemotherapy. In the end, it results in a low survival rate and poor QoL (23).

Studies focus on the pathological process rather than on how patients perceive symptoms, a study was done on patients undergoing radiotherapy demonstrated that it is also fundamental to know how patients perceive symptom (24). Because of this, it is not only what the symptoms would help to develop effective symptom management but also the perception matters. Importantly, all GI symptoms significantly correlate with various QOL domain values in long-term survivors.

Few studies assess the QoL of cancer patients in Africa including Ethiopia. Evaluating the different dimensions of QoL of cancer patients has a remarkable impact on cancer care. This study will evaluate the QoL of Gastro-intestinal cancer patients and assess whether such impairments disrupt their daily life.

Gastro-Intestinal Cancer is becoming a serious health and social problem both in developing and developed countries and the burden of this disease is increasing. Nowadays the survival of cancer patients is increasing due to advances in medicine, increasing health professionals, and others. Cancer treatment has been related mostly to survival even though there is a debate about the objective of cancer treatment.

The issues of QoL had been put into consideration from the late 1960s and 1970s in the USA; actually, quality of life was measured as an end-point in only 4% of cancer trials. But after many studies that show the importance of measuring QoL, public policies started to give attention to QoL for promoting a better life for patients. There are many different kinds of QoL researches in developed countries related to GI cancer but there are few studies in SSA. In Ethiopia, there are quality of life studies but are done related to breast, gynecological cancer (25-27). This study will be done for GI cancer patients which are different in anatomical site and type of surgery done from breast and gynecological cancer due to stoma, feeding tube used for defecation, or to eat solidified liquated foods respectively. So, it will try to fill the gap in knowledge related to GI cancer patients and will assess the QoL GI cancer patients in TASH.

1.4. Significance of the study

The finding of this study is expected to improve cancer care programs about the quality of life of patients and provide for health care professionals and policymakers. It is a foundation for interventions to improve QOL among GI cancer patients and help to include QOL assessment in the cancer treatment protocol and also to advise for resource allocation based on identified problems. Besides it is will be baseline data for future studies that use a better study design.

2. LITERATURE REVIEW

2.1. Cancer burden

Cancer appears as a public health issue in Africa. One-third of cancer deaths in Africa are potentially preventable -many are caused by chronic infection and tobacco use (28).

The overall case fatality from cancer (ratio of mortality to incidence) in high-income countries is 46% and in low-income countries estimated to be 75% (29). More than 80% of cases and deaths from cancer occur in developing and less developed countries (30, 31). Only 5% of patients are estimated to receive chemotherapy (32). Cancer mortality in sub-Saharan Africa is high because of poor infrastructure, insufficient numbers of health-care workers, and advanced stage at presentation, reliance on traditional therapies, few treatment choices, and poor compliance. From 52 African countries, only 23 radiotherapy machines are found in South Africa and Egypt, which account for roughly 60% of all radiation therapy resources in the continent. Ethiopia as a country needs to have around 74–85 machines (33).

With an estimated 4.8 million new cases and 3.4 million deaths worldwide in 2018, cancers of the gastrointestinal (GI) tract represent over 26% of the global cancer incidence and over one-third (35%) of all cancer-related deaths(3).

Squamous cell carcinoma (SCC) and adenocarcinoma are a serious malignancy in esophageal cancer due to their bad prognosis and fatal outcome in most of the cases (34, 35). The most common one is SCC is the main histologic type of esophageal cancer worldwide and also in blacks (African) than white (36).

Geographically scattered distribution is a distinctive feature of esophageal cancer (37). Gastric Cancer is two-fold higher in men than in women (3). Worldwide up to 90% of duodenal ulcers and up to 70% of gastric ulcers are associated with Helico Pylori (H pylori) infection (38). H.pylorus was classified as a class I Carcinogen by, the International Agency for Research into Cancer in 1994 (39). Peptic ulcer disease is more likely to be accounted for western countries, while gastric carcinoma is a more common disease-associated with developing countries (40).

GLOBACON 2018 report about liver cancer showed that both the incidence and mortality are two-three times higher among men in most of the regions in the world because of this liver cancer ranks fifth in terms of global cases and second in terms of deaths for males (3). In women, it is the seventh most frequently diagnosed cancer and the sixth principal cause of cancer death. Every half-minute, one person died in the world from liver cancer, which could be prevented. Over 80% of Hepatoma cellular carcinoma(HCC) occurs in sub-Saharan Africa, Southeast Asia, and East Asia (41). At least 80% of all HCC is associated with chronic viral infection with the hepatitis B virus (HBV) or hepatitis C virus (HCV) (42).

2.2. Risk factors for Gastro-Intestinal Cancers

Tobacco smoking and alcohol drinking are the main risk factors for esophageal cancer collaboratively. In certain areas, insufficient use of micronutrients and dietary carcinogens could also be important risk factors. A common etiological factor for both esophageal cancer and some other cancers are low levels of intake of fruits and vegetables (43). It is highest in the Asian belt between Turkey and China but the incidence of other Asian countries is now rising. It is also relatively common in Africa (44-46). Factors, which may cause HCC or act as additional in producing cirrhosis include consumption of foodstuffs contaminated by the fungal toxin aflatoxin B1, alcohol intake, diabetes/obesity/nonalcoholic steatohepatitis and rare metabolic disorders, including tyrosinemia, hemochromatosis, alpha-1 anti-trypsin deficiency, and several porphyria's. There is wide geographical variation in CRC incidence and mortality, but similar patterns both in men and women. Worldwide, age-standardized incidence rates (vary 10-fold in both sexes (47). In many regions, the lifetime risk of developing CR cancer is around 5%. About 45% of persons diagnosed with CR cancer die as a result of the disease, despite treatment (29). Treatment modalities have largely enhanced over the past decade and better disease outcomes and extended survival in patients with advanced and metastatic disease(48).

2.3. Patients presentation

Patients with CR cancer in SSA present at young ages, often when aged 40–60 years. The median age at diagnosis reported in a study from South Africa was 59 years. Patients came with late symptoms because screening is rare, but in the USA the median age is 71 years (49).

In one study from the Gambia, 16% of patients had tumor sizes and fulfill Milan criteria, which suggests surgery as a possible treatment, but 50% of these patients had substantial cirrhosis, not eligible for surgery (50).

Patients with gastric cancer in SSA often present with the disease before age 55 years(51). In SSA patients present with gastric outlet obstruction, hematemesis, or perforation. The proportion of patients who undergo resection is variable, ranging from 13% to 67% (52, 53).

2.4. Global health status

A study conducted in Turkey on 335 GI cancer patients showed the mean score was 58.03 ± 24.04 . There was no significant difference in mean quality of life scores between the genders(54).

A study conducted in 154 Chinese rectal cancer patients showed global health status had significant the difference in different treatment modalities patients took(55).

A prospective cohort study conducted in South Korea on long term survivors of gastric cancer patients with gastrectomy find out there was no statically significant change in the 5-year postoperatively. There mean score was 73.5 ± 23.5 (56).

A prospective cohort study conducted in Morocco on 294 patients presented with early colorectal cancer showed at the beginning of the study, the global health status was the most affected functional scale(57).

2.5. Factors associated with Gastro-Intestinal cancer patients' Quality of Life

2.5.1. Socio-demographic characteristic

A study conducted in Iran which asses the QoL of colorectal cancer found no significant relationship between the average QoL score and gender. The only significant variable was age. The mean age was (60.31 ± 15.71) years). The average QoL score was 77.37 ± 8.7 in women and 76.64 ± 8.7 in men. The average QoL score was 77.28 ± 8.86 for colon cancer and 76.5 ± 8.47 for rectal cancer, which was not statistically significant (58).

A cross-sectional study was done on Quality of Life of Patients operated on for Low Rectal Cancer on 132. There was no significant difference between the stoma and non-stoma patients for many

quality of life scores. Although, stoma patients criticized of diminished body image, and this was especially true for married and less educated patients at subgroup analysis. Stoma patients experienced greater financial worries, whereas none stoma patients had greater gastrointestinal concerns (59).

2.5.2. Clinical characteristics and QoL

A study conducted in Germany on 147 patients with cancer-free survival of at least 12 months after esophageal resection Global health status, functional scales, and symptom scores were significantly reduced compared with healthy reference populations. There was no significant effect of tumor histology, neoadjuvant treatment, minimally invasive approach, or duration of follow-up on HRQL. However, more than half of the patients reported there HRQL similar to that of the healthy reference population (60).

A study conducted on CRC in Izmir Turkey on 222 patients, 142 males (64%), and 80 females (36%) showed that 36.9% and 28.8% of the patients had local and locally advanced disease stage while 32.2% had advanced-stage disease. The mean QoL score was moderate (62.81 ± 27.0). The most common complaints were fatigue, economic difficulties, and constipation. Gender, education level, and disease stage were associated with QoL (61).

A systematic review of QoL in CRC patients has been reported to be associated with several factors. The reported factors include socio-demographic features (gender, age, income, educational level, and social network), variables related to treatment, and other factors, like the presence of comorbidities (62).

A study conducted on CRC patients has found that they had more co morbidities and poorer physical and mental QoL compared with individuals without cancer, and patients who had two or more comorbidities or those who had a recent diagnosis were found to have poorer QoL (63).

A study conducted in Iran which assesses the QoL of colorectal cancer found no significant relationship between the average QoL score and stage of cancer (58).

A study done to assess QOL after palliative stenting in patients with inoperable esophageal cancer patients on thirty-three patients with dysphagia underwent SEMS (self-expanding metal stent)

insertion showed that dysphagia improved significantly after stenting, and this improvement persisted until 2 months. The global health status and all functional scores improved significantly after stenting from baseline until 2 months. Except pain, there was significant improvement in deglutition, eating, and other symptom scales following stenting(64).

2.5.3. Functional scales, symptom scales and QOL

A prospective cohort study conducted in Morocco on 294 patients presented with early colorectal cancer showed at the beginning of the study: For symptoms: fatigue and financial difficulties scores were the most elevated ones. Emotional and social functions were significantly worse in colon cancer. Most symptoms were more present in rectal cancer. Anorexia was altogether increasing significantly among colorectal female patients. For patients more than 70 years of age, the difference was statistically significant for the physical function item which was lower. Overall, Functional dimension scores were improved after chemotherapy. The symptoms scores did not differ significantly for patients treated by radiotherapy, between inclusion and at one year (57).

EORTC QLQ-C30 physical scores were also higher among rectal cancer survivors than in the general Norwegian or German population. Unpredictably, stoma patients reported better social functioning than non-stoma patients, with less anxiety and higher self-esteem. Enduring Pain in the abdomen or pelvis and constipation had the most negative effect on the QoL (65).

A cross-sectional study conducted in china rural adult population aged from 45-69 years on 12,085 study participants showed that 30.62% of the participants reported problems in at least one EQ-5D dimension. Pain/discomfort (25.52%) was the most frequently reported problem followed by anxiety/depression (7.97%), mobility (5.82%), usual activities (2.61%), and self-care (1%) (66).

2.5.4. Conceptual framework of Quality of life of GI cancer patients

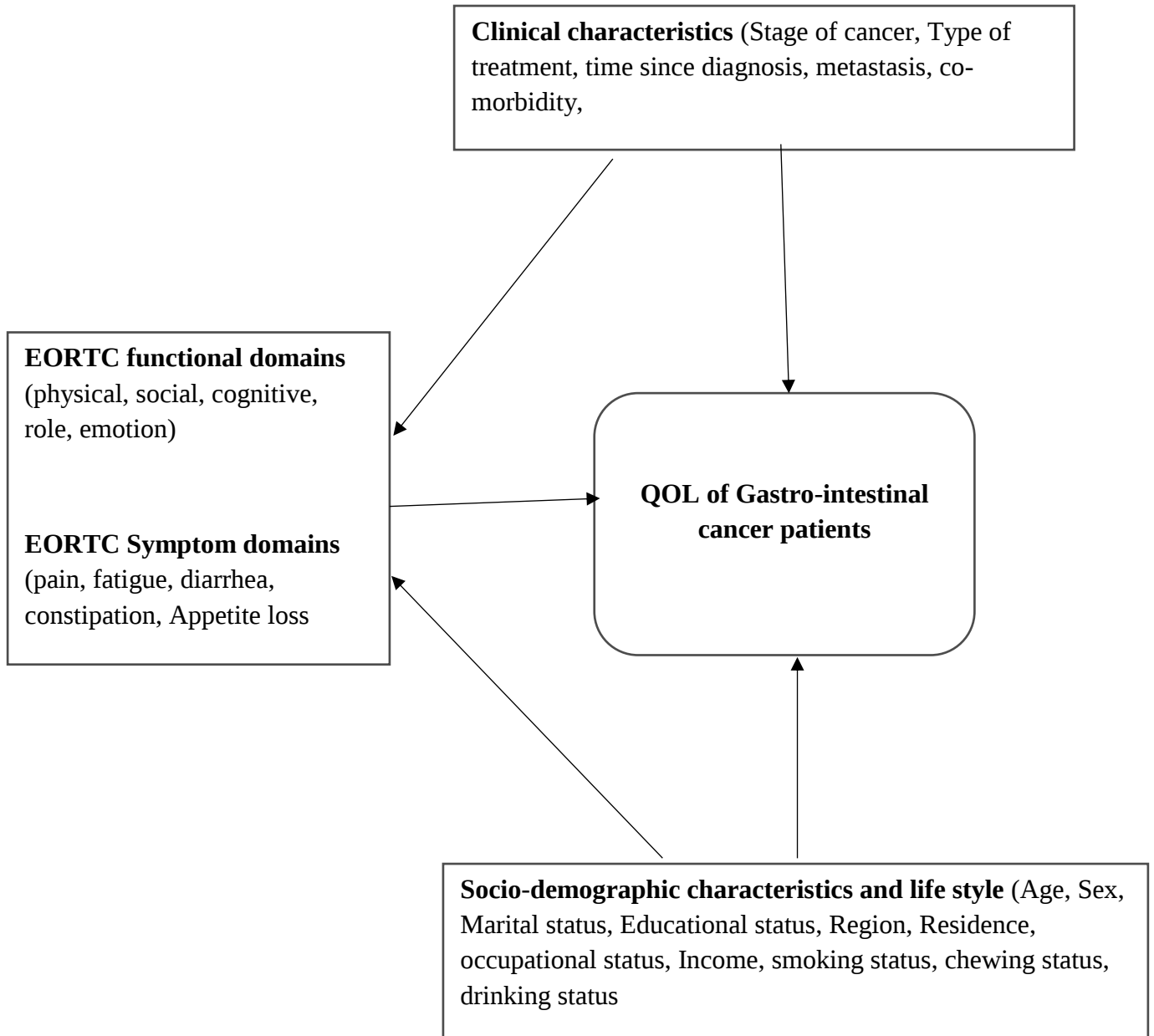


Figure 1: Conceptual framework about the association of Quality of life of GI cancer patients and other important variables of the study, TASH, Addis Ababa, Ethiopia, 2018/2019.

3. OBJECTIVES

3.1. General objective

To assess the quality of life and associated factors in adult Gastrointestinal cancer patients in TASH, Addis Ababa, Ethiopia, 2019.

3.2. Specific Objectives

1. To assess the quality of life in adult GI cancer patients TASH, Addis Ababa
2. To identify factors associated with quality of life of GI cancer patients TASH, Addis Ababa

4. METHODS AND MATERIALS

4.1. Study Area and period

Tikur Anbessa Specialized Hospital is one of the tertiary hospitals in Ethiopia since 1998GC which is located in Lideta sub-city of Addis Ababa. According to the FMOH tertiary hospitals are expected to serve 3.5-5.0 million people. It is also a teaching hospital giving training for under and post-graduate studies medical students, dentists, nurses, pharmacists, laboratory technicians, and others who bear the health problems of the community and the country at large. There are more than 600 beds among them 18 are dedicated to the oncology unit, totally of 627 staff nurses and dedicated oncologists are 27,4 medical oncologists,4 radiotherapists,2 specialized surgical oncologists (67).

The study was carried out from February 12- April 19, 2019, in TASH.

4.2. Study design

A quantitative hospital-based cross-sectional study was carried out.

4.3. Population

4.3.1. Source Population

All Gastro-Intestinal cancer patients in the oncology unit of TASH

4.3.2. Study Population

All Gastrointestinal cancer patients who fulfill the inclusion criteria

4.3.3. Study Unit

Gastrointestinal cancer patient

4.4. Eligibility criteria

4.4.1. Inclusion Criteria

- Patients with pathological diagnosis of either of the Gastro-intestinal cancers
- Age above 18 years old

- Primary diagnosis (no previous history of other cancer)

4.4.2. Exclusion criteria

- Either of the Gastro-intestinal cancer patients who are severely ill (severe pain)
- cognitively impaired
- newly diagnosed (less than 3 months and didn't get any kind of treatment)

4.5. Sample size determination and sampling technique

All consecutive GI cancer patients who fulfill the inclusion characteristics were included during the study period. Therefore, 250 GI cancer patients who visited the oncology unit for treatment or check-up in TASH.

4.6. Data collection tools

Scales prepared by Quality of life Group, a division of European Organization for Research and Treatment of Cancer, are a standard instrument used in malignancies. The validated Amharic version of EORTC QLQ C-30 (Version 3.0) was used in conjunction with respective disease-specific questioners to measure the quality of life among GI cancer patients. The disease-specific questioners were supplementary questionnaires and always used together with EORTC QLQ C-30. Face to face interview was done. It also contained basic socio-demographic questions, lifestyle, and clinical characteristics.

EORTC QLQ C-30 contains a multi-item scale and single-item scale measure. It includes 5 functional scales, three symptom scales, a global health status/QoL scale, and six single items. Every one of the multi-item scales comprises a diverse set of items – no item is repeated in other scales. Besides, the QLQ CR-29 includes 4 multi-item scales and 19 single-items assessing a variety of symptoms and common among colorectal cancer patients. The QLQ STO-22 is also supplementary, contains 5 symptom-item scales that assess dysphagia, eating, pain, reflux, anxiety, and 4 single items about dry mouth, taste, body image, hair loss in gastric cancer patients. The OES-18 is a supplementary questioner incorporates four multi-item scales that assess dysphagia, eating, reflux, pain, and six single-item scales in esophageal cancer patients. The HCC-18 supplementary questioner contains six multi-item scales to assess fatigue, pain, jaundice, nutrition,

body image, fever, and two single items assess abdominal swelling, sex life (11). Totally 59 questions were used from EORTC and QLQ CR-29 for colorectal cancer patients, 52 items were asked for gastric cancer patients from EORTC and QLQ STO-22, 48 questions were asked for esophageal and HCC patients from EORTC and QLQ OES-18 and EORTC and QLQ HCC-18 respectively. Socio-economic and clinical characteristics were used to assess the quality of life among GI cancer patients.

4.7.Data collection procedure

The translated Amharic version of the EORTC QLQ-CR29, EORTC QLQ OES-18, EORTC QLQ STO-22, EORTC QLQ HCC-18 module was pre-tested in patients with CRC, esophageal, gastric and hepatocellular cancer. During this phase, patients were asked whether they found any of the questions confusing, difficult to answer or understand, upsetting, or offensive. If a patient reported any of the above-mentioned issues, they were requested to suggest an alternative way to phrase the question. Following pre-testing, patients' comments were reviewed by the principal investigator and changed accordingly.

Data were collected by two trained BSc nurses and supervised by an oncology specialist nurse (MSc.) who work in the TASH oncology unit. The training was conducted for two days about the objective of the study, contents of the questioner, informed consent, and confidentiality of the data.

4.8.Data quality control

The validated Amharic version of the questioner (EORTC QLQ C-30) was used done by Ayana BA. The questioner had reliability with Cronbach's alpha α of 0.81(68). The questioners were pretested on 5% of the study participants in TASH before the actual data collection.

The questionnaire after data collection was also checked up by the principal investigator for its clarity, completeness. The collected data were checked and edited for the completeness, coded, entered into Epi data 4.4.2 then exported to SPSS 25.0 for the statistical analysis

Study Variables

4.8.1. Dependent Variables

Quality of life / Global Health Status

4.8.2. Independent variables

Socio-demographic characteristics: age (years), sex, marital status, place of residence, Region, wealth index, educational status, occupational status

wealth index-contained 19 questions about housing conditions, and household characteristics. They were computed and reduced the number of variables by principal component analysis (PCA). It was classified into 5 quintiles.

Clinical characteristic: time since diagnosis, type of treatment (surgical, radiotherapy, chemotherapy) and duration of treatment, stage of cancer, comorbid diseases, metastasis to another site.

Subscales EORTC-Functional domain (Physical function (PF), Emotional function (EF), Social function (SF), Cognitive function (CF), Role function (RF)) and symptom scales (fatigue, pain, insomnia, appetite loss, constipation, diarrhea, financial difficulties)

QLQ CR -Functional domain (Anxiety, Body Image, sexual interest in men and sexual interest in female) and symptom scale (Urinary incontinence, urinary frequency, Dysuria, abdominal pain, Buttock pain, Bloating, Blood and mucus in stool, flatulence)

QLQ OES -Symptom scale (Dysphagia, trouble swallowing saliva, choked when swallowing, eating, dry mouth, trouble with taste, trouble with coughing, trouble talking, pain, reflux)

QLQ HCC-Symptom scale (fatigue, body-image, jaundice, nutrition, pain, fever) and single items abdominal swelling and sex-life.

