RESEARCH ARTICLE

The trend of gastrointestinal cancers as a focal phenomenon in Kilombero Tanzania: Histological study

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ABSTRACT

Introduction: Gastrointestinal cancers refer to malignant cells occurring at any site along the Gastrointestinal Tract (GIT) system. Globally, GIT cancer accounts for19.2% referring to 3.5 million newly cancer cases and causing 22.7% of all cancer related deaths. In Tanzania the GIT cancer incidences are steadily increasing significantly like any other less developed countries. Most of the risk factors are modifiable such as cigarette smoking, excessive alcohol intake, sedentary lifestyle and low consumption of fruits, vegetables, dietary fiber and dietary calcium.

Materials and methods: The descriptive retrospective study was conducted at Saint Francis Referral based gastrointestinal histological results done within 3 years from January 2023 to December 2024. Histological patterns were regarded as information of importance. Data were entered and analyzed using SPSS computer software version 26.0 and presented in form of tables. The histological distribution and frequencies were presented in terms of frequencies.

Results: Out of 82 samples collected 76 were involved in the study and 6 of them were excluded due to various reasons including missing details and tissue deficit. Male were 60.53% and female were 39.47% making 1.5:1 M: F. The 41-60 was the predominant age group accounting for 36.8% of all while the least age group was 1.3%. Most of the samples were collected from colon which was 34.21%. Colon was the most area where biopsy was obtained accounting for 34.21% of all cases.

Conclusion: Tanzania experienced an increasing of significant incidence of all GI cancers over the as the time goes on. The observed increase of GI cancers in females requires further etiological studies. The proportion of young patients requires both education regarding risk factors and national screening policies that are tailored to the Tanzanian population and disease profile.

Keywords: Gastrointestinal cancer; Esophageal cancer; Life modification; Dietary factor; Colon cancer; Rectal cancer

INTRODUCTION

Gastrointestinal cancers refer to malignant cells occurring at any site along the Gastrointestinal Tract (GIT) system. This includes any site between esophagus and anus. But also include other associated structures along intra-abdominal cavity which are directly or indirect associated with GIT thorough attachment and blood supply or involved in digestive physiological function. These include mesentery, liver, pancreas, lymph nodes and momentum. GIT cancer is one of Non-Communicable Disease (NCD) associated with significant global challenge. It is estimated that GIT cancer accounts for19.2% referring to 3.5 million newly cancer cases per Anum, GIT is causing 22.7% of all cancer related deaths. In most cases cancers in Africa have poor prognosis due to delay diagnosed at advanced stage. Global GI cancers are estimated to increase by over 50% in the coming 20 years, while increase expected to be two times in developing countries. African population growth, dietary behavior and changes into sedentary lifestyle fuels the disease incidence in the area where there is poor health care accessibility and health system instability. The GIT cancer incidences are steadily increasing in Tanzania [1,2].

The GI cancer distribution from one geographic are to the other even within the same country while the higher burden is significantly being experienced in less developed society than more developed societies. The mortality patterns also differ from one site to the other whereby low and middle-income countries account for 70% of global cancer deaths. The trend of GI cancer in Tanzania, esophagus, colorectal and gastric cancers are among the top 5 causing cancer related deaths accounting for 11.4%, 4.8% and 3.7% respectively of all cancer related deaths while cervical, prostate and breast are the first three causes of cancer related deaths. This indicates a red flag to each one of us to advocate and shouting on cancer free campaigning [3].

Most of the risk factors are modifiable including cigarette smoking, excessive alcohol intake, sedentary lifestyle, high consumption of red and processed meats, obesity and low consumption of fruits, vegetables, dietary fiber and dietary calcium. Apart from the above-mentioned contributing factors; most of the rural patients lack of financial taking into consideration that they don't have national health insurance fund. This increase the probability of lacking cost for health services seeking at early stage of disease are additional to the universal factors. Poor attitude such that African beliefs on traditional healers and miraculous beliefs the so called in local language (wachungaji na manabii) advertisements may contribute to delayed health service seeking at early stage specifically in chronic illnesses and non-communicable diseases [4].

MATERIALS AND METHODS

Study design and setting

The descriptive retrospective study was conducted at Saint Francis Referral Hospital which is also a teaching hospital for medical students from various medical schools within the area. The study done based gastrointestinal histological results done in 3 years from January 2023 to December 2024. The biopsy tissues collected from esophagus, stomach, small bowel, caecum/ appendix, large bowel, rectum and annal, mesentery and peritoneal wall were included. Patient particulars such as age and sex were obtained from hospital records regarding the histological medical records. Histological patterns were regarded as information of importance. Patients address was regarded in insignificant since we considered most of the patient to come from Kilombero valley. with incomplete data confirmed cases were excluded from the study. Ethical approval for the study was issued by the Institutional Reviewer Board (IRB) before the commencement of the study. Data were entered and analyzed using SPSS computer software version 26.0 and

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presented in form of tables. The histological distribution was presented in terms of frequencies [5-7].

