KAIRUKI UNIVERSITY

DEPARTMENT OF GENERAL SURGERY

PATIENTS CHARACTERISTICS ENDOSCOPIC FINDINGS AND FACTORS ASSOCIATED WITH DYSPEPSIA AT MUHIMBILI NATIONAL HOSPITAL

BY

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CERTIFICATION

The undersigned hereby confirms that the dissertation entitled: **"PATIENTS CHARACTERISTICS ENDOSCOPIC FINDINGS AND FACTORS ASSOCIATED WITH DYSPEPSIA AT MUHIMBILI NATIONAL HOSPITAL FROM MAY - JULY 2025"** has been reviewed and is recommended for acceptance by Kairuki University as part of the requirements toward the award of the Master of Medicine in Surgery at the University.

SUPERVISOR:

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Signature..... Date 28.11.2025

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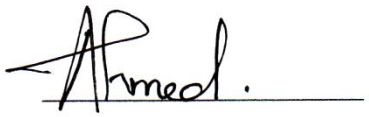
As a student researcher enrolled at Kairuki University, I am fully aware that plagiarism is a serious academic offense and therefore confirm that the content of this research is solely my own.

Signature: 

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ABSTRACT

Background

Dyspepsia is one of the most common conditions encountered in clinical practice and frequently necessitates upper gastrointestinal (GI) endoscopy. The procedure is generally safe, highly valuable diagnostically, and in certain cases provides therapeutic benefits. The aim of this study was to determine the clinical and endoscopic profile of patients presenting with dyspepsia at Muhimbili National Hospital and correlate them with clinical diagnosis.

Methodology

This study employed a cross-sectional design, including patients with dyspeptic symptoms who underwent upper gastrointestinal endoscopy at MNH from May to July 2025. The clinical (provisional) diagnosis was evaluated, and the data were assessed and compared with endoscopic findings, considered the gold standard. Diagnostic agreement was assessed using Cohen's Kappa coefficient (κ), which classifies levels of agreement as fair (<0.4), moderate (0.4–0.6), substantial (0.6–0.8), and almost perfect (>0.8).

Results

A total of 189 patients were enrolled in the study. Of these, 110 (58.2%) were females, with a male-to-female ratio of 1: 1.4. The median age of patients was 48 [IQR, 42-56] years. The most common clinical symptom observed in upper gastrointestinal tract conditions was epigastric pain in 186 (94.4%) cases. Among the 189 patients, 184 (97.4%) showed pathological endoscopic findings, with gastritis being the most commonly observed condition accounting for 70.9% (n=134) of cases. Kappa statistic showed moderate to substantial agreement (ķ = 0.39 - 0.71) of the overall diagnostic accuracy of clinical diagnosis in the detection of upper GI conditions against endoscopic findings.

Conclusion

The findings of this study confirm that epigastric pain is the most frequent presenting symptom, and gastritis is the predominant clinical and endoscopic diagnosis. Given the relatively low accuracy of clinical diagnosis, upper GI endoscopy continues to provide the most reliable method for confirming these conditions; hence, endoscopy continues to be the definitive method for diagnosing upper gastrointestinal conditions.

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LIST OF ACRONYMS

FD	Functional dyspepsia
GERD	Gastro esophageal Reflux Disease
GI	Gastrointestine
IV	Intravenous
KU	Kairuki University
NSAIDs	Non-steroidal anti-inflammatory drugs
NPV	Negative Predictive Value
OGD	Oesophagogastroduodenoscopy
PUD	Peptic Ulcer Disease
PPV	Positive Predictive Value
UGI	Upper gastrointestinal

DEFINITION OF TERMS

Dyspepsia: Is a group of symptoms that indicate presence of upper gastrointestinal disease which include postprandial fullness, early satiety, epigastric pain, and epigastric burning (1).

Endoscopy: Is a minimally invasive diagnostic and therapeutic medical procedure that is used to assess the interior surfaces of hollow organ by inserting a tube into it (2)

Endoscopic findings: Are those findings that observed during endoscopic procedures (3). In this study they include esophagitis, gastritis, duodenitis, peptic ulcer disease, gastro esophageal reflux disease, gastric malignancy and functional dyspepsia.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The word 'dyspepsia' originates from Greek, where 'dus' translates to 'bad' and 'peptien' means 'to digest,' reflecting its association with disordered digestion (1). This term is commonly used as a brief way to describe a range of symptom patterns associated with disorders of the upper digestive tract.

The burden of dyspepsia in the primary care setting in sub-Saharan Africa is significant, but poorly characterized, as most patients do not seek medical investigation (2). Although peptic ulcer disease (PUD) is often suspected in dyspeptic patients and many are referred for endoscopy, studies show that only 15% of these individuals are ultimately diagnosed with PUD (3).