QLQ STO-Symptom scale (Dysphagia, eating, dry mouth, taste, pain, reflux, hair loss, anxiety, body image)

4.9.Data analysis procedure

4.9.1. Scoring procedure

The general principle in scoring EORTC QLQ C-30, as it is composed of both multi-item scale and single-item measures. These include five functional scales, three symptoms scales, a global health status/QoL scale, and six single items. Each of the multi-item scales includes a different set of the items-no item occurs on more than one scale. All the scales and single-item measures range in score from 0 to 100. A high scale score represents a higher response level. Thus, a high score for a functional scale represents a high/healthy level of functioning, a high score for the global health status / QoL represents a high QoL, but a high score for a symptom scale/item represents a high level of symptomatology/problems (69).

The principle for scoring these scales is the same in all cases:

1. Estimate the average of the items that contribute to the scale; this is the raw score.
2. Use a linear transformation to standardize the raw score, so that scores range from 0 to 100; a higher score represents a higher ("better") level of functioning or a higher ("worse") level of

In practical terms, if items $I_1, I_2, \dots, I_n$ are included in a scale, the procedure is as follows:

Raw score

Calculate the raw score

$$\text{Raw Score} = \text{RS} = (I_1 + I_2 + \dots + I_n)/n$$

Linear transformation

Apply the linear transformation to 0-100 to obtain the score S ,

$$\text{Function scale: } (1 - (\text{RS} - 1) / \text{range}) * 100$$

$$\text{Symptom scale: } ((\text{RS} - 1) / \text{range}) * 100$$

$$\text{Global health status / QoL: } S = ((\text{RS} - 1) / \text{range}) * 100$$

The range is the difference between the maximum possible value of RS and the minimum possible value. The QLQ-C30 has been designed so that all items on any scale take the same range of values. Therefore, the range of RS equals the range of item values. Most items are scored 1 to 4, giving range = 3. The exceptions are the items contributing to the global health status / QoL, which are 7-point questions with range = 6, and the initial yes/no items on the earlier versions of the QLQ-C30 which have range = 1. Scoring manual for QLQ CR-29, QLQOES -18, QLQ STO-22, QLQ HCC-18 is annexed. (

Annex 2).

4.10. Statistical analysis

Global health status (QOL) is the outcome of the study and was dichotomized into poorer quality(affected) and good quality (unaffected) based on a review done Koller (70) as 50 cut-off point. The review stated the cutoff point 50 could show clinical impairment or clinical enhancement while used the EORTC questioner. Independent variables such as functional and symptom scales of general and specific questioner were considered as continuous variables. Forward stepwise logistic regression was done.

Multicollinearity was checked for all variables which enter from bi-variate to multivariable logistic regression. It was checked among the independent variables which were selected for multivariable logistic regression for colorectal, gastric and esophageal cancer patients. For colorectal cancer 21 independent variables were checked, among them there were two variables had interrelation fatigue and pain. But for the multivariable one of the highly interrelated variables was removed (fatigue) (Annex 5).

Variables were checked for collinearity in esophageal cancer patients but there was no multicollinearity detected among the independent variables for $VIF < 5$. There was no interaction among the independent variables (Annex 7).

Some variables were merged for gastric cancer patients for analysis purpose such as: Marital status -single including divorced, widowed, never married together: Educational status- university/college degree and masters and above were combined to university and above category: Occupational status-employed (governmental employee, NGO), self-employee (farmer, merchant) and unemployed (housewife, student, retired) (Table 19).

Multicollinearity was detected in gastric cancer patients functional and symptom scale variables. Between role function, physical function, appetite loss, and also among dysphagia, pain. But pain

and appetite loss were retained for the multivariable regression. Due to the suppressive effect of Time since diagnosis variable, it was not considered for the final model groundwork (Annex 8).

4.11. Operational definition

1. Quality of life – refers to the global health status of the participants that measures patients' perception of the positive and negative aspects associated with their disease and its treatment.
2. Human development index- levels to characterize aspects of the cancer burden according to the level of resource and extent of societal development (3).
3. Physical function- Was confined to bed, needed help dressing, washing, and eating when the score is 0 and able to do strenuous activities when the score is 100 (71).
4. Role functions- is completely unable to work at a job or do household jobs when the score is 0 and able to do work at household and work (71).
5. Emotional functions- felt intense, irritable, depressed, and worried a lot when the score is 0 and don't feel intense, irritable, and do not worry when the score is 100 (71).
6. Social Function- when physical function and medical treatment interfered very much with family life and social activities when the score is 0 and physical function and medical treatment do not interfere with family and social activities when the score is 100 (71).
7. Fatigue-did not feel at all weak or tired and did not need to rest at all when the score is 0 and did feel very weak and tired and needed to rest a lot when the score is 100 (71).
8. Cognitive function- Had a lot of difficulties concentrating and remembering things when the score is 0 and no difficulty of concentrating and remembering things when the score is 100 (71).
9. Nausea and vomiting -Did not feel nauseated and vomited when the score is 0 and feel nauseated and vomited when the score is 100 (71).
10. Pain-did not have pain and pain did not interfere with daily activities when the score is 0 and had a lot of pain; interfere very much with daily activities of the day when the score is 100 (71).
11. GI cancer patients are those who had colorectal cancer, esophageal cancer, gastric cancer and HCC.

4.12. Ethical consideration

Data was collected after Ethical clearance and approval letter was given by the ethical clearance committee of Addis Ababa University (AAU) College of health science, school of public health, ethical review committee to conduct the research. Also, the official letter given after approval was written to the TASH oncology unit. Informed verbal consent was obtained from the study participants after clearly introducing the purpose, the benefits, and risks of the study. Additionally, the participants were assured that no harm will occur to them by not participating in the study. Confidentiality was secured by avoiding writing the identification of the participant's name.

4.13. Dissemination of results

The result of the study will be presented through AAU College of health science, school of public health for the partial fulfillment of the degree of master of public health in epidemiology and biostatistics. And an effort will be made to disseminate the results through publication in international journals, presentations on annual scientific meetings, and a copy of the result will be offered to the TASH oncology unit.

5. RESULT

5.1.Socio-demography and lifestyle of GI cancer patients

The mean (SD) age of the patients were 49(13.16). one hundred thirty-four (53.6%) of the participants were male. Majority of the patients 172 (68.8%) were married, followed by widowed 29(11.6%). Most of the patients 156 (62.4%) were orthodox Christian in religion then 57(22.8%) Muslim faith. one hundred and five (42%) patients came from Addis Ababa, while 72 (28.8%) of the patients came from an Oromia region. The residence area for 178 (71.2%) of the patients were urban and 72(28.8%) rural. Seventy-nine (31.6%) of the patients did not have formal education followed by sixty-seven (26.8%) had primary education and few patients five (2.0%) had diploma and masters. Majority of the patients are farmers 53(21.2%), followed by government workers 42(16.8%) and housewife 38(15.2%). Many of the patients never chew chat 210 (84 %), never smoke (86.8%) and no history of alcohol drinking 124 (49.6%) (Table 1).

Table 1:Socio-demography characteristics of GI cancer patients, TASH 2019.

Variable (N = 250)	Category	Frequency	Percent (%)
Sex	female	116	46.4
	male	134	53.6
Age	49.6±13.12 years		
Religion	Orthodox	156	62.4
	Muslim	57	22.8
	protestant	32	12.8
	other ^a	5	2.0
Region	Tigray	5	2.0
	Oromia	72	28.8
	Amhara	28	11.2
	SNNPR	30	12.0
	Addis Ababa	105	42.0

	Other ^b	10	4.0
Residence	Urban	178	71.2
	Rural	72	28.8
Educational status	no education	79	31.6
	primary education	67	26.8
	Secondary & above	64	25.6
	masters & above	5	2.0
Occupational status	farmer	53	21.2
	Governmental	42	16.8
	Non-governmental	35	14.0
	Housewife	38	15.2
	Unemployed	25	10.0
	merchant	15	6.0
	pension	30	12.0
	Other ^c	12	4.8
Chat chew	used to chew	31	12.4
	still chew	9	3.6
	never chew	210	84.0
Smoking status	used to smoke	29	11.6
	still smokes	4	1.6
	never smoke	217	86.8
Drinking status	Alcohol yes	126	50.4
	no	124	49.6

Key: ^a: catholic, wakefetta ^b: Afar, Dire Dawa, Harari, Benshagul - Gumuz ^c laborer, middle-man, student SNNPR; Southern Nation Nationalities and people's region

5.2.Clinical characteristics of colorectal cancer patients

Among 159 colorectal cancer patients, one hundred thirty-one (82.4%) were diagnosed for the first time, while on twenty-seven (17%) had a recurrence. Median time since diagnosis was 12.5 months. At the time of diagnosis, several patients were in stage two fifty-eight (36.5%) and fifty-seven (35.8%) in stage three. Patients who treated both with Surgery and chemotherapy were eighty-one (50.9%) followed by surgery thirty-two (20.1%). Among the patients, forty-two (26.4%) had comorbidities like DM, HTN, HIV. Distant site metastasis occurred on thirty-eight (23.9%) to the liver (10.7%), lung (8.2%), bone (3.1%), ovary (3.1%) and locally advanced on forty-five (28.3%) of the patients. 57 (35.8%) of the patients had a colostomy bag (Figure 2).

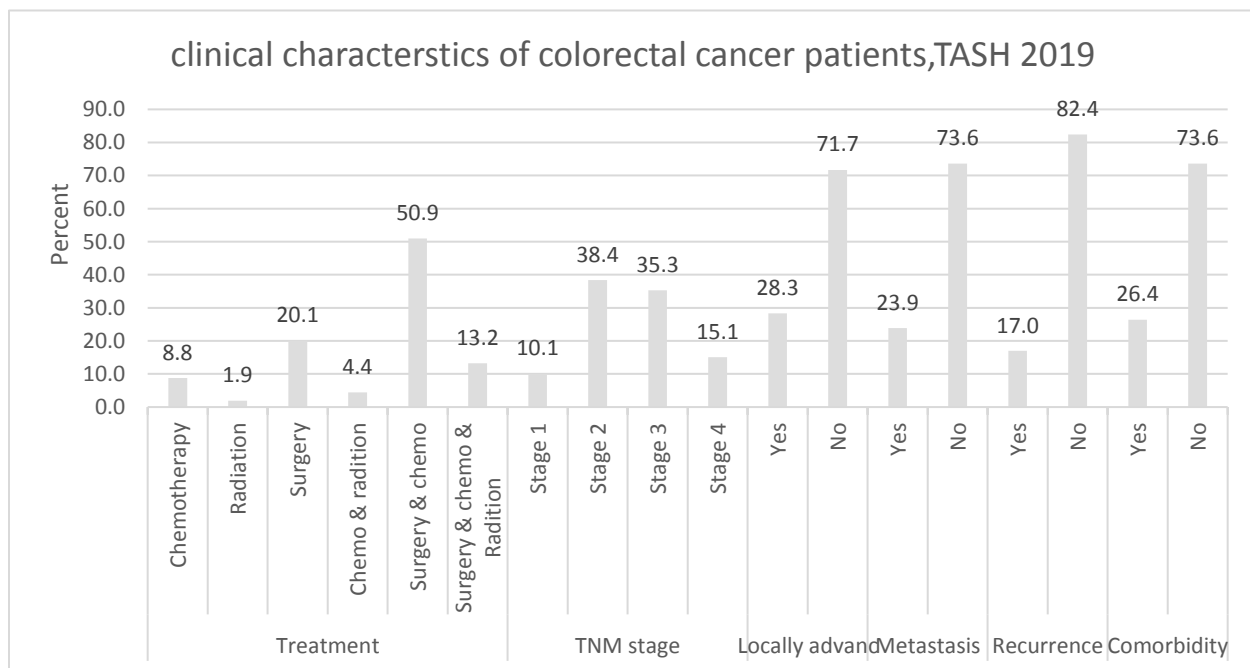


Figure 2:summary of clinical characteristics of colorectal cancer patients, TASH, 2019

5.3.Socio-demography characteristics and lifestyle of Esophageal cancer patients

There were 40 eligible respondents during the study period. The mean age of the study patients was (Mean $\pm$ SD) 54.15 $\pm$ 8in years. Majority of patients did not have formal education 30(75%), their partners also had no formal education 25(62.5%), female 24(60%), farmers 25(62.5%), Christian 21(52.5%), married 31(77.5%) and residents of Oromia region 25(62.5%). Half of the patients (50%) water source was unprotected water.

5.4.Clinical characteristics of Esophageal cancer patients

Among the 40 esophageal cancer patients, thirty-six (90%) were diagnosed for the first time while four (10%) had a recurrence. The median time since diagnosis was 6 months. At the time of diagnosis twenty-two (55.0%), ten (25%) and eight (20%) of the patients were stage 4, stage two, and stage three respectively. Patients who treated with surgery and chemotherapy were fifteen (37.5%) and thirteen (32.5%) respectively. Among the patients, only two (5%) had comorbidity which was HTN. Distant site metastasis occurred on five (12.5%) to the liver (7.5%), lung (5%), and locally advanced on twenty-one (52.5%) of the patients.11 (27.5%) of the patients used a feeding tube (Figure 3).

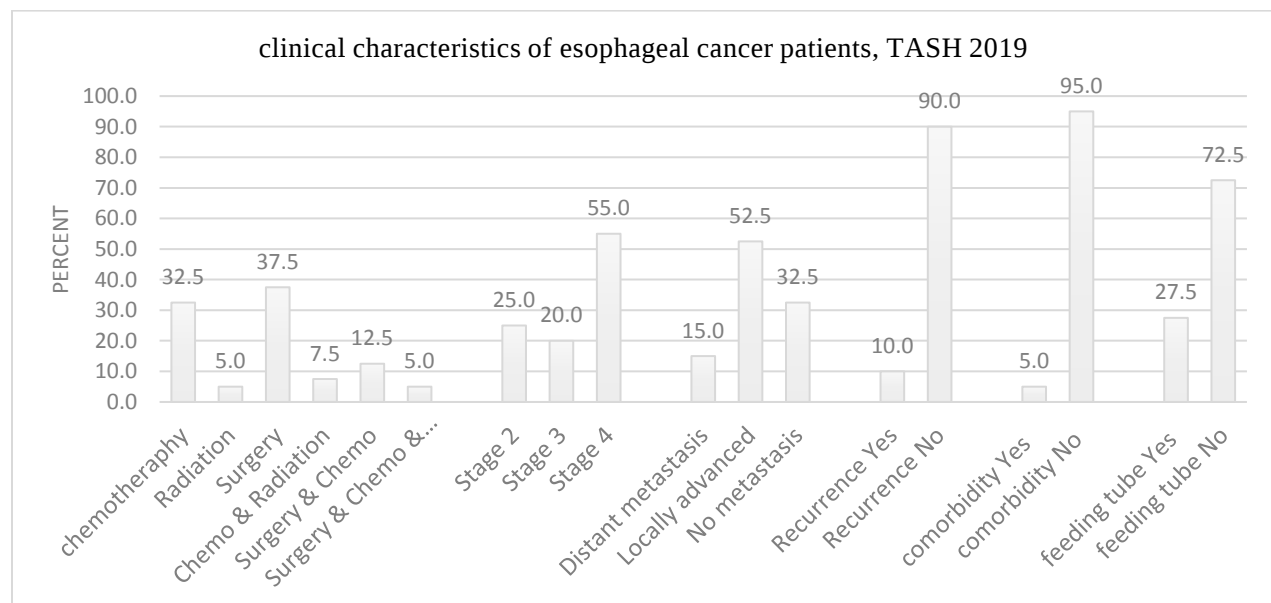


Figure 3:Summary of clinical characteristics of esophageal cancer patients, TASH 2019

5.5.Socio-demography characteristics and lifestyle of gastric cancer patients

A total of 39 eligible gastric cancer patients are included in this study with a mean age $\pm$ SD (46.92 $\pm$ 14.13) in years. The majority of them were female 23(59%), 27(69.2%) were married, 25 (64%) of them were less than 50 years of age. Eighteen (48.7%) of them had no formal education, and 13(33.3%) were farmers. Twelve (30.8%) of the patients came from Oromia and SNNPR region of the countries respectively, twenty-one (53.8%) reside in urban areas, and twenty-four (61.5%) are orthodox's. Four (10.3%) of them had a history of smoking cigarettes, 17(43.6%) of them had any experience of drinking alcohol, and 4 (10.3%) of them had any experience of chat chewing.

5.6.Clinical characteristics of gastric cancer patients

Nineteen (48.7%) out of 39 gastric cancer patients exposed to both surgery and chemotherapy treatment modalities. The median (IQR) length of time since diagnosis of gastric cancer patients was 12 months with IQR 7-23 of months. At the time of diagnosis only three patients (7.7%) were stage 1A but many of them 15 (38.5%) were stage 3A according to TNM staging classification for carcinoma of the stomach. There was distant site metastasis to lung, liver on 11 (28.2%), locally advanced on 9 (23.1%) of the study participants. Recurrence occurred on 8 (20.5%) of gastric cancer patients. Comorbidity diseases like DM, HTN, HIV were prevalent on 8(20.5%) of the patients (Figure 4).

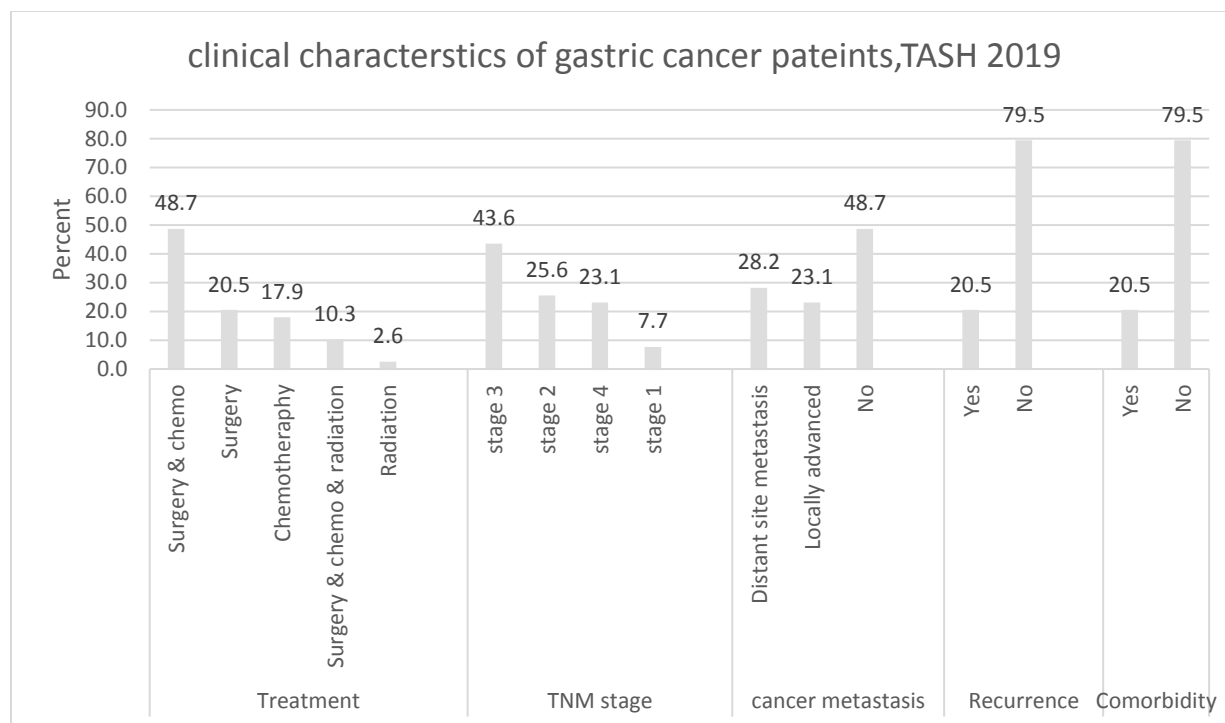


Figure 4: Summary of clinical characteristics of gastric cancer patients, TASH 2019

5.7. Socio-demography and lifestyle of Hepatocellular cancer patients

A total of 12 eligible HCC patients are included in this study with a mean age $\pm$ SD (46.17 ± 15.77) in years. Among the patients 10 (83.3%) were male, 10 (83.3%) were married, 12 of them are below the age of 65 years. 4 (33.3%) of them had primary education, 10 (83.3%) of them are orthodox, 4 (33.3%) of them are Non-governmental workers, 5 (41.7%) of them came from Addis Ababa, 9 (75.0%) of them reside in urban areas. This study showed 3 (25.0%) of them still smoke and chew chat, 9 (75.0%) of them had a history of alcohol drinking.