RESULTS

The total of 82 samples were examined during the period. The 76 samples were included in the study and 6 of them were excluded due to various reasons including missing details and tissue deficit. Among the participant's male were 60.53% and female were 39.47% making 1.5:1 M: F. The 41-60 age group was the predominant accounting for 36.8% of all while the least age group was 1.3%. Most of the samples were collected from colon which was 34.21% of all cases. Other particulars are summarized in Table 1 [8-15].

Table 1: Distribution of the histopathological samples.

Variables		Frequencies	Percent
Age group	1-20	16	21.1
	21-40	13	17.1
	41-60	28	36.8
	61-80	18	23.7
	81-100	1	1.32
Sex	Male	46	60.53
	Female	30	39.47
Anatomical site	Colon	27	34.21
	Esophagus	13	17.1
	Rectum	12	15.79
	Mesentery	10	13.16
	Small bowel	3	5.26
	Ileo-ceacal	1	3.95
	Anno-canal	2	2.63
	Abdominal wall	4	3.95
	Stomach	5	3.95

Histological profiles

Distribution of the histological types of GI cancer is shown in Table 2. Squamous Cell Carcinoma (SCC), adenocarcinoma, inflammation, Hirschsprung disease, normal tissue and others as they appear in Table 2 bellow. The adenocarcinoma comprised 35.52% of all histological cases, followed by SCC 11.84% and Hirschsprung disease comprising of 7.89% [16-19].

Table 2: Histological profile.

Variables		Frequency	Percent
Esophagus	SCC	9	11.84
	Adenocarcinoma	2	2.63
	B. disease	1	1.32
	Esophagitis	1	1.32
Stomach	Adenocarcinoma	4	5.26
	Gastritis	1	1.32
Jejunum	Fibroma	1	1.32
Ileum	Adenocarcinoma	2	2.63
Ileocecal	Adenocarcinoma	2	2.63
Colon	adenocarcinoma	16	21.05
	Normal tissue	3	3.95
	Hirschsprung disease	3	3.95
	SCC	2	2.63
	Papillary adenocarcinoma	1	1.32

Rectal	Adenocarcinoma	7	9.21
	Hirschsprung disease	3	3.95
	Inflammation	1	1.32
	Gastro-stromal tumor	1	1.32
Annal	Mucinous adenocarcinoma	1	1.32
	Melanoma	1	1.32
Mesenterial	Lymphadenitis	3	3.95
	Chronic inflammation	2	2.63
	Hodgkin lymphoma	2	2.63
	Liposarcoma	2	2.63
	Adenosarcoma	1	1.32
Abdominal wall	Lymphadenitis	3	3.95
	Peripheral neuroma tumor	1	1.32

DISCUSSION

Overall gastrointestinal cancer profile

In our study showed Tanzania to has increase in all GI cancers in both males and females. The increased higher incidence was in males than in females with M: F 1.5:1 which is slightly higher to what was reported by Habeebu et al., 2027 in Nigeria whose study revealed 1.2:1 male to female ratio. The 41-60 was the most predominant age with 36.8% of all cases. This aligns with Mazhindu, et al., 2025 who reported 45-70 to be the most prominent ages. Several literatures have been reported the similarity of our study findings. The increase in incidence was observed to be higher in colon and esophagus while esophageal, rectal and anal cancers have significant incidence. Despite this upward trend, cancer has been given low priority in the research field and in healthcare services in Tanzania. This study gives an existing gap on regular screening for gastrointestinal cancer which has contributed significant increase of age standardized death rates from 2000-2021 [20-23].

Esophageal cancer

Esophageal cancer had the significant incidence among GI cancers in this study. In this study SCC was the most esophageal cancer detected accounting for 11.84% (9/76) of all cancers and 75% of all esophageal cancers. This corelate with which have been reported in other literatures. The risk factors of esophageal cancer include tobacco smoking, alcohol drinking, Human Papilloma Virus (HPV) and corrosive drinks. Other risk factors include, Barrett's esophagus, thermal esophageal injury, obesity, sedentary lifestyle and genetics. Despite that Barret's esophagus is rarely reported in Sub Saharan African countries including Tanzania, but it remains a clinical importance as it is liked with esophageal adenocarcinoma. In this study therefore, there was 1.32% of Barrett's disease and 2.63% of adenocarcinoma. A study of the local high-risk population is highly recommended to predict the preventive measures including life style modification [24].