Dyspepsia does not have a universally agreed-upon definition. It generally refers to recurring symptoms that prompt a physician to investigate potential upper gastrointestinal tract disorders. Common manifestations include upper abdominal pain or discomfort, heartburn, and acid reflux. However, these symptoms are non-specific and, by themselves, are insufficient for a definitive diagnosis of dyspepsia (4).

Research conducted in Europe, North America, and Oceania has reported dyspepsia prevalence rates ranging from 3% to 40% (5).

In African countries like Rwanda, the prevalence of clinically significant dyspepsia in the general population is 14.2% (2) while it is 57.9% in Eastern Uganda (6).

According to the Rome IV consensus, dyspepsia is characterized by postprandial fullness, early satiety, epigastric pain, or burning, persisting for at least three months, with symptom onset at least six months prior to diagnosis. (7).

Known risk factors of dyspepsia are gender, various behavioral characteristics, *Helicobacter pylori* infection, smoking, caffeine consumption, and the use of non-steroidal anti-inflammatory drugs (NSAIDs) (8).

Dyspepsia can arise from various causes, with the most common being gastritis, duodenitis, peptic ulcer disease, malignancies, esophagitis, parasitic infections, and functional dyspepsia (9). Given the wide range of disease presentations, it is a tendency among clinicians to treat it empirically with acid suppression therapy in the early stages, especially in younger age groups (9).

Investigations and treatments for dyspepsia continue to become more sophisticated and expensive. Resources, however; are limited in developing countries and healthcare decision makers are increasingly under pressure to contain costs (8).

Upper gastrointestinal endoscopy (OGD) is recommended as the first-line investigation for patients presenting with upper gastrointestinal symptoms (10).

Upper gastrointestinal endoscopy employs a flexible, camera-equipped scope to observe the mucosa surfaces of the esophagus, stomach and duodenum, allowing for detailed inspection and biopsy when required (10).

Observations are made looking for focal benign or malignant lesions, diffuse mucosal changes, luminal obstruction, motility, and extrinsic compression by contiguous structures.

Standard diagnostic functions include inspection, biopsy, photography and video recording. A cost analysis also showed that endoscopy with therapeutic approach is more cost effective than an initial diagnostic approach with barium swallow in patients with upper gastro-intestinal symptoms (10).

OGD has been found to be both effective and a safe procedure that can be performed at large medical centers, small rural hospitals, outpatient clinics or even private offices (7). The procedure was first introduced in Eldoret in the early 1990s (8), and since then, numerous patients have undergone it, primarily for diagnostic purposes. However, its high cost remains a barrier for many patients.

1.1.1 Gastritis

"Gastritis is a prevalent social and public health concern in both developed and developing countries. It impacts individuals' socioeconomic status, health behaviors, and overall living conditions, including lifestyle choices, daily habits, and environmental factors (11). Epidemiological studies indicate that gastritis affects over half of the population in developing countries, with prevalence estimates around 50% (12).

Gastritis is the inflammation of the gastric mucosa and is commonly used to describe the abnormal (erythematous) appearance of the stomach lining on endoscopy or imaging. It includes both infectious and immune-mediated inflammation of the gastric mucosa as well as the associated host response (13).

Gastritis can be classified as either acute or chronic, depending on the duration of its signs and symptoms (14). It is manifested by sign and symptoms such as nausea, vomiting, dull pain, discomfort in the upper abdomen, feeling of fullness, and loss of appetite (15). Histopathological evidence of inflammation in the stomach lining is essential to diagnose this condition (13).

1.1.2 Duodenitis

Duodenitis is defined as inflammation on the duodenal mucosa and is not infrequent finding in patients undergoing endoscopy (15).

The visual endoscopic features of Duodenitis include mucosa erythema, erosions and petechial hemorrhage(17).

1.1.3 Peptic Ulcer Disease

Peptic ulcer disease (PUD) is defined as an insult to the mucosa of the upper digestive tract resulting in ulceration that extends beyond the mucosa and into the submucosa layers (18). Also PUD can be defined as breaks into submucosa depth or inner lining of the stomach and/or duodenum more than 5 mm (19).

Peptic ulcer disease (PUD) is a worldwide health issue, with a lifetime risk of occurrence estimated between 5% and 10% (20). It is a common cause of dyspepsia with prevalence between 8 and 14% (4). PUD most frequently affects the stomach and proximal duodenum, but it can also occur in the lower esophagus, distal duodenum, or jejunum (20).

While earlier theories emphasized stress, diet, and excess acid as causes of PUD, it is now established that *Helicobacter pylori* infection and NSAID use are the leading contributors. Other factors are smoking and alcohol uses (13).

Clinical manifestations of PUD may include upper abdominal pain in relation with meals, gastroesophageal reflux, dyspepsia, and melena (21). In patients with gastric ulcers, epigastric pain typically develops within 30 minutes after eating, whereas in duodenal ulcers, the pain usually appears 2–3 hours post-meal (20).