5.8. Clinical characteristics of Hepatocellular cancer patients

Nine (75.0%) out of twelve study patients treated with chemotherapy, the median time since diagnosis was 5 months. Eight (66.7%) of the patients were stage 3 and above. There was distant site metastasis to bone on three (25%) of the study patients and locally advanced on one of the study patients. There was no recurrence on any of the study patients. Comorbidity disease like HTN, DM, HIV was prevalent on four (33.3%) of the study patients. Among them, HTN was on two patients, DM and HIV on one patient. There were only two (16.7%) patients who were positive for the Hepatitis B virus but no patient was positive for the hepatitis C virus (Figure 5).

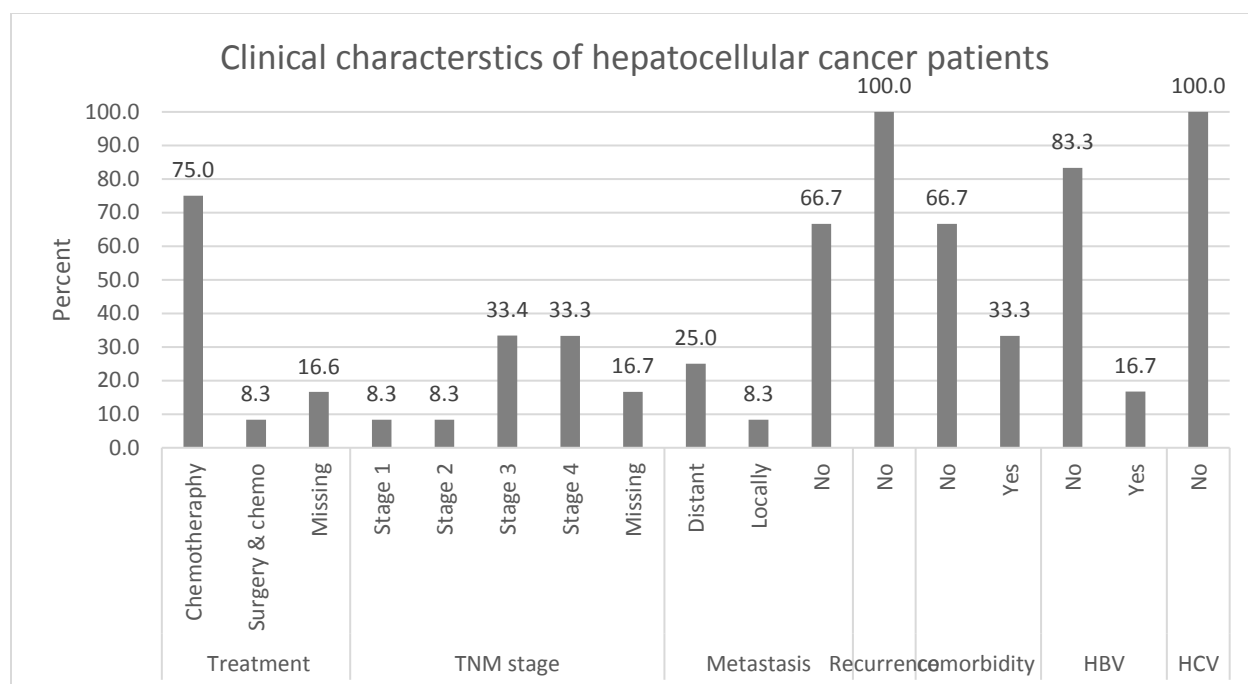


Figure 5: Summary of clinical characteristics of hepatocellular cancer patients, TASH, 2019

5.9. Quality of life score

5.9.1. Quality of life score for colorectal cancer patients

5.9.1.1. Functional and symptom scale cores of EORTC C-30

The mean global health status (QOL) of the study patients was 52.88 with a standard deviation of 21.02. Eighty (50.3%) of the patients had scored less than 50 and seventy-nine (49.6 %) scored greater than 50. The functional scales ranged from the mean ($\pm$ SD) of (77.8 $\pm$ 26.08) for cognitive functioning to mean of 56.7 $\pm$ 35.73 for social functioning. A high score for functional scale denotes a healthy level of functioning. For the symptom scale, mean ($\pm$ SD) of financial difficulty were 53.03 $\pm$ 40.42, fatigue was 43.95 $\pm$ 33.66 and pain mean ($\pm$ SD) of 43.50 $\pm$ 32.52. A high score for the symptom scale denotes a high level of symptomatology/problem. The other symptom scales had higher SD than their mean might be: the data were negatively skewed and checked for outliers and extreme values and managed accordingly.

Table 2: EORTC QLQ C-30 V.3 scales scores in colorectal cancer patients, TASH 2019.

EORTC Scales	Mean score	SD	Median	IQR
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Global health status/QOL	52.88	21.02	-	-
Functional scales				
Physical function	64.27	27.35	-	-
Role function	57.12	38.12	-	-
Emotion function	66.14	28.66	-	-
Cognitive function	77.88	26.08	-	-
Social function	56.7	35.73	-	-
Symptom scales				
Fatigue	43.95	33.66	-	-
Nausea and vomiting	11.74	22.15	-	-
Pain	43.50	32.52	-	-
Dyspnea	11.53	22.18	-	-
Insomnia	25.99	34.29	-	-
Appetite loss	35.63	35.79	-	-
Constipation	16.98	30.89	-	-
Diarrhea	10.98	20.89	-	-
Financial difficulties	53.03	40.42	-	-

5.9.1.2.Functional and symptom scales score of EORTC QLQ CR-29

The EORTC QLQ CR-29, functional scales (mean $\pm$ SD) for weight 76.31 $\pm$ 33.81, body image (67.51 $\pm$ 29.8) showed a better level of functioning. The remaining functioning scales showed high SD compared to the mean might be high invariability among the data. The symptom scales are presented with the median due to not normal distribution and skewness.

Table 3:EORTC QLQ CR-29 score in colorectal cancer patients, TASH 2019

EORTC CR-29	Mean score	SD	Median	IQR
Functional scales				

Anxiety	36.9	38.71	-	-
Weight	76.31	33.82	-	-
Body image	67.51	29.8	-	-
Sexual interest(men)	21.28	27.82	-	-
Sexual interest (women)	21.01	26.02	-	-
Symptom scales				
Urinary frequency	-	-	33.3	16.0-66.6
Urinary incontinence	-	-	0	0
Dysuria	-	-	0	0
Abdominal pain	-	-	0	0-33.3
Buttock pain	-	-	0	0-33.3
Bloating	-	-	0	0-33.3
Blood and mucus in stool	-	-	0	0-16.67
Dry mouth	-	-	33.3	0-66.67
Hair loss	-	-	0	0-33.33
Taste	-	-	0	0-33.33
Flatulence ¹	-	-	0	0-66.67
Fecal incontinency ¹	-	-	0	0
Sore skin ¹	-	-	0	0
Stool frequency ¹	-	-	16.6	0.0-33.3
Embrassement ¹	-	-	0	0
Stoma care problem ²	-	-	33.3	0.0-83.3
Stoma Flatulence ²	-	-	66.66	16.6-100
Stoma fecal inconsistency ²	-	-	0	0.0-66.6
Stoma sore skin ²	-	-	0	0.0-33.3
Embarrassment stoma ²	-	-	66.6	0-100
Stoma bag change frequency	-	-	33.3	16.0-50.0

Impotence ³	-	-	0	0.0-66.6
Dyspareunia ⁴	-	-	0	0

Key:1-Relevant only for Patients with no colostomy/ Ileostomy,2- Relevant only for Patients with colostomy/Ileostomy,3-Applicable only for men,4-Applicable only for female

5.9.2. Quality of life score for esophageal cancer patients

5.9.2.1.Functional and symptom scale score EORTC C-30

The mean($\pm$ SD) QOL score was 37.29 $\pm$ 17.29. The mean $\pm$ SD was high in cognitive functioning with 58.33 $\pm$ 22.95 showing a better functioning scale compared to others and the lowest(worse) functioning scale was seen in the role functioning scale with 26.6 $\pm$ 30.61. In the symptom scale, the highest symptomatology problem was seen in pain with a mean($\pm$ SD) of 73.75 $\pm$ 26.11 to the lowest symptomatology problem diarrhea with 11.6 $\pm$ 24.5.

Table 4: EORTC QLQ C-30 V.3 scales scores among esophageal cancer patients, TASH 2019

EORTC scales	Mean	SD	Median	IQR
Global health status/QOL	37.29	17.29	-	-
Functional scales				
Physical function	43.66	25.88	-	-
Role function	26.66	30.61	-	-
Emotion function	47.91	29.88	-	-
Cognitive function	58.33	22.95	-	-
Social function	36.66	32.29	-	-
Symptom scales/items				
Fatigue	71.66	22.35	-	-
Nausea and vomiting	32.5	29.94	-	-
Pain	73.75	26.11	-	-
Dyspnea	47.50	37.65	-	-
Insomnia	48.33	35.36	-	-

Appetite loss	55.0	41.72	-	-
Constipation	37.50	38.62	-	-
Diarrhea	11.6	24.5	-	-
Financial difficulties	62.5	40.07	-	-

5.9.2.2.Symptom scales score of EORTC QLQ OES-18

The study showed, the highest symptomatology problem was seen in eating with a mean($\pm$ SD) of 58.19 ± 25.63 and the lowest was seen with trouble choked when swallowing 40.00 ± 40.7 .

Table 5: EORTC QLQ OES-18 scale scores among esophageal cancer patients, TASH 2019

EORTC OES scales	mean	SD	median	IQR
Symptom scales/items				
Dysphagia	55.27	32.46	-	-
Trouble swallowing saliva	46.66	39.8	-	-
Choked when swallowing	40.00	40.7	-	-
Eating	58.12	25.63	-	-
Dry mouth	49.16	34.58	-	-
Trouble with taste	39.16	41.95	-	-
Trouble with coughing	53.33	41.2	-	-
Trouble talking	47.5	43.2	-	-
Reflux	51.25	33.62	-	-
Pain	53.89	30.35	-	-

5.9.3. Quality of life score for gastric cancer patients

5.9.3.1. Functional and symptom scale scores for EORTC C-30

In the EORTC QLQ C-30, global health status (QOL) ranged its mean ($\pm$ SD) for gastric cancer patients 47.43 ± 20.95 . Besides, the Functional scales mean (SD) was highest from cognitive functioning 67.09 ± 31.41 to the lowest role functioning with a mean of 44.07 ± 37.94 . The most affected functioning scale was role function, followed by physical functioning and all other functioning scales were better than Global health status (QOL).

The most prominent disease symptoms in this study were pain, fatigue, appetite loss, and financial difficulties based on their scores.

Table 6: EORTC QLQ C-30 V:3 among gastric cancer patients, TASH 2019.

EORTC scales	Mean	SD	Median	IQR
Global health status/QOL	47.43	20.95	-	-
Functional scales				
Physical function	48.72	27.06	-	-
Role function	44.07	37.94	-	-
Emotion function	53.42	30.98	-	-
Cognitive function	67.09	31.41	-	-
Social function	50.0	35.25	-	-
Symptom scales/items				
Fatigue	-	-	55.5	33.33-100
Nausea and vomiting	-	-	33.3	0-50.0
Pain	-	-	41	33.33-100
Dyspnea	-	-	0	0.0-66.67
Insomnia	-	-	0	0-66.67
Appetite loss	-	-	66.6	33.3-100
Constipation	-	-	0	0-66.67

Diarrhea	-	-	0	0
Financial difficulties	-	-	100	33.33-100

5.9.3.2.Symptom scale score for EORTC QLQ STO-22

The EORTC STO-22, the symptom scale of the study participants ranged its mean of 12.85 ± 16.42 for hair loss to mean of 68.94 ± 30.07 for anxiety. The most affected symptom scale was anxiety, tracked by body image and dry mouth.

Table 7: EORTC STO-22 scale score among gastric cancer patients, TASH 2019.

EORTC STO scales	Mean	SD	Median	IQR
Symptom scales/items				
Dysphagia	29.62	28.30	-	-
Pain	39.31	31.52	-	-
Reflux	34.75	31.95	-	-
Eating restriction	46.58	20.83	-	-
Anxiety	68.94	30.07	-	-
Dry mouth	46.15	33.86	-	-
Taste	40.17	36.81	-	-
Body Image	54.7	42.91	-	-
Hair loss	12.85	16.42	-	-

5.9.4. Quality of life score for HCC patients

5.9.4.1.Functional and symptom scales score for EORTC C-30

In HCC patients, the mean($\pm$ SD) QOL was 30.55 ± 18.57 . The better functioning scale was seen in social functioning with a mean ($\pm$ SD) of 52.77 ± 38.16 and the lowest was seen in role functioning with a mean of 27.7 ± 32.04 . The highest symptomatology was seen for pain with a mean($\pm$ SD) 79.16 ± 23.73 and the lowest symptom was seen for constipation 25.0 ± 37.93 .

Table 8:EORTC QLQ C-30 V:3 scale scores among hepatocellular cancer patients, TASH 2019

EORTC scales	Mean	SD	Median	IQR
Global health status/QOL	30.55	18.57	-	-
Functional scales				
Physical function	40.55	26.73	-	-
Role function	27.7	32.04	-	-
Emotion function	36.11	23.39	-	-
Cognitive function	50	28.42	-	-
Social function	52.77	38.16	-	-
Symptom scales				
Fatigue	72.22	27.00	-	-
Nausea and vomiting	54.16	42.71	-	-
Pain	79.16	23.73	-	-
Dyspnea	33.33	28.42	-	-
Insomnia	44.4	43.4	-	-
Appetite loss	75.0	45.22	-	-
Constipation	25.00	37.93	-	-
Diarrhea	33.3	44.9	-	-
Financial difficulties	63.88	43.71	-	-

5.9.4.2.Symptom scale for EORTC QLQ HCC-18

The mean($\pm$ SD) ranged from 27.7 $\pm$ 44.57 for sex life to the highly affected body image 75.0 $\pm$ 27.97 for the symptom scales of HCC patients. The highly affected symptom scales were body image, tracked by abdominal swelling, pain, and nourishment (Table 9).

Table 9: EORTC QLQ HCC-18 scale scores among hepatocellular cancer patients, TASH 2019

EORTC HCC	Mean	SD	Median	IQR
Symptom scales				
Fatigue	55.55	21.71	-	-
Body image	75	27.97	-	-
Jaundice	40.27	32.14	-	-
Nourishment	47.77	23.75	-	-
Pain	56.94	32.14	-	-
Fever	31.94	28.83	-	-
Abdominal swelling	58.33	42.93	-	-
Sex life	27.7	44.57	-	-

5.10. Bivariate and multivariable association between QOL and independent variables

5.10.1. Colorectal cancer

159 colorectal cancer patients participated in this study among them 57 of the had stoma and 102 were non-stoma. There were separate questions for the stoma and non-stoma and analysis was done for each of the subgroups.

5.10.1.1. Socio-demography, lifestyle

On bi-variate analysis-sex, educational status, region of the study participants, occupational status, wealth index was significantly associated with QOL and were selected for the multivariable logistic regression analysis by $p \leq 0.2$ for the 159 participants.

On bivariate logistic regression 20 variables were selected for patients with stoma and 21 for non-stoma patients with $p \leq 0.2$.

Table 10: Socio-demographic and lifestyle-related factors associated with QOL among colorectal cancer patients, TASH, Addis Ababa, Ethiopia, 2019.

Variables	Poor QOL N (%)	Good QOL N (%)	COR 95% CI	AOR 95% CI	P-Value
Sex					
Male	38(47.5)	51(64.5)	1	1	
Female	42(52.5)	28(35.4)	0.497(0.263-0.939)	0.164(0.052-0.521)	0.002
Marital status					
Married	49(61.3)	55(69.6)	1		
Never married	9(11.3)	5(6.3)	0.495(0.155-1.577)	/	0.234
Divorced	11(13.8)	11(13.9)	0.891(0.355-2.236)	/	0.806
Widowed	11(13.8)	8(10.1)	0.648(0.241-1.742)	/	0.390
Educational status					
Secondary and above (Grade 9-Diploma)	24(30.0)	33(42.9)	1		
No formal education	19(23.8)	9(11.7)	0.344(0.133-0.892)	/	
Primary education	29(36.3)	18(23.4)	0.451(0.205-0.994)	/	
University/college and above	8(10.0)	17(22.1)	1.545(0.574-4.164)	/	

Religion					
Christian	66(82.5)	66(85.7)	1	/	
Muslim	14(17.5)	11(14.3)	0.786(0.332-1.857)	/	
Region					
Addis Ababa			1	/	
Oromia			1.007(0.429-2.361)	/	
Amhara			0.470(0.171-1.289)	/	
SNNPR			0.727(0.207-2.559)	/	
Tigray			0.218(0.023-2.030)	/	
Other			1.163(0.246-5.504)	/	
Residence					
Urban	67(83.8)	71(89.9)	1		
Rural	13(16.3)	8(10.1)	0.581(0.226-1.489)	/	
Occupational status					
Unemployed	48(60.0)	31(39.2)	1		
Employee	16(20.0)	41(51.9)	3.976(1.892-8.357)	3.414 (1.146-10.17)	0.027
Self -employee	16(20.0)	7 (8.9)	0.679(0.249-1.852)	0.233(0.048-1.126)	0.07
Wealth Index					
Highest	23(28.7)	9(11.4)	1		
Lowest	14(17.5)	17(21.5)	3.103(1.090-8.833)	/	
Second	12(15.0)	20(25.3)	4.259(1.488-12.192)	/	

Middle	12(15.0)	20(25.3)	4.259(1.488-12.192)	/	
Fourth	19(23.8)	13(16.5)	1.749(0.615-4.971)	/	
Age			1.018(0.995-1.042)	/	
Smoking status					
Never smoked	73(91.3)	70(88.6)	1		
Smoked before	7 (8.8)	9(11.4)	1.341(0.474-3.796)	/	
Chat chewing					
Never chewed	66(82.5)	68(86.1)	1		
Chewed before	14(17.5)	11(13.9)	0.763(0.323-1.801)	/	
Drinking status					
Yes	37(46.3)	47(59.5)	1		
No	43(53.8)	32(40.5)	0.586(0.313-1.098)	/	

Key:/ -Variables not included in the model

5.10.1.2. Clinical characteristics

From the bivariate analysis, type of treatment and recurrence were significantly associated with QOL at $p \leq 0.2$ but by theoretical knowledge, the clinical stage (TNM) was also selected for the multivariable logistic regression. In the final model, clinical-stage was among one of the explanatory factors.

Table 11: Clinically related factors associated with QOL on colorectal cancer patients, in TASH, Addis Ababa, Ethiopia, 2019

Variables	Poor QOL N (%)	Good QOL N (%)	COR 95% CI	AOR 95% CI	P-value
Treatment type					
Surgery and chemotherapy	35(43.8)	46(58.2)	1		
Surgery	14(17.5)	18(22.8)	0.978(0.429-2.233)	/	
Chemotherapy and Radiation	6(7.5)	5(6.3)	0.634(0.179-2.248)	/	
Chemotherapy	10(12.5)	4(5.1)	0.304(0.088-1.052)	/	
Surgery, chemotherapy and radiation	15(18.8)	6(7.6)	0.304(0.107-0.864)	/	
TNM Stage					
Late-stage	79(50.3)	78(49.7)	1	1	
Early stage	37(46.8)	40(51.3)	1.195(0.639-2.236)	0.245(0.083-0.722)	0.011
History of Metastasis					
No	60(76.9)	57(48.7)	1		
Yes	18(23.1)	20(26.0)	1.170(0.562-2.434)	/	
History of Recurrence					
No	63(78.8)	68(87.2)	1		
Yes	17(21.3)	10(12.8)	0.545(0.232-1.279)	/	
Time since diagnosis (months) 1.007(0.995-1.019)				/	

Key: / - Variables not included in the model

5.10.1.3. Functional and symptom scales of EORTC QLQ C-30

All functional and symptom scale variables were entered into the multivariable logistic regression except diarrhea at $p \leq 0.2$. Physical functioning, social functioning, and financial difficulty were the variable that explains the final model.

For colostomy having colorectal cancer patients, all variables were candidates except dyspnea and for non-stoma, all nine variables were considered with $p \leq 0.2$ for the multivariable logistic regression.

Table 12: Functional and symptom scale of EORTC QLQ C-30 association with QOL among colorectal cancer patients, TASH, Addis Ababa, Ethiopia, 2019

Variable	COR (95% CI)	AOR 95%CI	P-value
Functional scales			
Physical function	1.044(1.028-1.060)	1.04(1.017-1.064)	0.001
Role functioning	1.026(1.016-1.036)	/	
Emotional functioning	1.048(1.032-1.064)	/	
Cognitive functioning	1.04(1.023-1.056)	/	
Social functioning	1.032(1.021-1.044)	1.019(1-1.037)	0.04
Symptom scales/items			
Fatigue	0.966(0.954-0.977)	/	
Nausea/vomiting	0.968(0.950-0.987)	/	
Pain	0.966(0.955-0.978)	/	
Dyspnea	0.974(0.957-0.991)	/	
Insomnia	0.982(0.972-0.992)	/	
Appetite loss	0.979(0.970-0.989)	/	
Constipation	0.975(0.962-0.989)	/	
Diarrhea	0.995(0.981-1.008)	/	

Financial difficulties	0.978(0.969-0.989)	0.976(0.961-0.991)	0.002
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Key: / -Variables not included in the model

5.10.1.4. Symptom and functional scales of EORTC QLQ CR-29

There were missing data on symptom scale on flatulence and female sexuality. Item- flatulence the missing percent was 0.1 and women sexuality 8.3% might be due to question sensitivity and cultural barriers on women. All variables were entered into the multivariable logistic regression except hair-loss($p=0.33$).