Gastric cancer

Gastric cancer accounted for 5.26% which was adenocarcinoma. This is low in comparison to what has been reported in the literatures. The incidence of gastric cancer has been reported in varying distribution on geographic location, race and socioeconomic status. The common risk factors for gastric cancer include tobacco smoking and alcohol consumption, *H. pylori*, Non-Steroid Anti-Inti-Pain Drugs (NSADs) use for along for a long time, ant other use of non-gastric mucosal erosion. Tobacco growing industry in Tanzania expose to second hand smoking in most of the Tanzania community [25].

Small bowel cancer

In this study the Small Bowel (SB) composed 6.58% of all cases of which Fibroma jejunum accounted for 1.32% from jejunum, adenocarcinoma 2.63% from ileum and 2.63% from the ileocecal region. The overall result of SB results is slightly high than what was reported by Uchendu et al., 2021 who reported 4.6%. Jejunal histology in this study was begin and accounted for 1.32%. these benign usually cause jejunal intestinal obstruction and are diagnosed incidentally. As it has been reported, jejunal malignant is uncommon despite being the longest part of the gastrointestinal tract. The short transit time of food particles, low bacterial load, high IgA concentration and less exposure to carcinogens are suggested to be protective mechanism from cancer diseases [26].

Colon cancer

Colon cancer in this study was the most predominant accounting for 21.05%. Colorectal Cancer (colon and rectal) (CRC) is the among most common GI cancer worldwide, while Tanzania CRC is the fifth cancer accounting for 4.9%. It has been reported that, low-frequency consumption of meats, potatoes, fruit and vegetables foods to be associated with decreased risk of colorectal cancer while Western deity, drinker and red meat pattern to have positive associated with CRC. The mechanism of carcinogenesis from red meat consumption not clearly known, but it has been suspected to be associated by the endogenous formation of genotoxic N-nitroso Compounds (NOCs), heterocyclic amines and polycyclic aromatic hydrocarbons and iron which may all cause oxidative stress. The people with Lynch syndrome while other genetic factors in Tanzania is unknown. African life style and diet has been documented to be protective on colon cancer particularly in rural primary residence [27].

Rectal cancer

The study revealed the significant incidence of Rectal Cancer (RC) accounting for 9.21% of which mostly was adenocarcinoma. The incidence of RC in our study is high than what has been reported by Ranjbar, et al., in Iran who reported 6.9%. RC has been reported to be another common GI cancer globally. In this study, it was the third following colon and esophageal cancers. The risk factor for RC is almost similar to that of Colonic Cancer (CC). Home literature have included HPV to be inclusive among the RC risk factors especially in annal sexual recipient [28].

Anal cancer

Anal cancer accounted for 2.63% which consisted of 1.32% of mucinous adenocarcinoma and 1.32% of melanoma. The study findings align with what has been reported in the literature whereby anal cancer is less than 5%. But also the findings of this study corelate with that of Uchendu, et al., who reported 1.9% of all GI cancers in Nigeria The study becomes dissimilar with what has been reported in the literatures whereby SCC is commonly reported due to which has been reported to be associated with HPV. However, Mucinous adenocarcinomas usually arise in the mucosa and anal glands [29-31].

CONCLUSION

Tanzania experienced an increasing of significant incidence of all GI cancers over the as the time goes on. The rate of increase in esophageal and gastric cancers in females was particularly high and the male-to-female ratio observed requires further etiological studies. The proportion of young colorectal cancer patients requires both education regarding risk factors and national screening policies that are tailored to the Tanzanian population and disease profile. In resource limited settings like Tanzania, improvement of data quality and data availability are highly needed to facilitate initiatives towards increasing GI cancer awareness and insight, cancer management improvement and disease preventive measure strategic plan.

RECOMMENDATION

It is important to note that the GI cancer incidence and pattern in low- and middle-income settings is increasing in occurrence. Diagnostic capacity in limited resourced areas should be enhanced. This includes minimally invasive biopsies, laparoscopic surgery, pathology services, Computed Tomography (CT) scans, Magnetic Resonance Imaging (MRI) scans and Positron Emission Tomography (PET) scan. Furthermore, cancer registries in LMICs face several challenges such as weak health standards and infrastructures, weak records centralization, population data analysis and differing health due to developmental, political, social and economic factors. There should be potential initiative towards improvements on above mentioned defects.

ETHICAL CONSIDERATION

The ethical clearance was obtained from SFUCHAS internal reviewer board.

SOURCE OF FUND

None.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in during or after conducting this study.

AUTHOR CONTRIBUTION

The author participated in the idea generation, conceptual flame work, study design, data collection and interpretation, analysis of results and manuscript preparation of the present research work. Finally, all authors approved the manuscript before submission.

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