This condition may be suspected on clinical grounds, but diagnosis is made using OGD.

Esophagogastroduodenoscopy (OGD) with biopsy remains the gold standard for distinguishing peptic ulcer disease from other causes of dyspepsia (21).

1.1.4 Malignancy

Upper gastrointestinal cancer is one of the most commonly diagnosed cancers and leading causes of cancer-related deaths worldwide. According to GLOBOCAN 2018 estimates, there were approximately 572,000 new cases of esophageal cancer and 509,000 related deaths, while gastric cancer accounted for over one million new cases and 783,000 deaths worldwide (22).

Cancers of the esophagus and stomach are among the most lethal of all malignant tumors. The majority of these neoplasms are detected at late stage due to the insidious nature of the onset of symptoms and their similarity in early stages to benign causes of dysphagia and dyspepsia.

Upper gastrointestinal tract cancers are often diagnosed at an advanced stage. Maintaining a low threshold of suspicion for gastric malignancy in patients with dyspepsia can lead to earlier detection and better survival outcomes. Nevertheless, cancer represents only 1–2% of UGI tract diagnoses and is even less common in patients younger than 50 years (23).

Conventional video endoscopy is the gold standard for diagnosing a wide range of upper GI malignancies (24).

1.1.5 Esophagitis

Esophagitis is the inflammation or damage of the esophageal lining, most commonly resulting from gastroesophageal reflux disease. It affects approximately 20% of people in Western countries (25).

The esophageal wall has limited protection against gastric acid, which can lead to either erosive or non-erosive forms of esophagitis, other potential causes of esophagitis include infections, corrosive substances that damage the esophageal lining, and injuries resulting from chemotherapy or radiotherapy (25).

Regardless of the causes of esophagitis, its presentation is similar which include retrosternal chest pain, heartburn, dysphagia or odynophagia (26).

1.1.6 Gastroesophageal reflux disease

Gastroesophageal reflux disease (GERD) is a prevalent chronic condition affecting populations in both developed and developing countries, it's prevalence is high as 10%-20% in the western world (27). GERD can be defined as a chronic gastrointestinal disorder characterized by the regurgitation of gastric contents into the esophagus (28).

The main symptoms of GERD are heartburn and regurgitation (28). The symptoms are often more pronounced after meals, tend to worsen when lying down, and are typically relieved by medications that reduce stomach acid (27).

GERD is usually diagnosed based on a combination of clinical symptoms, response to acid-suppressive therapy, and objective assessments such as upper endoscopy and esophageal pH monitoring (30).

Upper endoscopy is the main method for assessing the esophageal lining in patients with GERD and also permits biopsy of any suspicious lesions (30).

During endoscopy, some patients with GERD symptoms may show no visible mucosal damage, while others may present with esophageal injuries such as erosions or ulcers (28).

1.1.7 Functional dyspepsia

Functional dyspepsia (FD) is a common functional gastrointestinal disorder, with global prevalence estimates ranging between 5% and 20% of the population, although functional dyspepsia (FD), is not life-threatening, it can considerably impair quality of life and raises healthcare costs for both patients and society (31).

When routine diagnostic tests, including upper endoscopy, fail to reveal an underlying organic or biochemical cause, the condition is classified as functional dyspepsia. (31).

Based on the recently updated Rome IV criteria, functional dyspepsia (FD) is defined by any combination of four symptoms—postprandial fullness, early satiety, epigastric pain, and epigastric burning—that interfere with normal daily activities. These symptoms must occur at least three days per week over the past three months and have been present for at least six months before evaluation, with no clear evidence of organic, systemic, metabolic, or structural disease that could explain them (32).

The etiology of FD appears to be multi factorial, commonly *H. pylori* infection and gastrointestinal motility disorders that can be due to hypersensitivity to mechanical and chemical stimuli, immune system activation, and elevated mucosal permeability in the proximal areas of small intestine.

Additionally, a genetic predisposition and coexisting psychological disorders have been suggested as contributing factors, although the supporting evidence is less robust than that seen in other functional gastrointestinal disorders, such as irritable bowel syndrome (33).

1.2 Problem Statement

Dyspepsia is one of the most common gastrointestinal complaints worldwide and a frequent reason for referral to endoscopy units. It encompasses a spectrum of upper abdominal symptoms such as epigastric pain, bloating, and early satiety, which may be associated with underlying pathologies ranging from benign functional disorders to serious organic conditions, including peptic ulcer disease and gastric malignancies (9).

In sub-Saharan Africa, including Tanzania, the burden of dyspepsia is compounded by limited diagnostic resources and late presentation of patients, often leading to under-diagnosis or delayed treatment of significant gastrointestinal disease.