For stoma having colorectal cancer patient's urinary frequency, bloating were candidates for the multivariable logistic regression by $p\text{-value} \leq 0.2$. For patients with non-stoma urinary incontinence, blood, and mucus in stool, anxiety were candidates for multivariable logistic regression by $p\text{-value} \leq 0.2$.

Table 13: Functional and symptom scales of EORTC QLQ CR-29 association with QOL among colorectal cancer, TASH, Addis Ababa, Ethiopia, 2019

Variable	COR (95% CI)	P-value	AOR (95% CI)
Symptom scale			
Urinary frequency	0.983(0.971-0.995)	0.004	/
Urinary incontinence	0.983(0.967-0.998)	0.031	/
Dysuria	0.972(0.956-0.989)	0.001	/
Abdominal pain	0.982(0.972-0.993)	0.002	/
Buttock pain	0.983(0.973-0.993)	0.001	/
Bloating	0.987(0.976-0.998)	0.017	/
Blood and mucus in stool	0.963(0.942-0.985)	0.001	0.937(0.910-0.964)
Dry mouth	0.985(0.974-0.996)	0.007	/
Hair loss	0.995(0.985-1.006)	0.373	/
Taste	0.990(0.980-1.001)	0.065	/

Impotence ³	0.999(0.989-1.010)	0.906	/
Dysuria ⁴	0.996(0.976-1.017)	0.732	/
Functional scales			
Anxiety	1.011(1.002-1.019)	0.012	/
Weight	1.021(1.010-1.032)	0.00	/
Body image	1.024(1.012-1.036)	0.00	/
Sexual interest in men ⁴	0.996(0.982-1.011)	0.643	/
Sexual interest in women ³	0.996(0.976-1.017)	0.732	/

Key: / -Variables not included in the model

5.10.1.5. Multivariable logistic regression of colon cancer

The final model on colorectal cancer patients was established by 157 participants, 2 participants were not analyzed because of missing data. The final model was significant ($X^2_{(8)}121.352$, $P<0.01$), correctly classifying good QOL by 84.7%. The model was a good fit as showed by Hosmer-Lemeshow goodness-of-fit ($X^2_{(8)}5.79$, $p=0.671$) and the model variation was explained between 53.8% (Cox and Snell R square) and 71.8% (Nagelkere R square). Sex, occupational status, clinical staging (TNM stage), physical function, social function, Financial difficulty, Stoma presence, Blood, and mucus in stool were the variables that explained the model.

The odds of poor QOL among female colorectal cancer patients were six times higher than male colorectal cancer patients, controlling for other factors (AOR:6.3 95%CI:1.83-22.12, $p=0.004$)

The odds of poor quality of life among colorectal cancer patients were 93.2% less likely an employee than unemployed after controlling other factors (AOR:0.068 95%CI:0.012-0.387, 0.002).

The odds of poor QOL is about 4 times higher in those diagnosed in late-stage than early-stage colorectal cancer patients after controlling for all other variables (AOR:4.98 95%CI:1.512-16.454, $p=0.008$).

Per a unit increase in the score of physical function, the odds of good QOL increase by 4% more likely as compared with those who had poor QOL after controlling all variables in the model (AOR:1.04 95%CI:1.013-1.063, p=0.001).

Per a unit increase in the score of social function, the odds of poor QOL increase by 2% more likely than those who had better QOL after controlling all variables in the model (AOR:1.02 95% CI:1.001-1.042, p=0.039).

The odds of good QOL decrease by 2.5% as the score of financial difficulty increase in a unit by keeping all other variables in the model constant (AOR:0.975 95%CI:0.959-0.991).

The score of the presence of blood and mucus in the stool increase in a unit, the odds of poor QOL of colon cancer patients decrease by 6.4% by keeping all other variables constant in the model (AOR: 0.936 95%CI: 0.907-0.966).

The odds of poor QOL is about eight times higher among stoma having colorectal cancer patients than non-stoma colorectal cancer patients after controlling all other factors (AOR=7.98 95% CI= (1.512-16.454))

5.10.2. Stoma and non-stoma colorectal cancer patients

5.10.2.1. Multivariable logistic regression

Forward stepwise logistic regression was done to assess the QOL of colorectal cancer patients with a stoma. The model contained three independent variables (social functioning, sore skin in the stoma area, pain). The model was significant $X^2=28.574$ (3, N=57) $P<0.05$, indicating respondents between (affected) poor QOL and (Unaffected) good QOL. It was explained between 40.0% (Cox and Snell R square) and 56.5% (Nagelkerke R square) of the variance in QOL and correctly classified 85.7% cases.

In the final model of colorectal cancer patients without stoma had ten significant variables (sex, occupational status, cognitive functioning, social functioning, dyspnea, constipation, bloating, absence of blood and mucus in the stool, anxiety, urinary incontinence). The model was a good fit as showed by Hosmer-Lemeshow goodness-of-fit $X^2=13.61$ (8, $P>0.05$) and omnibus test of model coefficient ($X^2=104.947$, df 11, $p<0.01$). The predictors explained the variation in QOL between

64.6% (Cox and Snell R square) and 87.2% (Nagelkere R square) and correctly classifies 95% of cases.

From the EORTC Functional scale, social function score increases in a unit, the odds of good QoL increases by 4% more likely, (AOR=1.043 95%CI (1.013-1.074) $p<0.005$) by keeping all variables constant. From the EORTC symptom scale, as there is a unit increase in the score of pain, the odds of patients 'good QOL decrease by 4% less likely as compared to poor QOL by keeping all factors equal (AOR=0.96 95%CI(0.932-0.989) $p<0.05$). From CR-29, for every unit increase in the score of absence in sore skin around the stoma area, the odds of good QOL increase by 5% more likely than those with poor QOL by keeping all variables constant (AOR=1.05 95%CI(1.017-1.091) $P<0.004$).

For those patients with non-stoma, females good QOL decrease by 99% less likely as compared to males (AOR:0.005 CI:0.00-0.377). Like-wise self-employed patients good QOL decrease by 97% less likely as compared to unemployed patients (AOR:0.02 CI: 0.843-0.957). From the EORTC Functional scale, like the score in cognitive function increase in one-unit, good QOL increase by 7% among patients with non-stoma colorectal cancer (AOR:1.07 95 %CI:1.001-1.146). Similarly, like the score in social function increase by one unit, the patient's good QOL increase by 10% (AOR:1.103 95% CI:1.032-1.178). For the EORTC symptom scale, the score in dyspnea increases by a unit, good QOL decrease by 8% less-likely (AOR:0.92 95%CI:0.874-0.988). In the same way, aa unit change in the score of constipation, patients good QOL decreased by 9% (AOR;0.91 95%CI:0.856-0.973).

Regarding EORTC CR-29 functional scale, as there is a unit increase in anxiety there was a decrease in good QOL for patients by 7% (AOR:0.93 95%CI:0.883-0.989). About symptom scales, as the score in urinary incontinency increase in one-unit, good QOL decreases by 13% (AOR:0.87 95%CI:0.792-0.958). Also, as the score in the absence of bloating increase in one unit, then good QOL increase by 10% (AOR:1.10 95%CI:1.025-1.197). As the score in blood and mucus in the stool increase, good QOL decreased by 18% (AOR:0.82 95%CI:0.707-0.960).

5.10.3. Esophageal cancer

5.10.3.1. Socio-demography, lifestyle of participants

After fitting each of the socio-demographic variables with QOL of esophageal cancer patient's employment, marital status and chat chewing status were candidates for the final model with a p value ≤ 0.2 .

Table 14: socio-demographic and lifestyle-related factors of characteristics with QOL for esophageal cancer patients, TASH 2019.

Variables				
QOL				
	Poor n (%)	Good n (%)	COR (95%CI)	P-value
Sex				
Female	20(58.8)	4(66.7)	1	
Male	14(41.2)	2(33.3)	0.714 (0.115-4.451)	0.719
Age	0.714(0.115-1.158)			0.278
Residence				
Rural	27(79.4)	4(66.7)	1	
Urban	7(20.6)	2(33.3)	1.929 (0.291-12.766)	0.496
Region				
Oromia	23(67.6)	3(50.0)	1	
SNNPR	7(20.6)	1(16.7)	1.095(0.098-12.269)	0.941
Others	4(11.8)	2(33.3)	3.833 (0.479-30.700)	0.206
Religion				
Muslim	17(50.0)	2(33.3)	1	
Orthodox	11(32.4)	3(50.0)	2.3180.332-16.185)	0.396
Protestant	6(17.6)	1(16.7)	1.417(0.108-18.595)	0.791
Marital status				
Married	28(82.4)	3(50.0)	1	
Single	6(17.6)	3(50.0)	4.667(0.751-29.008)	0.098
Educational status				
No education	26(76.5)	4(66.7)	1	
Some form of education	8(23.5)	2(33.3)	1.625(0.250-10.578)	0.611
Employment status				
Employed /Self-employed	25(73.5)	2(33.3)	1	
Un-employed	9(26.5)	4(66.7)	5.556(0.864-35.706)	0.071
Wealth quintile				

Lowest	6(17.6)	2(33.3)	1	
Second	7(20.6)	1(16.7)	0.429 (0.031-5.985)	0.529
Middle	7(20.6)	1(16.7)	0.429 (0.031-5.985)	0.529
Fourth	7(20.6)	1(16.7)	0.429 (0.031-5.985)	0.529
Highest	7(20.6)	1(16.7)	0.429 (0.031-5.985)	0.529
Smoking status				
Still smokes	26(76.5)	3(50.0)	1	
Used to smoke	8(23.5)	3(50.0)	3.250(0.545-19.383)	0.99
Chat chewing status				
Still chew	27(82.4)	3(17.6)	1	
Used to chew	7(17.6)	3(50.0)	3.857(0.635-23.412)	0.142
Drinking status				
No	21(61.8)	5(83.3)	1	
Yes	13(38.2)	1(16.7)	0.323(0.034-3.083)	0.326

5.10.3.2. Clinical characteristics

After fitting each of the clinical characteristics with QOL of esophageal cancer patients, none of the independent variables were candidates for the final model with a p value $\leq$ 0.2 (Table 15).

Table 15:clinical characteristics with QOL for esophageal cancer patients, TASH 2019

Variables	QOL			
	Poor n (%)	Good n (%)	COR (95%CI)	p-value
The stage at diagnosis				
Advanced	25(50.0)	5(83.3)	1	
Early	9(26.5)	1(16.7)	0.556(0.057-5.422)	0.613
Type of treatment				
Surgery	14(41.2)	1(16.7)	1	
Chemotherapy	10(29.4)	3(50.0)	4.200(0.379-46.495)	0.242
Surgery & chemo	4(11.8)	1(16.7)	3.500(0.177-69.339)	0.411
Surgery, chemo & radiation	6(17.6)	1(16.7)	2.333(0.124-43.792)	0.571
History of recurrence				
No	31(91.2)	5(83.3)	1	

Yes	3(8.8)	1(16.7)	2.067(0.178-24.006)	0.562
History of metastasis				
Local	17(50.0)	4(66.7)	1	
Distant	5(14.7)	1(16.7)	0.850 (0.077-9.440)	0.895
No	12(35.3)	1(16.7)	0.354(0.035-3.577)	0.379
History of comorbidity				
No	32(94.1)	3(50.0)	1	
Yes	2(5.9)	3(050.0)	16.000 (1.873 -136.696)	0.011

5.10.3.3. Functional and symptom scale of EORTC QLQ C-30

After fitting each of the functional scales with QOL of esophageal cancer patients, only emotional and cognitive function were candidates for the final model with p value ≤ 0.2 (Table 16)

Table 16: functional scale of EORTC QLQ C-30 scores association with QOL among esophageal cancer patients, TASH, Addis Ababa, Ethiopia, 2019.

Variables	COR (95% CI)	P-value
Physical function	1.017(0.984-1.052)	0.323
Role function	1.005(0.977-1.033)	0.733
Emotional function	1.02(0.989-1.053)	0.202
Cognitive function	1.042(0.997-1.089)	0.065
Social function	1.389(0.216-8.927)	0.729

After fitting each of the EORTC C-30 QOL general symptom scales of esophageal cancer patients with their QOL, only symptoms of fatigue and pain were candidates for the final model with p value < 0.2 (Table 17).

Table 17: Symptom scale of EORTC QLQ C-30 score association with QOL of esophageal cancer patients, TASH, Addis Ababa, Ethiopia, 2019

Variables	COR (95% CI)	P-value
Fatigue	0.966(0.926-1.007)	0.102
Pain	0.964(0.929-1.000)	0.047
Nausea and vomiting	0.989(0.958-1.021)	0.504
Dyspnea	0.993(0.969-1.017)	0.541
Insomnia	0.991(0.966-1.016)	0.478
Appetite loss	1.000(0.980-1.022)	0.971
Constipation	0.992(0.968-1.016)	0.503
Diarrhea	0.575(0.000-1.277)	0.998
Financial difficulties	0.999(0.977-1.021)	0.926

5.10.3.4. Symptom scale of EORTC QLQ OES -18

After fitting each of the EORTC QLQ OES-18 specific symptom scale of esophageal cancer patients with their QOL, symptoms like trouble with saliva swallowing, choking, dry mouth, trouble talking and reflux were candidates for the final model with $p \text{ value} \leq 0.2$ (Table 18)

Table 18: Symptom scale of EORTC QLQ OES-18 association with QOL among esophageal cancer patients, TASH, Addis Ababa, Ethiopia, 2019.

Variables	COR (95% CI)	P value
Trouble saliva swallowing	0.140(0.015-1.332)	0.087
Chocking	0.979(0.951-1.008)	0.153
Dysphagia	1.002(0.975-1.030)	0.860
Eating	1.006(0.971-1.041)	0.754
Dry mouth	0.967(0.935-1.001)	0.055
Trouble tasting	1.000(0.176-5.673)	1.000
Trouble cough	0.969(0.941-0.998)	0.038
Trouble talking	0.976(0.950-1.003)	0.083
Reflux	0.953(0.915-0.992)	0.018
Pain	0.985(0.957-1.015)	0.324

5.10.3.5. Multivariable logistic regression of esophageal cancer

Among the twenty independent variables, only one variable remained for explaining the QOL of esophageal cancer patients.

The final model was a good fit confirmed by omnibus test $p\text{-value} < 0.01$ and Hosmer and Lemeshow ($X^2=0.920$, $df=5$, $p>0.5$). The variable reflux explained the model between 0.194 and 0.340 by cox & Snell R-square and Nagelkere R-square.

The quality of life of esophageal cancer patients was affected only by Reflux. As there is a unit increase in reflux, odds of esophageal cancer patients QOL decrease by 4.5% (AOR=0.953 CI=0.915-0.992)

5.10.4. Gastric cancer

5.10.4.1. Socio-demography, lifestyle of participants

After fitting for bivariate logistic regression with $p\text{-value} \leq 0.2$, sex and region were the participants came from were considered for multivariable logistic regression (Table 19).

Table 19: Socio-demography and lifestyle-related factors of Gastric cancer patients associated with QOL in TASH, Addis Ababa, Ethiopia, 2019.

Variables	Poor QOL N (%)	Good QOL N (%)	COR 95% CI	P-value
Sex				
Female	10(45.5)	13(76.5)	1	
Male	12(54.5)	4(23.5)	0.256(0.063-1.040)	0.057
Marital status				
Married	17 (77.3)	10(58.8)	1	
Single ⁵	5(22.7)	7(41.2)	2.380(0.594-9.538)	0.221
Educational status				
No formal education	11(50.0)	8(47.1)	1	

Primary education	2(9.1)	4(23.5)	2.750(0.401-18.876)	0.303
Secondary education	3(13.6)	3(17.6)	1.375(0.218-8.669)	0.735
University/college and above degree	6(27.3)	2(11.8)	0.458(0.073-2.890)	0.406
Religion				
Christian	16(72.7)	12(70.6)	1	
Muslim	6(27.3)	5(29.4)	1.11(0.273-4.520)	0.883
Region				
Oromia	7(31.8)	5(29.4)	1	
SNNPR	9(40.9)	3(17.6)	0.467(0.082-2.656)	0.390
Addis Ababa	5(22.7)	4(23.5)	1.120(0.196-6.414)	0.899
Other	1 (4.5)	5(29.4)	7.0(0.613-79.871)	0.117
Residence				
Urban	12(54.5)	9(52.9)	1	
Rural	10(45.5)	8(47.1)	1.067(0.3-3.796)	0.921
Occupational status				
Employed	10(45.5)	5(29.4)	1	
Self-employed	6(27.3)	5(29.4)	1.667(0.336-8.258)	0.532
Unemployed	6(27.3)	7(41.2)	2.33(0.505-10.778)	0.278
Wealth index				
Highest	4(18.2)	4(23.5)	1	

Lowest	4 (18.2)	3(17.6)	0.75(0.098-5.768)	0.762
Second	4(18.2)	4(23.5)	1.0(0.141-7.09)	1.0
Middle	5(22.7)	3(17.6)	0.6(0.082-4.4)	0.615
Fourth	5(22.7)	3(17.6)	0.6(0.082-4.4)	0.615
Age			1.0(0.957-1.048)	0.957
Smoking status				
Never smoked	20(90.9)	15(88.2)	1	
Used to smoke	2(9.1)	2(11.8)	1.33(0.168-10.579)	0.785
Chat Chewing status				
Never chewed	21(95.5)	14(82.4)	1	
Used to chew	1(4.5)	3(17.6)	4.5(0.424-47.757)	0.212
Drinking status				
No	12(54.5)	10(58.8)	1	
Yes	10(45.5)	7(41.2)	0.840(0.234-3.02)	0.789

5.10.4.2. Clinical characteristics

Treatment, Time since diagnosis were selected from clinical characteristics with p-value $\leq$ 0.2. The stage of cancer was also a candidate by clinical importance criteria (Table 20).

Table 20: Clinical characteristics of gastric cancer patients associated with QOL in TASH, Addis Ababa, Ethiopia, 2019.

Variable	Poor QOL	Good QOL	COR (95% CI)	P-Value
Type of treatment				
Surgery and chemotherapy	9(40.9)	10 (58.8)	1	

Surgery	6(27.3)	2(11.8)	0.3(0.048-1.882)	0.199
Chemotherapy	3(13.6)	4(23.5)	1.2 (0.209-6.884)	0.83
Surgery, chemotherapy and radiation	4(18.2)	1(5.9)	0.225(0.021-2.405)	0.217
TNM stage				
Late stage	14(63.6)	12(70.6)	1	
Early stage	8(36.4)	5(29.4)	0.729(0.188-2.834)	0.648
Metastasis				
No	17(77.3)	11(64.7)	1	
Yes	5(22.7)	6(35.3)	1.855(0.453-7.584)	0.390
Recurrence				
No	19(86.4)	12(70.6)	1	
Yes	3(13.6)	5(29.4)	2.639(0.531-13.116)	0.236
Comorbidity				
No	19(86.4)	12(70.6)	1	
Yes	3(13.6)	5(29.4)	2.639(0.531-13.116)	0.23
Time since diagnosis			1.03(0.992-1.089)	0.108

5.10.4.3. Functional and symptom scale of EORTC QLQ C-30

Ten variables were selected for the multivariable logistic regression except for cognitive function, dyspnea, insomnia, diarrhea p-value >0.2 (Table 21).

Table 21: Functioning scale and symptom scale of EORTC QLQ C-30 of gastric cancer association with QOL, TASH, Addis Ababa, Ethiopia, 2019.

Variable	COR (95% CI)	P-Value
Physical function	1.056(1.016-1.096)	0.005
Role function	1.017 (0.999-1.036)	0.067
Emotional function	1.039(1.011-1.067)	0.006
Cognitive function	1.012(0.991-1.035)	0.261
Social function	1.020(1.0-1.04)	0.052
Fatigue	0.973(0.951-0.995)	0.018
Nausea/Vomiting	0.963(0.937-0.991)	0.008
Pain	0.982(0.962-1.002)	0.081
Dyspnea	0.994(0.975-1.013)	0.515
Insomnia	0.990(0.972-1.008)	0.274
Appetite loss	0.963(0.941-0.986)	0.002
Constipation	0.988(0.972-1.004)	0.149
Diarrhea	0.996(0.967-1.027)	0.809
Financial difficulties	0.978(0.959-0.996)	0.020

5.10.4.4. Symptom scale of STO-22

From the nine symptom scales, only six symptom scales were considered for the multivariable logistic regression $p \leq 0.2$. Three scales that were not included for the analysis of multivariable logistic regression were dry-mouth, taste, and hair loss (Table 22).

Table 22: Symptom scales of STO-22 of gastric cancer associated with QOL in TASH, Addis Ababa, Ethiopia, 2019.

Variable	COR (95% CI)	P-Value
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Dysphagia	0.925(0.884-0.968)	0.001
Pain	0.955(0.926-0.984)	0.003
Reflux	0.973(0.950-0.996)	0.022
Eating	0.974(0.941-1.008)	0.129
Anxiety	0.982(0.960-1.004)	0.115
Dry mouth	1.001(0.983-1.021)	0.882
Taste	0.993(0.976-1.011)	0.463
Body image	0.980(0.963-0.996)	0.016
Hair loss	0.979(0.941-1.02)	0.31

5.10.4.5. Multivariable logistic regression for gastric cancer

Among the twenty significant variables, only two variables remain significant for the multivariable logistic regression model.

Quality of life of gastric cancer patients was affected by pain (symptom scale of STO-22) and appetite loss. As there is a unit increase in the presence of appetite loss, the odds of a patient's quality of life decrease by 4% (AOR=0.96 CI (0.945-0.994)). The odds of quality of life decrease by 3.7%, as a unit increase in pain (symptom scale of STO-22) (AOR=0.963 CI=0.931-0.996).

The final model was a good fit confirmed by Hosmer and Lemeshow Test at chi-square 6.44, degree of freedom -7 and p-value 0.489, an omnibus test p-value<0.05. It was explained between 0.412 and 0.553 by cox & Snell R-square and Nagelkerke R-square respectively.

5.10.5. Hepatocellular cancer

5.10.5.1.Socio-demography, lifestyle

Table 23:Socio-demography and lifestyle-related factors of hepatocellular cancer patients associated with QOL in TASH, Addis Ababa, Ethiopia,2019

Variables	Poor QOL N (%)	Good QOL N (%)	COR 95% CI	P-value
Sex				
Male	1(10.0)	1(50.0)	1	
Female	9(90.0)	1(50.0)	9.0(0.284-285.5)	0.213
Educational status				
No formal education	3(30.0)	0(0)	1	
Some formal education	7(70.0)	2(100)	0.0(0.0-)	0.99
Religion				
Christian	9(90.0)	2(100)	1	
Muslim	1(10.0)	0	0..0(0.0)	1.0
Region				
Out of Addis Ababa	6(60.0)	1(50.0)	1	
Addis Ababa	4(40.0)	1(50.0)	1.5(0.071-31.575)	0.794
Residence				
Urban	7(70.0)	2(100)	1	
Rural	3(30.0)	0	0	0.99
Wealth index				
Second	2(20.0)	1(50.0)	1	
First	2(20.0)	0(0)	0.00	0.99
Middle	1(10.0)	1(50.0)	2.0(0.051-78.250)	0.711

Fourth	3(30.0)	0	0.0	0.999
Highest	2(10)	0	0.0	0.999
Age			0.0	0.994
Smoking status				
Never smoked	7(70.0)	2(100)	1	
Used to smoke	3(30.0)	0(0)	0.0(0.0-)	0.99
Chat chewing				
Never chewed	7(70.0)	2(100)	1	
Used to chew	3(30.0)	0(0)	0.0(0.0-)	0.999
Drinking status				
Yes	9(90.0)	0	1	
No	1(10.0)	2(100)	320(0.0-)	0.999

5.10.5.2.Clinical characteristics

All of the variables were above $P>0.2$ and did not consider the final model. Time since diagnosis not included because of missing data.

Table 24: Clinical characteristics of hepatocellular cancer patients associated with QOL in TASH, Addis Ababa, Ethiopia, 2019.

Variables	Poor QOL N (%)	Good QOL N (%)	COR 95% CI	P-value
Type of treatment				
Chemotherapy	7(100)	1(50.0)	0.0(0.0-)	1.0
Surgery and chemotherapy	0(0)	1(50.0)	1	
TNM staging				
Late stage	5(62.5)	1(50.0)	1	
Early stage	3(37.5)	1(50.0)	1.667(0.074-37.728)	0.748
Metastasis				
No	5(71.4)	1(50.0)	1	
Yes	2(28.6)	1(50.0)	2.5(0.1-62.6)	0.577
Recurrence				
NO	9(100)	2(18.2)		
Comorbidity				
No	7(70.0)	1(50.0)	1	
Yes	3(30.0)	1(50.0)	2.33(0.107-50.982)	0.590

5.10.5.3. Functional and symptom scale of EORTC C-30

There was no significant variable both from a functional and symptom scale that could be a candidate for the final model.

Table 25: Functioning scale and symptom scale of EORTC QLQ C-30 of hepatocellular cancer association with QOL, TASH, Addis Ababa, Ethiopia, 2019.

Variable	COR(CI)	P-Value
Functional scale		

Physical function	1.0(0.949-1.065)	0.867
Role functioning	1.016(0.970-1.064)	0.496
Emotional functioning	1.012(0.952-1.075)	0.705
Cognitive functioning	0.985(0.924-1.05)	0.641
Social functioning	1.036(0.975-1.1)	0.255
Symptom scale		
Fatigue	1.0(0.943-1.060)	1.0
Nausea/vomiting	1.003(0.966-1.041)	0.875
Pain	0.991(0.932-1.054)	0.778
Dyspnea	1.0(0.946-1.057)	1.0
Insomnia	0.591(0.0-)	0.998
Appetite loss	0.986(0.955-1.018)	0.393
Constipation	0.745(0.0-)	0.999
Diarrhea	0.595(0.0-)	0.998
Financial difficulties	0.991(0.957-1.0	0.612

Table 26: Symptom scale of EORTC QLQ HCC-18 of HCC association with QOL, TASH, Addis Ababa, Ethiopia, 2019.

After fitting each of the EORTC QLQ HCC-18 specific symptom scales of HCC patients with their QOL, Abdominal swelling symptom was a candidate for the final model $p \leq 0.2$.

Variable	COR (95% CI)	P-Value
Symptom scale		
Fatigue	0.961(0.868-1.063)	0.441
Body image	1.016(0.950-1.087)	0.636
Jaundice	0.991(0.942-1.043)	0.729

Nourishment	1.042(0.961-1.13)	0.324
Pain	1.073(0.954-1.206)	0.242
Fever	1.002(0.949-1.058)	0.938
Abdominal swelling	0.965(0.914-1.018)	0.192
Sex life	0.595(0.0-)	0.999

5.10.5.4.Multivariable logistic regression

For the final model, there were only two variables which were candidates $p < 0.2$, but none of them could not make a logistic regression model. Due to this, there was no model(variable) that could explain the QOL of HCC patients.

6. DISCUSSION

QOL is a meaningful endpoint used together with the clinical and physiological aspects and explained from the patient's perspective. This study assessed QOL (global health status) of gastrointestinal cancer patients and factors associated with it. As gastrointestinal cancer incorporated cancer of colon and rectum, esophagus, stomach (gastric), and liver; the factors that affected each type of cancer were different. But in general, the common factors that affected gastrointestinal cancer patients were social functioning, role functioning, pain, fatigue, and financial difficulty.

The mean Global health status (QOL) score of colorectal cancer patients in TASH is lower than the studies compared. It was lower than a study done in Turkey, UK, China (54, 55, 72) the discrepancy of the result of this study with other studies might be due to there is no screening program for most of the cancers including colorectal cancer in Ethiopia because of this many patients came at a late stage, enrollment of participants(patients diagnosed only for rectal cancer and without colostomy), and participants who ended their treatment phases, they were on follow up. It was also lower than EORTC QLQ C-30 Reference value manual for colorectal cancer (60 ± 23.4) showing poor QOL(73). Therefore, the reason for lower QOL might be due to the side effects of the different treatments. Most patients were treated with radiotherapy, chemotherapy, and surgery which lead to colostomy or ileostomy.

The reason for low QOL in this study might be the tertiary hospital (TASH) did not contain multidisciplinary teams like colorectal surgeons, oncologists, palliative physicians, and pain management teams which is very hard to find in Africa. Most patients are in an advanced stage during their presentation because most patients diagnosed with stage III and IV cancer were usually referred to the tertiary hospitals such as TASH.

The mean score for physical, role, cognitive and social function were lower than the EORTC QLQ reference value manual for colorectal cancer, however, the emotional functioning score was almost comparable with reference value manual for colorectal cancer. The least mean score was obtained for a role and social function, there mean score was almost equal. It was consistent with studies done in Morocco, German, Netherlands (57, 74, 75). The reasons for the reduced role and social function might be due to ostomies and bowel control difficulty encountered by colorectal cancer

patients. So, when they had a different site for excretion by using a colostomy, they might not be able to participate in daily activities of their work environment and social life.

Results of symptom scale scores for EORTC QLQ C-30 colorectal cancer patients were above the EORTC reference manual for fatigue, pain, appetite loss, and financial difficulties, and other's stayed comparable. This showed they had severe symptom complaints as compared to the reference manual. Most of the symptom burdens are expected from treatment side effects. A study was done in Germany (76) showed that a lower median summary score for symptom scales but fatigue was among the higher symptom burden complaint. A study was done in the general population of Danish and Colombia showed that fatigue and pain were one of the highest symptom complaints even though their mean scores were lower than this study (77, 78). A study conducted in China showed financial difficulty was also the main complaint of the participants despite fatigue and pain. The discrepancy for lower symptom scale scores might be due to malnutrition and lower pain management.

One of the determinants that affect QOL of colorectal cancer patients were having a stoma, it is not appalling result because of the feeling of stigma, bowel dysfunction, fear of odor and leakage, and also a restriction in social activities. It was consistent with studies done in England, USA (79, 80).

Despite the presence of stoma, colorectal cancer participants QOL were affected by Social functioning problems (difficulties). This was supported by studies done in Saudi Arabia (81). Contrary to this study, a study done in the USA showed that physical functioning affects survivors' QOL.

The other factor that has an association with QOL was pain. It was supported by a study done in Turkey (82) this might be due to patients with moderate and severe pain, the pain interferes with their sleep, daily life activities, the joy of life, workability, and social interactions.

The mean Global health status (QOL) score for gastric cancer patients in TASH was slightly lower than the mean score for the reference value manual of EORTC QLQ for gastric cancer (53.1 ± 26.5)(73). The reference value manual is based on pretreatment data only. Therefore, the reason for lower QOL might be due to the different treatment side effects that most patients had

been taking including surgery result in gastrectomy, chemotherapy. The mean QOL score of gastric cancer was found to be lesser than a study done in Japan, Spain, Korea (56, 83, 84). The discrepancy might be due to the method of enrollment of study participants, the intention of the treatment (curative gastrectomy was done), early screening methods, type of participants (stage one gastric cancer patients), and long-term survival (5 years).

The median score for the Symptom scale of EORTC QLQ C-30 for gastric cancer was above the reference value manual of EORTC QLQ for gastric cancer (73). Despite the difference in median score, the most affected scales were financial difficulties, appetite loss, fatigue, and pain. A study done in Korea, Japan (56, 83) showed fatigue was one of the most affected scales which is consistent with this study. In this study, financial difficulty and appetite loss were the least affected scales. This discrepancy might be due to expenses related to treatment, and economic differences between compared countries. Like the studies, measured the pattern of scales in different periods the symptom improved gradually.

From gastric specific questioner, the most affected scales in descending order were anxiety, body image, eating restriction. This result was supported by studies done in Korea (56, 85). It might be due to the patients had weight loss and feeling of unattractiveness.

Gastric cancer patients' QOL was significantly associated with pain (STO-22). This result was not in line with studies done in the Republic of Korea, Scotland (86, 87). Their results showed that QOL was significantly associated with eating restrictions. The difference might be due to the treatment type: total gastrectomy (surgery) which is resection of the 1/3 or 1/2 upper stomach thus result in damage to the normal physiologic relaxation of the stomach and in the long term it brings adjustment in dietary habits.

The mean score for QOL for esophageal cancer patients was lower as compared to the reference value manual of EORTC QLQ C-30 for esophageal cancer. It was also lower than the Danish, Colombian, and Korean general population-based reference data (77, 78, 88). Because the manual was based on baseline (pre-treatment) QoL data only, the other was on randomly selected healthy individuals which enabled for comparison. Cancer patients took different treatment regimens which on their own had toxicities that affected a patient's life. The mean score for QOL was also lower than a study done in China (89).

Among the five functional scales, role functioning was the most affected scale, it was supported by studies done in Sweden, Sri Lanka, Switzerland, and the Netherlands (90-94). This might be because role function was not the affected scale before the start of treatment and many of the participants were females, they have a crucial role in the family especially when they are mothers, to take care of their children (to cook food, to send children to school) when these things are limited to do their role as mother and caregiver diminishes highly.

Other studies done in China, Korea, and Taiwan showed that the most affected scale was social functioning (89, 95, 96). But in this study, the affected scale was role functioning followed by social functioning. The discrepancy might be because in the other studies participants were older (greater than 50 years) and had weak social support as cancer requires a lot of time for treatment, recurrence, and follow up.

The result may support the idea that cancer patients exhibit abnormalities in circadian rhythm function, which suggests that circadian rhythm alterations and social function are related in complex ways: social cues help to reset the biological clock, whereas disruptions in circadian and sleep cycle patterns tend to affect social interactions.

From the general symptom scales, pain and fatigue were highly affected scales. Studies done in Sweden, Sri Lanka, Switzerland, and Netherlands (90-94) stated that fatigue was a highly affected scale, and the pain was also considered as one of the symptoms they experienced. This might be due to the nature of the tumor site, and many of the participants in this study came at a late stage because of this the intention of the treatment was not curative.

From EORTC QLQ OES-18 eating difficulty was the most affected symptomology problem, it was consistent with studies done in Sweden (90, 97, 98). It was inconsistent with studies done in Srilanka, Switzerland, Taiwan (92, 93, 96). The discrepancy of these studies might be due to lack of enough health education programs about their dietary condition to eat small food and the frequency they eat after treatment, changes in the anatomy after esophagectomy, Pancreatic insufficiency, and dumping syndrome may also be responsible for eating difficulty.

The mean score for QOL of HCC was lower as compared to the reference value manual of EORTC QLQ C-30 for liver/bile/pancreas cancer (69).

EORTC QLQ C-30 mean score for HCC functional scales were very low compared to different studies done in Germany, China, Taiwan, Hong-Kong (99-102). The main reason might be due to many of the chemotherapy and related procedures used in these countries that are not available in Ethiopia governmental hospitals and if it is available in a private hospital it is very expensive. Many patients presented late with advanced disease in this study as compared to other papers participants who presented at an early stage.

EORTC QLQ C-30 score among the symptom scale the most affected scales were pain, appetite loss, fatigue, and financial difficulty. This is consistent with previous studies done in German, Taiwan, Hong-Kong (99, 101, 103). This might be because many HCC patients visit the health institution when they are symptomatic or secondary findings during an investigation for other diseases. So advanced disease at presentation is expected and patients suffer from symptoms as a result of large space-occupying lesions in the liver or associated hepatic dysfunction/failure.

EORTC QLQ HCC-30 the most affected symptom scales were body image and abdominal swelling was supported by studies done in Europe(multicenter), Germany (104, 105). Among the symptom scales, the least affected was sex life. Body image and abdominal swelling are some of the most disease presenting characteristics of HCC patients.

HCC is an aggressive disease, patients commonly present at an advanced stage when treatment option is limited, of modest benefit, and associated with disabling toxicities. HRQOL assessment enables the identification of symptoms/problems, whereby symptom control and psychosocial support measures could be offered as part of palliative care in parallel with anti-neoplastic therapy.

6.1. Limitation of the study

During the interpretation of the results, the following points should be under caution

- Participants' sexual experience might be highly affected, despite this study result, might be because of the cultural barriers.
- As there was no model for HCC due to the insufficient sample size
- Does not include other GI cancers like pancreatic cancer which is very rare, so could not be generalized for all other GI cancers.

7. Conclusion and Recommendation

7.1. Conclusion

This study showed that the quality of life of GI cancer patients is below average and lower than the studies compared. In common for all participants, they had a below average score on social, role, and physical functioning. Patients had high score in pain, fatigue, appetite loss and financial difficulty. Sex, occupational status, clinical stage, physical functioning, social functioning, financial difficulty, stoma presence, blood, and mucus in the stool were associated with QOL of colorectal cancer patients. GI symptoms were associated with esophageal and gastric cancer patients.

7.2. Recommendations

For health care providers

- QoL data can help to determine adequate supportive care need during the treatment period and follow up time
- Give awareness for patients what to expect during the process of cancer treatment and others.

For researchers

- Researchers should consider planning or doing reference data for QOL for the general Ethiopian population so that the data could be compared with those of cancer patients.
- This study focuses on GI cancer patients, it would be better if further studies focus exclusively on each of the cancers to assess their QOL with strong study design.

Policymakers

- Policymakers should give attention to patient-reported outcomes and include them on the patient's treatment protocol which enables the assessment of patients' functional and symptom scales which are related to either the cancer nature or treatment.

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9. ANNEXES

Annex 1: Tabulated presentation of bivariate and multivariable analysis

Annex 1.1. socio-demographic and life style related factors associated with QOL among colostomy having colorectal cancer patients, TASH, Addis Ababa, Ethiopia, 2019

Variables	Poor QOL	Good QOL	COR (95%CI)	P-value	
Sex					
Male	19(48.7)	13(72.2)	1		
Female	20(51.3)	5(27.8)	0.365(0.109-1.2)	0.1	
Marital status					
Married	25(64.1)	14(77.8)	1		
Not currently married	14(35.9)	4(22.2)	0.51(0.141-1.853)	0.306	
Educational status					
Secondary education and above (grade9-diploma)	13(33.3)	8(47.1)			
No formal education	9(23.1)	3(17.6)	0.54(0.112-2.61)	0.446	
Primary education	13(33.3)	2(11.8)	0.25(0.04-1.41)	0.116	
University/college and above	4(10.3)	4(23.5)	1.6(0.31-8.39)	0.562	
Religion					
Christian	33(84.6)	12(75.0)	1		
Muslim	6(15.4)	4(25.0)	1.8(0.44-7.60)	0.40	
Residence					
Urban	35(89.7)	14(77.8)	1		
Rural	4(10.3)	4(22.2)	2.5(0.54-11.41)	0.23	
Region					
Addis Ababa			1		
Oromia			2.32(0.57-9.36)	0.235	

Amhara			1.3(0.10-17.41)	0.81	
SNNPR			1.3(0.20-9.12)	0.75	
Tigray			0.0(0.0)	0.99	
Other			1.3(0.20-9.12)	0.75	
Occupational status					
Unemployed	24(61.5)	8(44.4)	1		
Self-employed	7(17.9)	3(16.7)	1.28(0.267-6.18)	0.754	
Employed	8(20.5)	7(38.9)	2.62(0.72-9.55)	0.143	
Wealth index					
Highest	13(33.3)	5(27.8)	1		
Second	8(20.5)	2(11.1)	1.25(0.164-9.53)	0.830	
Middle	6(15.4)	4(22.2)	0.5(0.05-4.978)	0.554	
Fourth	8(20.5)	5(27.8)	1.33(0.16-11.07)	0.790	
Lowest	4(10.3)	2(11.1)	0.769(0.106-5.6)	0.796	
Life style					
Smoking status					
Never smoked	34(87.2)	16(88.9)	1		
Used to smoke	5(12.8)	2(11.1)	0.85(0.149-4.83)	0.855	
Chat chewing status					
Never chewed	31(79.5)	17(94.4)	1		
Used to chew	8(20.5)	1(5.6)	0.22(0.026-1.97)	0.18	
Drinking status					
No	21(53.8)	10(55.6)	1		
Yes	18(46.2)	8(44.4)	0.93(0.30-2.869)	0.904	
Age in years			0.99(0.959-1.04)	0.945	

Annex 1.2. Clinical characteristics associated with QOL among colorectal cancer patients with colostomy, TASH, Addis Ababa, Ethiopia,2019.

Variable	Poor QOL N (%)	Good QOL N (%)	AOR 95%CI	p-value
Type of treatment				
Surgery and chemotherapy	15(38.5)	8(44.4)	1	
Surgery	9(23.1)	5(27.8)	1.04(0.26-4.181)	0.954
Chemotherapy, radiation and surgery	15(38.5)	5(27.5)	0.625(0.166-2.356)	0.488
TNM stage				
Late stage	21(53.8)	11(61.1)	1	
Early stage	18(46.2)	7(38.9)	0.742(0.238-2.316)	0.6
History of metastasis				
No	31(79.5)	16(88.9)	1	
Yes	8(20.5)	2(11.1)	0.484(0.092-2.55)	0.393
History of recurrence				
No	31(79.5)	16(88.9)	1	
Yes	8(20.5)	2(11.1)	2.06(0.391-10.88)	0.393
Comorbidity diseases				
No	31(79.5)	15(83.3)	1	
Yes	8(20.5)	3(16.7)	0.775(0.179-3.348)	0.733
Time since diagnosis(months)			1.01(0.990-1.034)	0.277

Annex 1.3. Functional and symptom scale of EORTC QLQ C 30 association with QOL among colorectal cancer patients with colostomy, TASH, Addis Ababa, Ethiopia,2019

Variable	COR 95% CI	P-Value
Functional scale		
Physical function	1.03(1.008-1.06)	0.010
Role function	1.017(1.0-1.035)	0.048
Cognitive function	1.025(0.997-1.053)	0.082
Emotional function	1.04(1.015-1.074)	0.003
Social function	1.032(1.01-1.054)	0.003
Symptom scale		
Fatigue	0.961(0.938-0.984)	0.001
Nausea/vomiting	0.942(0.891-0.996)	0.037
Pain	0.968(0.948-0.990)	0.004
Dyspnea	0.989(0.954-1.018)	0.376
Appetite loss	0.976(0.956-0.996)	0.020
Insomnia	0.978(0.959-0.998)	0.031
Constipation	0.561(0.00-)	0.998
Diarrhea	1.014(0.985-1.043)	0.353
Financial difficulty	0.976(0.959-0.994)	0.007

Annex 1.4. Functional and symptom scales of EORTC QLQ CR-29 association with QoL among colorectal cancer patients with colostomy, TASH, Addis Ababa, Ethiopia,2019

Scales			
Symptom scales/items	COR 95% CI	AOR 95% CI	P-Value
Urinary frequency	0.983(0.961-1.005)		0.129
Urinary incontinence	0.997(0.974-1.021)		0.808

Dysuria	0.994(0.966-1.022)		0.653
Abdominal pain	0.989(0.968-1.011)		0.322
Buttock pain	0.994(0.977-1.012)		0.504
Bloating	0.981(0.953-1.009)		0.189
Blood and mucus in stool	0.993(0.965-1.022)		0.636
Dry mouth	0.986(0.961-1.01)		0.248
Hair loss	0.996(0.979-1.013)		0.638
Taste	0.984(0.958-1.010)		0.219
Stoma care problems	0.992(0.977-1.006)		0.268
Flatulence	1.006(0.991-1.021)		0.424
Fecal incontinence	1.012(0.995-1.029)		0.169
Sore skin	1.019(0.997-1.043)		0.095
Stool frequency	0.993(0.969-1.017)		0.572
Embarrassment	1.005(0.991-1.018)		0.485
Impotence	1.002(0.984-1.020)		0.824
Dyspareunia	1.011(0.985-1.037)		0.428
Functional scales/items			
Anxiety	1.014(0.998-1.030)		0.08
Weight	1.022(1.002-1.042)		0.034
Body Image	1.024(1.001-1.047)		0.039
Sexual interest(men)	1.007(0.983-1.032)		0.557
Sexual interest(women)	1.011(0.985-1.037)		0.428

Annex 2: SCORING manual

CR-29 colorectal cancer Scoring manual

The **Colorectal Cancer Module** is a supplementary questionnaire module to be employed in conjunction with the QLQ-C30. The QLQ-CR29 incorporates 4 multiitem scales and 19 single-items assessing a range of symptoms and problems common among patients with colorectal cancer.

The scoring approach for the QLQ-CR29 is identical in principle to that for the function and symptom scales/single-items of the QLQ-C30. All scoring information specific to the QLQ-CR29 is presented below.

Interpretation:

All of the scales and single-item measures range in score from 0 to 100. A high score for the functional scale and functional single-items represents a high level of functioning, whereas a high score for the symptom scales and symptom single-items represents a high level of symptomatology or problems.

Scoring the QLQ-CR29

Analysis category	Number of items	Item range	QLQ-CR29 item numbers(I₁, I₂, ..I_n)	Reverse scoring item
Symptom scales/items				
Urinary frequency	2	3	501,502	-
Urinary incontinence	1	3	503	-
Dysuria	1	3	504	-
Abdominal pain	1	3	505	-
Buttock pain	1	3	506	-
Bloating	1	3	507	-
Blood and mucus in stool	2	3	508,509	-

Dry mouth	1	3	510	-
Hair loss	1	3	511	-
Taste	1	3	512	-
Flatulence¹	1	3	519	-
Faecal incontinence¹	1	3	520	-
Sore skin¹	1	3	521	-
Stool frequency¹	2	3	522,523	-
Embarrassment	1	3	524	-
Stoma care problems²	1	3	525	-
Impotence³	1	3	527	-
Dyspareunia⁴	1	3	529	-
Functional scales/items				
Anxiety	1	3	513	-
Weight	1	3	514	-
Body Image	3	3	515-517	-
Sexual interest (men)³	1	3	526	526
Sexual interest (women)⁴	1	3	528	528

* “Item range” is the difference between the possible maximum and the minimum response to individual items. Most items are scored 1 to 4, giving range = 3.

¹ When scoring scales or single-items that include questions 49 – 54, ensure the answers are taken from the relevant box of questions. Therefore, check the answer to question 48: ‘Do you have a stoma bag (colostomy/ileostomy)?’

² This item is of relevance only if the answer to question 48 is ‘Yes’.

³ Items 56 and 57 are only applicable to men.

⁴ Items 58 and 59 are only applicable to women

STO-22 Gastric cancer scoring manual

The Gastric Cancer Module is a supplementary questionnaire module to be employed in conjunction with the QLQ-C30. The QLQ-STO22 incorporates five multi-item scales to assess dysphagia, pain, reflux, eating, and anxiety. Also, four single items assess dry mouth, taste, body image, and hair loss. The scoring approach for the QLQ-STO22 is identical in principle to that for the symptom scales / single items of the QLQ-C30.

Interpretation:

All of the scales and single-item measures range in score from 0 to 100. For all scales and/or single items, a high score represents a high level of symptomatology or problems.

Scoring manual for QLQ STO-22

Analysis category	Number of items	Item range	QLQ STO-22 items numbers
Symptom scale			
Dysphagia	3	3	401-403
Pain	4	3	404-407
Reflux	3	3	408-410
Eating restrictions	4	3	411-413,416
Anxiety	3	3	417,418,420
Dry-mouth	1	3	414
Taste	1	3	415
Body image	1	3	419
Hair loss	1	3	422

“Item range” is the difference between the possible maximum and the minimum response to individual items. [All / Most] items are scored 1 to 4, giving range = 3. Item 221 is conditional and must be treated as missing if the answer to question 220 ‘Have you lost any hair?’ is ‘not at all’.

EORTC QLQ OES-18 scoring manual

The Esophageal Cancer Module is a supplementary questionnaire module to be employed in conjunction with the QLQ-C30. The QLQ-OES18 incorporates four multi-item scales to assess dysphagia, eating, reflux, and pain. In addition, six single items assess trouble swallowing saliva, choked when swallowing, dry mouth, trouble with taste, trouble with coughing, and trouble talking.

The scoring approach for the QLQ-OES18 is identical in principle to that for the symptom scales and single items of the QLQ-C30.

Analysis category	No. of items	Item range	QLQ OES-18 items numbers	Reverse scoring items
Symptom scales / items				
Dysphagia	3	3	601-603	601-603
Trouble swallowing saliva	1	3	604	
Choked when swallowing	1	3	605	
Eating	4	3	606-609	
Dry mouth	1	3	610	
Trouble with taste	1	3	611	
Trouble with coughing	1	3	612	
Trouble talking	1	3	613	
Reflux	2	3	614-615	
Pain	3	3	616-618	

EORTC QLQ-HCC18 Scoring Manual

The Hepatocellular Carcinoma Module is a supplementary questionnaire module to be employed in conjunction with the QLQ-C30. The QLQ-HCC18 incorporates 6 multi-item scales to assess fatigue, body image, jaundice, nutrition, pain, and fever. In addition, 2 single items assess abdominal swelling and sex life.

Analysis category	No. of items	Item range	QLQ OES-18 items numbers
Symptom Scale			
Fatigue	3	3	315-317
Body image	2	3	303,305

Jaundice	2	3	306,307
Nutrition	5	3	301,302,312-314
Pain	2	3	308,309
Fever	2	3	310,311
Single items			
Abdominal swelling	1	3	304
Sex life	1	3	318

Annex 3. Questioner English version

INFORMATION SHEET

Purpose of the research project: This research is done to assess the quality of life of Gastro-intestinal cancer patients.

Reasons for participation: You are being asked to join this study because you are

- 18 years old and above
- Currently on treatment or follow up either of the gastrointestinal cancer

Study procedures: Face to face interview was by using the EORTC QLQ -30 questioner in conjunction with disease-specific questioner respective of their cancer type. The interview took 30-40 minutes.

Risks/discomforts: We believe the risks of this study are relatively insignificant. There could be some discomfort and anxiety about some issues for example urinary incontinency, fecal incontinency, and flatulence, and others.

Benefits: There are no implicit direct benefits for the study participants. However, you will be provided with information about Gastro-intestinal cancers and side effects of the treatment at the end of your participation.

Payment: There was no payment for study participants because the data collection was done during the day, they come for follow up either for treatment or checkup or in the inpatient ward of oncology or surgical unit.

Data Sharing: During the study, the data was accessed only by the PI including consent documents. There was no intention of sharing data to public after the study.

Data Confidentiality: It was kept by the safe storage of data and De-identification of participants. All study team members were trained regarding the need to keep all information from participants confidential, as well as what needs to happen during any breach of confidentiality occur. There were no breaches. Name or physical address was not used during report sharing and communication of results.

Protecting your privacy during data collection: Privacy of respondents were respected through the informed consent. Primary data were handled by PI and the data was protected through password. During data analysis, again data was stored through a password protected system and data was analyzed using codes, without personal identifiers.

Questions or problems: Call the principal investigator Helen G/Libanos, at 0946338501 OR E-mail-helenlibanos789@gmail.com if you have questions or complaints, as a result of being in this study.

Institution -School OF PUBLIC HEALTH

Address –Zewditu campus

Part 1- demographic characteristics of adult Gastro-Intestinal cancer patients in Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2018/2019.

101	Sex	1. Male 2. Female
102	How old are you?(complete years)	-----years
103.	Where is your Residence?	1. Urban 2. Rural
104	From where region did you come from?	-----
105	What is your current marital status?	1. Never married 2. Married 3. Living together 4. Divorced/separated 5. Widowed
106.	What is your religion?	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Traditional 6. Other(specify) -----

107.	What is your educational status	1. No education 2. can read & write 3. Primary education 4. Secondary education 5. Diploma & Degree 6. Masters and Above
108.	What is your occupation? That is, what kind of work do you mainly do?	1.Farmer 2.Daily laborer 3. Governmental 4.Merchant 5. private /non-governmental 6. Student 7. Housewife/unemployed 8. Pension 9.Others
109.	partners Occupational status	1.farmer 2.govermental 3.non-govermental 4.merchant 5.student 6.housewife 7.unemployeed 8.pension 9.other,specify-----
110.	Smoke cigarrete	1.used to smoke 2.still smokes 3.never smoke
111.	Chat chew	1.used to chew 2.still chew 3.never chew
112.	Did you drink	1.yes 2.No
	If yes	1.Tela 2.Tej 3.Areke 4.Beer 5.other
113.	status of drinking currently	1.used to drink 2.still drink 3.sometimes drink 4.always drink

Part 2-Housing Condition (Wealth Index)

114.	Television	1. Yes.	2. No
115.	Radio	1. Yes.	2. No
116.	Mobile	1. Yes.	2. No
117.	Non- Mobile Telephone	1. Yes.	2. No
118.	Electric stove	1. Yes.	2. No
119.	Refrigerator	1. Yes.	2. No
120.	Washing machine	1. Yes.	2. No
121.	Couch	1. Yes	. 2. No
122.	Bicycle/Motorcycle	1. Yes.	2. No

123.	Car	1. Yes. 2. No
124.	Chair	1. Yes. 2. No
125.	How many hectares of agricultural land do members of this household own?	1.-----Hectar 2. I don't have
126.	What is the type of toilet facility you have in your house?	1. Flush or Pour Flush Toilet 2. Pit Latrine 3. No Facility/Bush/Field
127.	What is the main source of drinking water used by your household?	1. Piped Water 2. Protected Spring 3. Unprotected spring 4. Dug Well 5. River /Lake/Pond 6. Water from Spring/Dam 7. No
128.	How many of the following animals does this household own?	1. Milk cows, oxen or bulls? 2. Chickens 3. Sheep 4. Goats 5. Horses, donkeys, or mules 6. Beehives

Housing condition		
129	Owner of the house?	1. Private 2. Government 3. Private rental 4. Other
130	Number of room in the household?	
131	How many peoples are sleeping per room in this household?	
132	What is the main material of the roof of the dwelling?	1. Natural roofing (wood planks, cardboard) 2. Metal/Corrugated Iron 3. Cement/ Calamine Fiber 4. Ceramic Tiles 5. Others (specify)
133	What is the main material of the floor of the dwelling?	1. Earth/Sand/Dung 2. Wood Planks 3. Cement 4. Ceramic Tiles 5. Carpet 6. Others. (Specify)

Part 3-Clinical characteristics

Questions		
134	Type of treatment patient take	1. Chemotherapy 2. Radiation 3. Surgery 4. Chemotherapy & radiation

		5. Surgery & chemotherapy 6. Surgery & chemo & radiation
135	Does the Cancer metastasize	1. Yes 2.No Locally Distant A. Lung B. Bone C. Liver D. Ovary E. other
136	Cancer stage(TNM)	T----- N----- M-----
137	Cancer stage	1.Stage 1 2. Stage 2A 3. Stage 2B 4. Stage 3A 5. Stage 3B 6. Stage 4
138	Biopsy Date	M/D/Year
139	Co morbidity	1.Yes 2.No
140	Type of co morbidity	1. HTN 2.DM 3.CVD 4.Kidney 5.HIV6. Other
141	Recurrence	1.Yes 2.No
142	Cancer site	1. Colon 2. Rectum
143	HBV Positive	1.Yes 2.No
143	HCV Positive	1.Yes 2.No

Part 4-The EORTC QLQ C-30 version 3 for all Gastro-intestinal cancer patients in Tikur-Anbessa Specialized Hospital, Addis Ababa, Ethiopia, 2018/2019.

During the past week	Not at all	A little	Quite a bit	Very much
200.Do you have trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase	1	2	3	4
201.Do you have trouble taking a long walk	1	2	3	4
202.Do you have trouble taking a short walk outside of the house	1	2	3	4
203. Do you have need to stay in bed or a chair during the day	1	2	3	4

204.Do you have need help with eating, dressing, washing yourself or using the toilet	1	2	3	4
During the past week				
205. Were you limited in doing either your work or other daily activities?	1	2	3	4
206.Were you limited in pursuing your hobbies or other leisure time activities?	1	2	3	4
207.Were you short of breath?	1	2	3	4
208.Have you had pain?	1	2	3	4
209.Did you need to rest?	1	2	3	4
210. Have you had trouble sleeping?	1	2	3	4
211.Have you felt weak?	1	2	3	4
212. Have you lacked appetite?	1	2	3	4
213. Have you felt nauseated?	1	2	3	4
214. Have you vomited?	1	2	3	4
215. Have you been constipated?	1	2	3	4
During past week				
216. Have you had diarrhea?	1	2	3	4
217. Were you tired?	1	2	3	4
218. Did pain interfere with your daily activities?	1	2	3	4
219. Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	4
220. Did you feel tense?	1	2	3	4
221. Did you worry?	1	2	3	4

222. Did you feel irritable?	1	2	3	4
223. Did you feel depressed?	1	2	3	4
224. Have you had difficulty remembering things?	1	2	3	4
225. Has your physical condition or medical treatment interfered with your family life?	1	2	3	4
226. Has your physical condition or medical treatment Interfered with your social activities?	1	2	3	4
228. Has your physical condition or medical treatment caused you financial difficulties?	1	2	3	4

For the following questions please circle the number between 1 and 7 that best applies to you

229. How would you rate your **overall health** during the past week?

1 Very poor	2	3	4	5	6	7 Excellent
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230. How would you rate your **overall quality of life** during the past week?

1 Very poor	2	3	4	5	6	7 Excellent
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Part 5-Quality of life questioner for Hepatocellular cancer EORTC QLQ HCC-18 among gastric cancer patients in TASH,2019.

During the past week		Not at all	A little	Quite a bit	Very much
301	Did you feel thirsty?	1	2	3	4
302	Have you had problems with your sense of taste?	1	2	3	4
303	Have you lost muscle from your arms or legs?	1	2	3	4
304	Have you had abdominal swelling?	1	2	3	4

305	Have you been concerned by the appearance of your abdomen?	1	2	3	4
306	Have you been concerned by your skin or eyes being yellow (jaundiced)?	1	2	3	4
307	Have you had itching?	1	2	3	4
308	Have you had pain in your shoulder?	1	2	3	4
309	Have you had abdominal pain?	1	2	3	4
310	Have you had fevers?	1	2	3	4
311	Have you had chills?	1	2	3	4
312	Have you worried about getting enough nourishment?	1	2	3	4
313	Have you felt full up too quickly after beginning to eat?	1	2	3	4
314	Have you worried about your weight being too low?	1	2	3	4
315	Have you been less active than you would like to be?	1	2	3	4
316	Have you found it difficult to finish things?	1	2	3	4
317	Have you needed to sleep during the day?	1	2	3	4

During the past four weeks:

318.Has the disease or treatment had any effect on your sex life? 1 2 3 4

Part 6-Quality of life questioner for gastric cancer STO-22 among gastric cancer patients in TASH,2019.

During the past week	Not at all	A little	Quite a bit	Very much
401. Have you had problems eating solid foods?	1	2	3	4
402. Have you had problems eating liquidized or soft foods?	1	2	3	4
403. Have you had problems drinking liquids?	1	2	3	4
404. Have you had discomfort when eating?	1	2	3	4
405. Have you had pain in your stomach area?	1	2	3	4

406. Have you had discomfort in your stomach area?	1	2	3	4
407. Did you have a bloated Feeling in your abdomen?	1	2	3	4
408. Have you had trouble with acid or bile coming to your mouth?	1	2	3	4
409. Have you had acid ingestion or Heartburn?	1	2	3	4
410. Have you had trouble with belching?	1	2	3	4
411. Have you felt full up too quickly after beginning to eat?	1	2	3	4
412. Have you had trouble enjoying your meals?	1	2	3	4
413. Has it taken you a long time to complete your meals?	1	2	3	4
414. Have you had a dry mouth?	1	2	3	4
415. Did food and drink taste different from usual?	1	2	3	4
416. Have you had trouble with eating in front of other people?	1	2	3	4
417. Have you been thinking about your illness?	1	2	3	4
418. Have you worried about your weight being too low?	1	2	3	4
419. Have you felt physically less attractive as a result of your disease or treatment?	1	2	3	4
420. Have you worried about your health in the future?	1	2	3	4

421. Have you lost any hair?

Yes

No

422. Answer this question only if you lost any hair:

If so, were you upset by the loss of your hair? 1 2 3 4

Part 7-Quality of life questioner for colorectal cancer EORTC QLQ CR-29 among gastric cancer patients in TASH,2019.

During the past week	Not at all	A little	Quite a bit	Very little
501. Did you urinate frequently during the day?	1	2	3	4
502. Did you urinate frequently during night?	1	2	3	4
503. Have you had any unintentional release (leakage) urine?	1	2	3	4
504. Did you have pain when you urinated?	1	2	3	4
505. Did you have abdominal pain?	1	2	3	4
506. Did you have pain in your buttocks/anal area/rectum?	1	2	3	4
507. Did you have a bloated feeling in your abdomen?	1	2	3	4
508. Did you had blood in your stools?	1	2	3	4
509.did you had mucus in your stools?	1	2	3	4
DURING THE PAST WEEK				
510. Did you have a dry mouth?	1	2	3	4
511. Have you lost hair as a result of your treatment?	1	2	3	4
512. Have you had problems with your sense of taste?	1	2	3	4
513. Were you worried about your health in the future?	1	2	3	4
514. Have you worried about your weight	1	2	3	4
515. Have you felt physically less attractive as a result of your disease or treatment?	1	2	3	4

516. Have you been feeling less feminine/masculine as a result of your disease or treatment?	1	2	3	4
517. Have you been dissatisfied with your body?	1	2	3	4

518. Do you have a stoma bag (colostomy/ ileostomy)?

1. YES

2. NO

Answer these questions ONLY IF YOU HAVE A STOMA BAG, if not please continue below				
During the past week:	Not at all	A little	Quite a bit	Very Much
519. Have you had unintentional release of Gas /flatulence from your stoma bag?	1	2	3	4
520. Have you had leakage of stools from your stoma bag?	1	2	3	4
521. Have you had sore skin around your stoma?	1	2	3	4
522. Did frequent bag changes occur during the day?	1	2	3	4
523. Did frequent bag changes occur during the night?	1	2	3	4
524. Did you feel embarrassed because of your stoma?	1	2	3	4
525. Did you have problems caring for your stoma?	1	2	3	4

Answer these questions ONLY IF YOU DO NOT HAVE A STOMA BAG				
During the past week:	Not at all	A little	Quite a bit	Very Much
519. Have you had unintentional release of gas/flatulence from your back passage?	1	2	3	4
520. Have you had leakage of stools from your back passage?	1	2	3	4
521. Have you had sore skin around your anal area?	1	2	3	4
522. Did frequent bowel movements occur during the day?	1	2	3	4

523. Did frequent bowel movements occur during the night?	1	2	3	4
524. Did you feel embarrassed because of your bowel movement?	1	2	3	4

During the past 4 weeks:

For men only:

526. To what extent were you interested in sex? 1 2 3 4

527. Did you have difficulty getting or maintaining an erection? 1 2 3 4

For women only

528. To what extent were you interested in sex? 1 2 3 4

529. Did you have pain or discomfort during intercourse? 1 2 3 4

Part 8-Quality of life questioner for esophageal cancer EORTC QLQ OES-18 among gastric cancer patients in TASH,2019.

During the past week	Not at all	A little	Quite a bit	Very much
601. Could you eat solid food?	1	2	3	4
602. Could you eat liquidized or soft food?	1	2	3	4
603. Could you drink liquids?	1	2	3	4
604. Have you had trouble with swallowing your saliva?	1	2	3	4
605. Have you choked when swallowing	1	2	3	4
606. Have you had trouble enjoying your meals?	1	2	3	4
607. Have you felt full up too quickly?	1	2	3	4
608. Have you had trouble with eating?	1	2	3	4
609. Have you had trouble with eating in front of other people?	1	2	3	4
610. Have you had a dry mouth?	1	2	3	4
611. Have you had problems with your sense of taste?	1	2	3	4
612. Have you had trouble with coughing?	1	2	3	4
613. Have you had trouble with talking	1	2	3	4

614. Have you had acid indigestion or heartburn?	1	2	3	4
615. Have you had trouble with acid or bile coming into your mouth?	1	2	3	4
616. Have you had pain when you eat?	1	2	3	4
617. Have you had pain in your chest?	1	2	3	4
618. Have you had pain in your stomach?	1	2	3	4

619. Did you use feeding tube? 1. yes 2. No

Annex 4. Questioner Amharic version

የመረጃቅጽ

የጥናቱ አላማ -ይህ ጥናት የሚሰራው የጨካኝነት አንጀት ካንሰር ህመም ላለባቸው ታካሚዎች የህይወት ጣእማቸውን ለማወቅ ነው፡፡

ለጥናቱ የተመረጡበት ምክኒያት-

ለዚህ ጥናት እንዲሳተፉ የተመረጡት 18 ዓመትና ከዛብ ላለ ሆኑ እና በጥቁር አንበሳ እሰፕላዝድ ሆስፒታል ውስጥ በካንሰር ህክምና ክፍል የጨካኝነት ካንሰር ህመም ስለሚታከሙ ነው፡፡

የጥናት ሁኔታ (አካሄድ) -በዚህ ጥናት ላይ ሲሳተፉ በEORTC QLQC -30 በተዘጋጀው መጠይቅ መሰረት ለ 30 ደቂቃ ይጠየቃሉ፡፡

ጉዳት/አለመመቻቸት -በዚህ ጥናት ላይ በመሳተፍ የሚደርስበት እጅግ በጣም ጥቂት ጉዳት ነው ፡፡ ለምሳሌ በሚጠየቁበት ጊዜ የመረበሽ ስሜት ሊያጋጥሙት ይችላል፡፡

ጥቅም በዚህ ጥናት ላይ በመሳተፍ በቀጥታ የሚያገኙት ጥቅም ባይኖርም ስለህመሙ እና ስለሚወስዱት መድሃኒት ተጨማሪ መረጃና ማብራሪያ ያገኛሉ፡፡

ክፍያ -በዚህ ጥናት ላይ በመሳተፍ የገንዘብ ክፍያ አይኖርም ምክኒያቱም መረጃ እየተሰበሰበ ያለው እርሶ ለመደበኛ ህክምና ክትትል ወይም ቀጠሮ ስለሆነ ነው፡፡

የመረጃ ስርጭት -ጥናቱ በሚሰራበት ጊዜ መረጃው የሚቆየው (የሚያዘው) በዋና አጥኚው ነው፡፡ መረጃውን ለሌላ ስራ ወይም ጥናት አናውለውም፡፡

የመረጃ ሚስጥራዊነት -መረጃ በጥንቃቄና ደህንነቱ በተጠበቀ ሁኔታ ይቀመጣል፡፡ ሁሉም በጥናቱ ላይ የሚሳተፉ የጥናቱ አባላት መረጃው እንዴት በጥንቃቄና ደህንነቱ በተጠበቀ ሁኔታ እንደሚቀመጥ ተገቢውን የሆነ ስልጠና የወሰዱ ናቸው፡፡ መረጃው አፈትልኮ የሚወጣበት ሁኔታ እጅግ በጣም አናሳ ነው፡፡ የመረጃው ውጤት በሚቀርብበት ጊዜ ምንም ዓይነት የተሳታፊዎች ስም እና አድራሻ አንጠቀምም፡፡

መረጃ በሚሰበሰብበት ጊዜና ሁኔታ -መረጃ በሚሰበሰብበት ጊዜ ለተሳታፊዎች አመቺ በሆነ ቦታ ነው (ሳይሳቀቁና ሚስጥራቸውን ሌላ ታካሚ በማይሰማባቸው ሁኔታ)፡፡ መረጃው የሚቆየው ዋና አጥኚው ጋር ሲሆን መረጃው በኮምፒውተር ውስጥ ከገባ በኋላ በሚስጥር ኮድ የሚቆለፍ ይሆናል፡፡

ጥናቱ ላይ ጥያቄ ወይም ችግር ካለ ማነጋገር የሚችሉት አካል

የጥናቱ ዋና ሀላፊ ሄለን ገ/ሊባኖስ ስልክ ቁ-0946 338501 email-helenlibanos789@gmail.com አድራሻ-School Public Health Zewditu campus

አዲስአበባ ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ የማህበረሰብ የትምህርት ክፍል

የተሳታፊዎች የመረጃ ቅጽ

ጤና ይስጥልኝ ስሜ _____ ይባላል የምሰራው በ _____ ነው

በአዲስአበባ ዩኒቨርሲቲ ህክምናና ጤና ሳይንስ ኮሌጅ የጥናት ቡድን አባላት በተዘጋጀው ጥናት ላይ መረጃ ሰብሳቢ ሆኜ እየሰራሁ ነው ፡፡ ይህንን ጥናት በተመለከተ አጭር ቃለ መጠይቅ ከእርስዎ ጋር ይኖረኛል፡፡ከቃለ ምልልሱ በፊት ግን ስለዚህ ጥናት አላማ በአጭሩ እገልጻለሁ፡፡ይህ ጥናት በአ/አ ዩኒቨርሲቲ ህክምናና ጥናት ሳይንስ ኮሌጅ የማስተርስ ኘሮግራም የመመረቂያ ጽሁፍ ነው፡፡ የዚህ ጥናት ዓላማ በጥቁር አንባሳ እስፔሻሊዝድ ሆስፒታል የሚገኙ የጨጓራ ፣ የአንጀት፣ የሆድ ካንሰር ላለባቸው የኬሞቴራፒ ፣ ህክምና ላይ ላሉ ህመምተኞች በህይወት የመኖር ጣዕም ላይ የሚያተኩር ነው እርስዎም በዚህ ጥናት ላይ እንዲሳተፉ ተጋብዘዋል፡፡ አሁን የምናደርገው የቃለ ምልልሱ ምክንያት ግዜውን ከመሻማት ውጭ በአካሉ ላይ የሚደረግ ምንም ዓይነት ጉዳት የለም ፡፡

EORTC QLQ C-30 (Amharic version)

የእኛው-ቡድንስለከእርሶዎስለጤንነትዎልዩትኩረትመስጠትነው፡፡

እባክዎትንየሚከተሉትንጥያቄዎችበሙሉእርሶዎትከከለኛብለውያመኑበትንበማክበብይመልሱ፡፡ትከከለኛመልስወይምየተሳሳተ መልስየሚባልየለም፡፡የሚሰጡትመረጃሁሉሚስጠራዊነቱበደንበየተጠበቀይሆናል፡፡

መለያቁጥር.....

ቀን፡...

Informed consent form (Amharic version)

ፈቃደኝነትንየሚያረጋግጥቅፅ

በመረጃሰብሳቢዎመሰረትየተነገረኝንመረጃበሙሉተረድቻለሁ፡፡አናምበዚህቃለመጠይቅላይለመሳተፍፈቃደኝነኝ፡፡

የምላሽሰጪፊርማ.....

ቀን.....

የጠያቂፊርማ.....

ተቆጣጣሪ ፊርማ.....

ክፍል1:የማህበራዊናየሰነ-ህዝብገጽታወች

ተ.ቁ	ጥያቄዎች	መልስሊሆኑ የሚችሉዝርዝሮች
101.	ዕድሜዎስንትነው?	_____ ዓመት
102.	ጾታ	1.ሴት 2.ወንድ
103.	የጋብቻሁኔታ?	1. ያገባ/ች 2. ያላገባ/ች 3.የተፋታ/ች 4. ባል/ሚስትየሞተባ/በት
104.	የትምህርት ደረጃዎ ምን ያህልነው?	1. ማንበብናመጻፍየማይችል 2. የመጀመሪያደረጃ 3. ሁለተኛደረጃናከዛበላየ 4.ዩንቨርሲቲ 5. ሁለተኛከዛበላይ
105.	የኑሮ አጋሮ የትምህርት ደረጃዎምን ያህልነው?	1.ማንበብናመጻፍየማይችል 2.የመጀመሪያደረጃ 3.ሁለተኛደረጃናከዛበላየ 4.ዩንቨርሲቲ 5. ሁለተኛከዛበላይ
106.	ሐይማኖተዎምን ይደንገው?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላካለይጠቀስ _____
107.	የመኖሪያአድራሻ	1.ትግራይ2.አፋር3.አሮሚያ 4.አማራ5.ሶማሊ...ደቡብህዝቦች ጋምቤላ .ሀረሪኣዲስአበባ ድሬዳዋ

108	የመኖሪያ አድራሻ	1. ገጠር 2. ከተማ
109	ስራዎትምን ድንከር ነው?	1. ገበሬ 2. የመንግስት ሰራተኛ 3. የግል ስራ 4. የቤት እመቤት 5. ነጋዴ 6. ተማሪ 7. ሌላ ካለ ይጠቀስ _____
110	ሲጋራ ያጨሳሉ	1. አጨስነበር 2. አሁንም አጨሳለሁ 3. በፍፁም አጭሼ አላቅም
111	ጫት ይቅማሉ	1. እቅም ነበር 2. አሁንም እቅማለሁ/. አልፎ አልፎ/ሁልጊዜ 3. በፍፁም ቅጫ አላቅም
112.	መጠጥ ይጠጣሉ	0. አዎ 1. አይ አልጠጣም
113	የትኛውን የመጠጥ ይጠጣሉ	1. ጠላ 2. ጠጅ 3. አረቄ 4. ቢራ 5. ሌላ ካለ-----
114	መጠጥ ይጠጣሉ	0. እጠጣ ነበር 1. አሁንም እጠጣለሁ 2. አልፎ አልፎ እጠጣለሁ 3. ሁልጊዜ እጠጣለሁ

ክፍል 2: የቤት ውስጥ ማህበራዊና ኢኮኖሚያዊ ደረጃ (wealth index) የሚቀጥለው መጠየቅ የቤተሰብ ንብረት አገልግሎትና የቤት ሁኔታን የሚቃኝ ይሆናል፡፡ እባእዎ መልስዎን በተሰጠው መልስ ሳጥንው ስጥ ያክብቡ፡፡

ቁጥር	ጥያቄ	መልስ
115.	ቴሌቪዥን	1. አዎ 2. የለም
116.	ሬድዮ/ቴፕ ሬከርደር	1. አዎ 2. የለም
117	ሞባይል ስልክ	1. አዎ 2. የለም
118	ሞባይል የለም/የገመድ ስልክ	1. አዎ 2. የለም
119	የኤሌትሪክ ምድጃ	1. አዎ 2. የለም
120	ፍሪጅ	1. አዎ 2. የለም

121	ላውንደሪ(የልብስማጠብያ	1.አዎ2.የለም
122	ሶፋ	1.አዎ2.የለም
123	ሳይክል/ሞተርሳይክል	1.አዎ2. የለም
124	መኪና	1አዎ 2.የለም
125	የቤትውስጥሰራተኛ	1.አዎ2.የለም

2.የቤትሁኔታ፡የሚከተለውመጠየቅየእርሶንየቤትሁኔታየሚቃኝይሆናልእባኮዎመልስበትክክለኛውመልስላይያክብቡ

126	የመኖሪያቤትባለቤትነት	1.የግል 2.የመንግስት 3.ኪራይ 4.ሌላጥቅስ
127	የክፍልቀጥር..... በአንድክፍልውስጥየሚተኛውየሰውብዛት.....	
128	ግድግዳሁኔታ	1.ተፈጥራዊቁስ(ሣር) 2.ቆርቆሮ 3.ሸክላ 4.ሌላጥቅስ
129	የቤቱየወለልሁኔታ	1. ጭቃ 2. ጣውላ 3. የሲሚንቶወለል 4. ሴራሚክ 5. ምንጣፍ 6. ሌላ(ጥቅስ)
130	ምንደረነትመጸዳጃቤትአላቺ	1. ውሃያለውሽንትቤት 2. ጉርጓድመጸዳጃቤት 3. መጸዳጃቤትየለም/በቁጥቋጥ/በሜዳ
131	ለቤተሰቡየመጠጥአገልግሎትየሚውል ውሀዋናምንጩምንድንነው	1.የቧንቧውሀ 2. የምንጭ ውሀ(የተከለከለ/ያልተከለከለ) 3.የጉርጓድውሀ(ተከለከለ/ያልተከለከለ 4. ኩሬ/ሀይቅ/ወንዝ/ትንሽ

		ወንዝ/ምንጭ/ግድብ
		5. ቋሚ የሆነ ምንጭ የለም

132	የቤተሰቡ አባል ምን ያህል የእርሻ መሬት አለው	1. የአካባቢው መለኪያጋሻ
133	ከተዘረዘሩት የእንስሳ መሀል የቤተሰቡ አባል ምን ያህል አለው	2. የእርሻ መሬት የለኝም 1. የወተት ላም፣ በሬ፣ ኮርማ 2. ዶሮ 3. ፍየል 4. በግ 5. ፈረስ፣ አህያ፣ በቅሎ 6. የንብቀፎ

ክፍል ሳንገኝ የታማሚውን የበሽታ ሁኔታ ከዚህ በታች ያሉት ጥያቄዎች የሚዳስስሰሆንበት መለያ ስር ያለውን ቁጥር ከታካሚ ካርድ ላይ እየታየ ይከብብ::	
ጥያቄዎች	መልሶችና የኮድ መደቦች
134. ታካሚው የሚወስደው ህክምና አይነት	1. ኬሞቴራፒ ህክምና 2. የጨረር ህክምና 3. ቀዶ ጥገና ህክምና 4. ኬሞቴራፒ እና የጨረር 5. ቀዶ ጥገና ህክምናና ኬሞቴራፒ
135. ካንሰሩ ተሰራጭቶ ነበር?	1. አዎ 2. አይደለም
136. ካንሰሩ ድጋሚ ተመልሰነው?	1. አዎ 2. አይደለም
137. የካንሰሩ እስቴጅ	1. ደረጃ አንድ Stage I 2. ደረጃ ሁለት Stage II A 3. Stage II B 4. ደረጃ ሶስት Stage III A 5. Stage III B 6. ደረጃ አራት Stage IV
138. ይህ በሽታ በምርመራ የተረጋገጠው መቼ ነው?	

139.ተጉዋዳኝበሺታዐለብዎት	1.አዎ 2.አይደለም
140.ተጉዋዳኝበሺታዐለብዎት	1.የደምግፊት 2.የስኳርበሽታ 3.የልብበሽታ 4.ኩላሊትበሽታ 4.ሌላ.....
141.HBV አለቦት	1.አዎ 2.አይደለም
142. HCVአለቦት	1.አዎ 2.አይደለም

ክፍል አራት፡ አማርኛ ትርጉም የአኗኗር ሂደትን በተመለከተ በEORTC QLQ-30 ለአዋቂ የጨው ሀይል አገጽ ካንሰር ታካሚዎች ጥቁር አንባባሪ ፔሻላይዝድ ሆስፒታል፣ 2018/2019

የአኗኗር ሂደት ላይ በሽታው ያስከተለውን ተጽእኖ መዳሰሻ መጠይቅ				
ሕመምተኞች እንዲያውቁት የሕመምተኛው የሕይወት ስሜቶች ወይም ችግሮች እንዳሉባቸው ይገልጻሉ። እርስዎ ባለፈው አንድ ዓመት ውስጥም ያህል እነዚህ ስሜቶች ወይም ችግሮች እንዳጋጠሙዎት ይግለጹልን። EORTC QLQ – C30				
ባለፈው አንድ ዓመት	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
201. ከባድ ስራ ወይም እንቅስቃሴ ለመስራት ችግር አለብዎ (ለምሳሌ፡ ዘንቢል ለመሸከም)	1	2	3	4
202. ረጅም የእግር ጉዞ ለማድረግ ችግር አለብዎ	1	2	3	4
203. አጭር የእግር ጉዞ ለማድረግ ችግር አለብዎ (ከቤት ያውጪ)	1	2	3	4
204. በህመም ወይም የተነሳ በቀን አልጋ ላይ ወይም ወንበር ላይ ሁነው ረዘም ላለ ሰዓት ያሳልፍሉ?	1	2	3	4
205. የዕለት ተዕለት እንቅስቃሴዎን ለማከናወን ረዳት ወይም አጋዥ ይፈልጋሉ? ለምሳሌ መመገብ መልበስ	1	2	3	4
206. ስራዎችን ወይም የዕለት ተዕለት እንቅስቃሴዎን ለማከናወን አግድዎት ነበር?	1	2	3	4
207. በትርፍ ጊዜ የሚከናወን ስራ ወይም ዝነንባሌዎን ለማሳካት ወይም ሌሎች የመዝናኛ ጊዜዎች ለማሳለፍ አግዶታለ?	1	2	3	4
208. ሲተነፍሱ ትንፋሽ ማጠር አጋትጥመዎት ነበር?	1	2	3	4
209. የህመም ስሜት ነበረብዎ?	1	2	3	4
210. ከወትሮ ያለ የተለየ የሪፖርት አስፈልጎት ነበር?	1	2	3	4
211. የእንቅልፍ ችግር ነበረብዎ?	1	2	3	4
212. አቅምዎን ስወጥተዋል?	1	2	3	4
213. የምግብ ፍላጎትዎ ቀንሷል?	1	2	3	4

201.	የማቅለሽለሽስሜትነበረበዎ?	1	2	3	4
202.	አስመልስዎትነበር ?	1	2	3	4
203.	የሰገራድርቀትነበረብዎ?	1	2	3	4
204.	ተቅማጥነበረብዎ?	1	2	3	4
205.	የድካምስሜትነበረብዎት?	1	2	3	4
206.	ህመሙዕለትተዕለትአንቅስቃሴዎን ያውኩብዎነበረ ?	1	2	3	4
207.	አንዳንድነገሮችትኩረትሰጥተውለመስራት?ያ ዉክዎትነበር? (ለምሳሌ፤ጋዜጣለማንበብ፤ራዲዮበማዳመጥ) ?	1	2	3	4
208.	የውጥረትስሜትነበረብዎ ?	1	2	3	4
209.	የመጨነቅስሜትነበረብዎ?	1	2	3	4
210.	የመነጫነጭስሜትነበረብዎ?	1	2	3	4
211.	የመደበርስሜትነበረብዎ?	1	2	3	4
ባለፈውሳምንትውስጥ					
212.	ነገሮችንየማስታወስችግርነበረብዎ?	1	2	3	4
213.	የጤናዎሁኔታወይምየሚከታተሉት ህክምናኑሮላይያሳደረውተፅዕኖአለ?	1	2	3	4
214.	የጤናዎሁኔታወይምየሚከታተሉትህክምናገን ዘብእንዲያጥርዎ /እንደቸገርዎአድርጓል ?	1	2	3	4
215.	የጤናዎሁኔታወይምየሚከታተሉትህክምና ገንዘብእንዲያጥርዎ /እንደቸገርዎአድርጓል ?	1	2	3	4

216. ባለፈዉ ሳምንት በአጠቃላይ የጤንነት ሁኔታዎን እንዴት ይመዝኑታል?

በጣምመጥፎ

እጅግ በጣምጥሩ

1

2

3

4

5

6

7

217. በአጠቃላይ ባለፈው ሳምንት የነበረውን የኑሮ ሁኔታ ጥራት እንዴት ይመዝኑታል?

በጣምመጥፎ

እጅግ በጣምጥሩ

1 2 3 4 5 6 7

ክፍልአምስት-አማርኛትርጉምየአኗኗርሂደትንበተመለከተበ EORTC HCC-18 ለጉበት ካንሰር ለአዋቂ ታካሚዎች ጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል፣2018/2019

ባለፉትሳምንታት	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
301. የመጠማት ስሜትያጋጥሞትነበር?	1	2	3	4
302.ጣእም የመለየት ችግር ያጋጥሞት ነበር ?	1	2	3	4
303.የእግርወይምየእጅጡንቻ መጠን ቀንሶ ነበር?	1	2	3	4
304.የሆድ እብጠት ነበረቦት ?	1	2	3	4
305. የሆድ ቅርፅ ያሳስቦት ነበር?	1	2	3	4
306.በሰውነት ቆዳዎ ወይንም በአይኖ ቢጫ መሆን ተጨንቀው ነበር?	1	2	3	4
307.ሰውነቶትን ያሳክኮት ነበር?	1	2	3	4
308. ትከሻዎት ላይ ህመም ይሰማዎት ነበር?	1	2	3	4
309.የሆድህመምያስቸግሮት(ኖሮቦት)ነበር ?	1	2	3	4
310.ትኩሳት ነበረቦት ?	1	2	3	4
311.ብርድ ብርድ ይለጩት ነበር?	1	2	3	4
312.በቂምግብስለማግኘትይጨነቁነበር	1	2	3	4
313.ምግብመመገብእንደጀመሩወዲያውየመጥገብስሜትያጋጥሞትነበር	1	2	3	4
314.የሰውነት ክብደቶ በጣም ስለቀነሰ/su ይጨነቁ ነበር?	1	2	3	4
315.መንቀሳቀስ ከሚፈልጉት በታች እየተንቀሳቀሱ ነበር?	1	2	3	4

316.ጀመሩትን ነገር ለመጨረስ ይቸገሩ ነበር?	1	2	3	4
317.ቀንላይብዙይተኙነበር	1	2	3	4

318.ህመሙ ወይም ህክምናዉ ወሲባዊ ህይወት ላይ ያደረሰው ተጸእኖ አለ ? 1 2 3 4

ክፍል ስድስት-አማርኛ ትርጉም የአኗኗር ሂደትን በተመለከተ በSTO22 ለአዋቂ የጨገራ ታካሚዎች ጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል፣2018/2019

	ባለፈዉ አንድ ሳምንት	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
401.	ደረቅምግብስትመገብ/ቢያስቸግርሃል/ሻል?	1	2	3	4
402	ለስላሳ ምግቦችን ብትመገብ/ቢያስቸግርሃል/ሻል ?	1	2	3	4
403	ፈሳሽ ነገርስትጠጡ ያስቸግርሃል/ሻል ?	1	2	3	4
404	ምግብ በምትመገቡበት ጊዜ ይረብሽዎታል ወይ?	1	2	3	4
405	ሆዶት አካባቢ የህመም ስሜት ተስምቶት ያውቃል ወይ?	1	2	3	4
406	ሆዶት አካባቢ የሚረብሽ ስሜት ይሰማዎታል ወይ ?	1	2	3	4
407	ሆዶት አካባቢ የመንፋት ስሜት አጋጥሞዎት ያውቃል ወይ?	1	2	3	4
408	የማቃር ስሜት አጋጥሞዎት ያውቃል ወይ?	1	2	3	4
409	ልቦት አካባቢ የሚቃጥል ስሜት አጋጥሞዎት ያውቃል ወይ?	1	2	3	4
410	በማግሳቶዎአክልያጋጥሞዎታልወይ?	1	2	3	4
411	ምግብመብላትእንደጀመሩየመጥገብስሜትያጋጥሞዎታልወይ?	1	2	3	4
412	ምግብደስብሎትይመገባሉወይ?	1	2	3	4
413	ምግብተመግበውለመጨረስረዥምጊዜይፈጅቦዎታልወይ?	1	2	3	4
414	አፎዎትይደርቃል?	1	2	3	4
415	ምግብወይምመጠጥከቀድሞጣዕሙይለያልወይ?	1	2	3	4
416	ከስዎችፊትሆነውመመገብያስቸግርዎታልወይ?	1	2	3	4

417	ስለህመምዎ ይጨነቃሉወይ?	1	2	3	4
418	ከብደትዎ ዝቅተኛ ስለሆነ ይጨነቃሉወይ?	1	2	3	4
419	በህመሙ ወይም በህክምናው ምክንያት የተከለሰው ነት ሳቢነት ቀንሷል ብለው ያስባሉወይ?	1	2	3	4
420	ስለወደፊቱ ጤንነቱ ይጨነቃሉወይ?	1	2	3	4

421. ፀጉርዎ አልቋል ወይ? 1.አዎ 2.አይደለም

422. ፀጉርዎ ስላለቀ ተበሳጭተው ነበር ? 1.በጭራሽ 2. በትንሹ 3. በመጠኑ 4. በብዛት

ክፍል 6- አማርኛ ትርጉም የአፍሪካ ሪፖርት ንበተመለከተ በ EORTC QLQ CR-29 ለአዋቂ ትልቅ አንጅት (colorectal cancer) ካንሰር ታካሚዎች ጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል፣ 2018/2019.

ባለፉት አንድ ሳምንታት	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
501. በቀን ውስጥ በተደጋጋሚ ሽንቶትን ይሸኑ ነበር	1	2	3	4
502. ማታ ላይ በተደጋጋሚ ሽንቶትን ይሸኑ ነበር	1	2	3	4
503. በድንገት (ሳያስቡት) ሽንቶት አምልጦት ያውቃል	1	2	3	4
504. ሽንቶትን ሲሸኑ የህመም ስሜት ይሰማዎት ነበር	1	2	3	4
505. የሆድ ህመም ነበረብት	1	2	3	4
506. መቀመጫ / ሰገራ መውጫ አካባቢ ህመም ይሰማዎት ነበር	1	2	3	4
507. የሆድ መነፋት ስሜት ነበረብት				
508. ሰገራዎት ደም ቀላቅሎ ያውቃል	1	2	3	4
509. ሰገራዎት ላይ ንፍጥ (ዘለግላጋ) የሚመስል ነገር ቀላቅሎ ያውቃል	1	2	3	4
510. አፎ ይደርቅ ነበር	1	2	3	4
511. በህክምና ወቅት የፀጉር መመለጥ አጋጥሞት ነበር	1	2	3	4
512. የመቅመስከሎ ታዎላይ ችግር አጋጥሞት ነበር	1	2	3	4

ባለፋዉ አንድ ሳምንት				
513.ስለወደፊት ጤናዎ ተጨንቀው ያውቁ ነበር	1	2	3	4
514.ስለ ሰውነት ክብደቶ ይጨነቃሉ	1	2	3	4
515.የሰውነት አቋሜ በህክምናው/በመድሀኒቱ ምክንያት አይሰብ ብለው ተሰምቶት ያውቃል	1	2	3	4
516.በህክምና ወይም በመድሀኒቱ ምክንያት የሴትነት ወይም የወንድነት ስሜቶ ከበፊቱ የቀነሰ ይመስሎት ነበር	1	2	3	4
517.በሰውነቶ ምክንያት ደስተኝነቶ ቀንሷል ነበር	1	2	3	4

518.ሆዶት አካባቢ ቀዶ ጥገና ተደረጎሎት ነበር (ሆዶት ላይ የሰገራ ማውጫ ቱቦ ተሰርቷል) (colostomy, ileostomy)

1. አዎ 2. አይ አልተሰራም

	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
519.ከከረጢቱ ሳያስበት ድንገት ጋዝ (ፈስ) ወቶ ያውቃል	1	2	3	4
520. ከከረጢቱ ሰገራ አምልጦት ያውቅ ነበር (ያውቃል)	1	2	3	4
521. ቆዳዎት ከረጢቱ ያለበት ቦታ ላይ ገርጥቶ ቆስሎ ያውቅ ነበር	1	2	3	4
522. በቀን በዙጊዜ (በተደጋጋሚ) ከረጢቶን ይቀይሩ ነበር	1	2	3	4
523. በምሽት በዙጊዜ (በተደጋጋሚ) ከረጢቶን ይቀይሩ ነበር	1	2	3	4
523. በምሽት በዙጊዜ (በተደጋጋሚ) ከረጢቶን ይቀይሩ ነበር	1	2	3	4
524. በከረጢቶት ምክንያት ያፍሩ (ይሳቀቁ) ነበር	1	2	3	4
525. ለከረጢቶ እንክብካቤ የማድረግ ጥረት አጋጥሞት ያውቅ ነበር	1	2	3	4

	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
526. ሳያስበት ከመቀመጫዎው ስጥፈስ/ጋዝ አምልጦት ያውቃል	1	2	3	4
527 ከመቀመጫዎ ሰገራ አምልጦት ያውቃል	1	2	3	4

528.ሰገራመውጫአካባቢያለውቆዳቆስሎያውቃል	1	2	3	4
529.ቀንቀንበተደጋጋሚሸንትቤትይጠቀማሉ	1	2	3	4
530.ማታማታበተደጋጋሚሸንትቤትይጠቀማሉ	1	2	3	4
531.በተደጋጋሚሸንትቤት ስለሚጠቀሙአፋረውያውቃሉ	1	2	3	4

ባለፋት አንድ ወር

ለወንዶች

ባለፋት አንድ ወር	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
532.የወሲብፍላጎትዎምንይህልነበር	1	2	3	4
533. ብልቶትአዲቆም (ቆሞ እንዲቆይ)ይቸገራሉ	1	2	3	4

ለሴቶች

ባለፋት አንድ ወር	በጭራሽ	በትንሹ	በመጠኑ	በብዛት
532. የወሲብፍላጎትዎምንይህልነበር	1	2	3	4
533.ወሲባዊግንኙነትበሚያደርጉበትጊዜህመምደሰማዎትነበር?	1	2	3	4

ክፍል 7- አማርኛትርጉምየአኗኗሪደትንበተመለከተበ EORTC QLQ OES-18 ለአዋቂየምግብቧንቧ (Esophageal cancer) ካንሰርታካሚዎችጥቁርአንበሳስፔሻላይዝድሆስፒታል፣2018/2019

ባለፉት አንድ ሳምንት		በጭራሽ	በትንሹ	በመጠኑ	በብዛት
601	ደረቅ ምግቦችን መመገብ ይቻላል ?(ዳቦ፣ ቂጣ፣ኩኪስ)	1	2	3	4
602	ለስላሳ ምግቦችን መመገብ ይቻላል ወይ?	1	2	3	4
603	ፈሳሽ ነገር መጠጣት ይቻላል ወይ?	1	2	3	4
604	ምራቆዎችን ሲውጡ ይቸገራሉ ወይ?	1	2	3	4
605	ምራቅ በምትውጡበት ጊዜ ትብሎት ያውቃል ወይ?	1	2	3	4
606	ምግብ ደስ ብሎት ይመገባሉ?	1	2	3	4
607	ቶሎ ብሎ የመጥገብ ችግር ያጋጥሞዎታል ወይ?	1	2	3	4
608	ምግብ ሲመገቡ ይቸገራሉ ወይ?	1	2	3	4
609	በሰዎች ፊት መብላት ያስቸግሮዎታል ወይ?	1	2	3	4
610	አፎዎት ይደርቃል ወይ				
611	ጣዕም የመለየት ችግር ያጋጥሞዎታል ወይ?	1	2	3	4
612	በሚያስሉበት ጊዜ ይቸገራሉ /አክል ያገጥሞዎታል/ወይ?	1	2	3	4
613	ማውራት ያስቸግሮዎታል ወይ?	1	2	3	4
614	ምግብ ያለመፈጨት ስሜት/ደረት ላይ የሚቃጠል ስሜት ያስቸግሮዎታል	1	2	3	4
615	ወደአፎት ሀሞት ወይም ምችት የሚነሳ እና የሚያቃጥል ነገር ይመጣል?	1	2	3	4
616	በሚመገቡበት ሰዓት ህመም ይሰማዎታል ወይ?	1	2	3	4
617	ደረት አካባቢ ህመም ይሰማዎታል ወይ?	1	2	3	4
618	ጨጓራ አካባቢ ህመም ይሰማዎታል ወይ?	1	2	3	4

619 .ምግብየመመገቢያትቦተጠቅመውያውቃሉ ? 0.አዎ1.አላቅም

Annex 5:Multicollinearity tests among independent variables Colorectal cancer

Independent variable	Collinearity diagnostic	
	Tolerance	VIF
Sex	0.519	1.928
Educational status	0.666	1.501
Anxiety	0.487	2.055
Body-weight	0.332	3.009
Body-Image	0.380	2.631
Urinary frequency	0.485	2.060
Bloating	0.676	1.479
Stoma Incontinence	0.610	1.639
Stoma Sore skin	0.670	1.492
Physical Function	0.295	3.391
Role Function	0.250	4.002
Emotion Function	0.295	3.385
Cognitive Function	0.307	3.253
Social function	0.357	2.798
Fatigue	0.160*	6.267
Nausea/Vomit	0.488	2.049
Pain	0.191*	5.236
Insomnia	0.632	1.583
Appetite loss	0.295	3.392
Financial Difficulty	0.448	2.234
Employment condition	0.404	2.476

Key *-variables with multicollinearity

Annex 6: Multicollinearity among independent variables of non-stoma colorectal cancer patients

Variables	Collinearity diagnostic	
	Tolerance	VIF
Sex	0.568	1.759
type of residence	0.564	1.774
drinking status	0.704	1.420
Comorbidity disease	0.607	1.648
Type of treatment	0.521	1.918
occupational status	0.670	1.493
Region	0.562	1.781
Physical Function	0.192*	5.210
Role Function	0.203	4.933
Emotion Function	0.282	3.550
Cognitive Function	0.237	4.214
Social Function	0.232	4.301
Fatigue	0.230	4.349
Nausea/Vomit	0.365	2.741
Pain	0.179*	5.578
Dyspnea	0.354	2.825
Insomnia	0.455	2.197
Appetite loss	0.351	2.848
Financial Difficulty	0.371	2.692
urinary frequency	0.551	1.815
urinary Incontinency	0.457	2.190
Dysuria	0.402	2.487
Abdominal	0.298	3.358
Buttock pain	0.264	3.790
Bloating	0.335	2.988

Blood and mucus in stool	0.375	2.664
Dry mouth	0.469	2.132
flatulence	0.617	1.622
Incontinency back passage	0.356	2.813
Sore Skin	0.366	2.730
stool Frequency	0.366	2.731
Embraced	0.419	2.388
Anxiety	0.521	1.918
Bodyweight	0.428	2.338
Body Image	0.383	2.608

Key: VIF-variance inflation factor, * variables with <0.2 tolerance

Annex 7: Multicollinearity among independent variables of esophageal cancer

Independent variable	Collinearity diagnostic	
	Tolerance	VIF
Marital status	.689	1.452
Employment status	.502	1.992
Chew chat	.757	1.322
Emotion Function	.438	2.285
Cognitive Function	.476	2.101
Fatigue	.407	2.455
Pain	.391	2.556
Trouble saliva swallowing	.317	3.153
Choking	.360	2.779
Dry mouth	.499	2.003
Trouble Cough	.399	2.509
Trouble Talking	.224	4.457

Key: *variables with <0.2 tolerance, VIF-variance inflation factor

Annex 8: Multicollinearity among independent variables of gastric cancer

Independent variables	Tolerance	VIF
Sex	0.598	1.672
Region	0.344	2.910
Type of treatment	0.329	3.037
Time since diagnosis	0.349	2.869
Functional scales (EORTC C-30)		
Physical Function	0.158*	6.309
Role Function	0.108*	9.259
Emotion Function	0.171*	5.859
Social function		
Symptom scale (EORTC C-30)		
Fatigue	0.075*	13.300
Nausea	0.230	4.353
Pain	0.128*	7.793
Appetite Loss	0.137*	7.278
Constipation	0.242	4.132
Financial difficulties	0.446	2.243
Symptom scale (STO-22)		
Dysphagia	0.119*	8.414
Pain	0.193*	5.191
Reflux	0.221	4.526
Eating	0.396	2.528
Anxiety	0.217	4.604
Body-Image	0.267	3.749

Key: *variables with <0.2 tolerance, VIF-variance inflation factor

Annex 9: Omnibus Test of Model Coefficients

GI cancer	Chi-square	Df	Sig.
Colorectal cancer	121.252	8	0.0
Esophageal cancer	8.63	1	0.01
Gastric cancer	20.726	2	0.00

Annex 10: Final model of colorectal cancer patients

Final model of colorectal cancer patients, TASH, Addis Ababa, Ethiopia, 2019

Variables in the final model	B	AOR 95% CI	P-value
Sex			
Male		1	
Female	1.8	6.35(1.826-22.12)	0.004
Occupational status			
Un-employed		1	
Self-employee	-1.45	0.235(0.049-1.128)	0.07
Employee	-2.695	0.068(0.012-0.387)	0.002
Clinical stage (TNM Staging)			
Late stage		1	
Early stage	1.6	4.988(1.512-16.454)	0.008
Physical function	0.038	1.04(1.013-1.063)	0.003
Social function	0.022	1.02(1.002-1.042)	0.031
Financial difficulty	-0.025	0.936(0.907-0.966)	0.001
Blood and mucus in stool	-0.065	0.937(0.911-0.964)	0.00
Having stoma	2.0	7.923(2.390-26.263)	0.001

Final model of colorectal cancer patients with stoma

Variables in the model	B	SE	Sig	Exp(B)	95% CI	
					Lower bound	Upper bound
Stoma Sore-skin	0.052	0.018	0.004	1.053	1.017	1.091
Social Function	0.042	0.015	0.005	1.043	1.013	1.074
Pain	-0.041	0.015	0.007	0.960	0.932	0.989
Constant	-2.538	1.332	0.057	0.079		

Final model of colorectal cancer patients(non-stoma)

Variables in the model	B	SE	Sig	EXP(B)	95% CI	
Sex (female)	-5.397	2.256	0.017	0.005	0.000	0.377
Occupational status Unemployed			0.108			
Occupational status(self-employee)	-3.847	1.940	0.047	0.021	0.000	0.957
Occupational status (Employee)	-1.029	1.334	0.440	0.357	0.026	4.880
Anxiety	-0.068	0.029	0.019	0.934	0.883	0.989

Urinary Incontinency	-0.138	0.049	0.005	0.871	0.792	0.958
Bloating	0.102	0.040	0.010	1.108	1.025	1.197
Blood and mucus in stool	-0.194	0.078	0.013	0.824	0.707	0.960
Cognitive Function	0.069	0.035	0.048	1.071	1.001	1.146
Social Function	0.098	0.034	0.004	1.103	1.032	1.178
Dyspnea	-0.073	0.031	0.019	0.929	0.874	0.988
Constipation	-0.092	0.033	0.005	0.912	0.856	0.973
Constant	0.094	2.475	0.970	1.098		

Annex 11:Final model of esophageal cancer patients

Final model of esophageal cancer patients, TASH, Addis Ababa, Ethiopia,2019

Variables in the final model	B	S. E	Sign.	Exp(B)	95% CI
Reflux	-0.049	0.02	0.018	0.953	0.915-0.992

Annex 12:Final model of gastric cancer patients

Final model of gastric cancer patients, TASH, Addis Ababa, Ethiopia,2019

Variables in the final model	B	S. E	Sign.	Exp(B)	95%CI
Appetite loss	-0.031	0.013	0.013	0.96	0.945-0.994
Pain	-0.038	0.017	0.026	0.963	0.931-0.996

Annex 13:Curriculum vitae of the principal investigator

Helen G/ Libanos

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Profile

Assistant lecturer in Debre Berhan university since 2016 and enrolled in a master's education program at Addis Ababa University for public health program in Epidemiology and Biostatics in 2017.

Experience

Debre Berhan University

Assistant lecturer | march 2016 - Present

Giving courses (CDC and epidemiology) to nursing and public health Debre Berhan university students for one year

Debre Berhan University

community health practice (4th-year public health student) | March - April 2016

Data collection, a static action plan developed with the team leaders, presenter on the fourteen-night reporter.

Debre Berhan University

Team training program (4th-year public health student) | May - June 2016

Document preparation, community action plan developer, developed mini project for cha-cha town (Oromia region) in storage, transportation & disposal of solid waste, submission for the appropriate stakeholders, put these things at last on the land

Education

Mph, Epidemiology, and Biostatistics

Addis Ababa University, Addis Ababa | Sep 2017 – Present

BSc., Public health

Debre Berhan University, Debre Berhan | oct 2013 - June 2016

Achievements

Journal article

Demie T, Demissew T, Huluka T, Workineh F, Libanos H. Postpartum family planning utilization among postpartum women in public health institutions of Debre Berhan town, Ethiopia. J Women's Health Care.2018;7(426):2167-0420.

Skills

Language-Amharic (mother tongue), English (fluent)

Software-Microsoft office, SPSS, Endnote

Relevant training

November 2018- I completed training on NCD Epidemiology held at Addis Ababa University, School of Public Health, and Addis Ababa, Ethiopia.

December 2018-I completed training on Scientific Writing and Communication held at Addis Ababa University, School of Public Health, and Addis Ababa, Ethiopia

Personal growth

Consider me as a highly productive individual, read books (becoming Michelle Obama, poor and rich dad), motivational videos.

References

Dr. Girma Taye

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Annex 14: Assurance of the principal investigator

ASSURANCE OF PRINCIPAL INVESTIGATOR

I, the undersigned MPH student declare that this thesis is my original work in fulfillment of the requirement for the master of public health in Epidemiology and Biostatistics.

Name of the student: Helen G/Libanos

Date. 16/06/2020 Signature Helen

Approval of the primary Advisor

This thesis work has been submitted with our approval as the university advisor.

Name of the primary advisor: **Dr. Girma Taye**

Date. _____ Signature _____