At Muhimbili National Hospital (MNH), the largest tertiary referral center in Tanzania, a large number of patients present with dyspeptic symptoms every month. However, there is limited local data describing the demographic characteristics of these patients, their endoscopic findings, and the factors associated with dyspepsia.

Most available evidence is extrapolated from other regions, which may not reflect the local epidemiological and clinical patterns. (12).

Without such context-specific data, clinicians face challenges in developing targeted diagnostic and management strategies, and health policymakers lack evidence to guide resource allocation.

Most physicians provide the treatment based on the symptoms while the definitive diagnostic remain unknown.

Therefore, understanding the patients' characteristics, endoscopic findings, and factors associated with dyspepsia at MNH will provide critical insight into the local burden of disease, support early diagnosis, improve management outcomes, and guide future research and public health interventions.

1.3 Rationale

The goal of the study is to evaluate Patients characteristics, endoscopic findings and factors associated with Dyspepsia at Muhimbili National Hospital. Conducting this study at MNH will help to fill this knowledge gap by providing context-specific evidence.

Understanding the patients' characteristics and endoscopic findings will guide clinicians in early diagnosis and improve management strategies.

Furthermore, identifying the factors associated with dyspepsia will help in risk stratification, patient education, and policy planning.

Ultimately, the findings of this study will contribute to better patient outcomes, rational use of endoscopy services, and evidence-based healthcare planning in Tanzania.

1.4 Objectives

1.4.1 Broad Objective

To describe patient's characteristics, endoscopic findings and factors associated with Dyspepsia at Muhimbili National Hospital from May – July 2025.

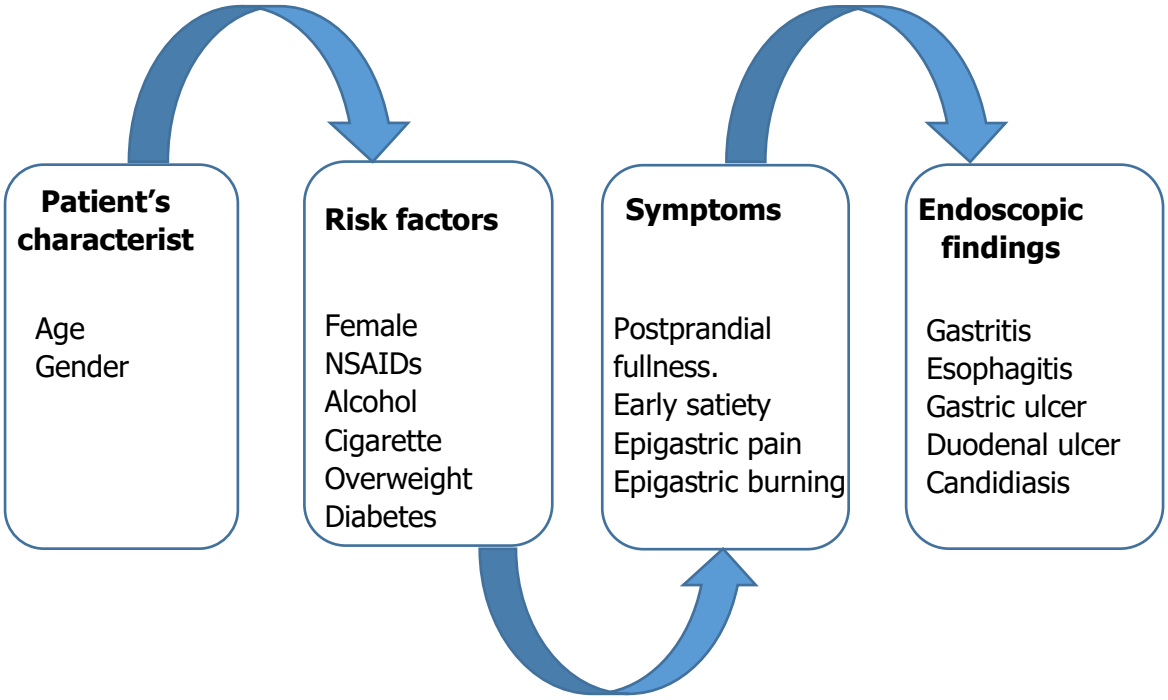
1.4.2 Specific Objectives

1. To determine sociodemographic factors associated with dyspeptic patients at Muhimbili National Hospital.
2. To determine the symptoms of dyspepsia on dyspeptic patients at Muhimbili National Hospital.
3. To determine endoscopic findings in dyspeptic patients at Muhimbili National Hospital.
4. To determine the factors associated with dyspepsia at Muhimbili National Hospital

1.5 Research Question

1. What are the patient's characteristics, endoscopic findings, and factors associated with dyspepsia among patients attending Muhimbili National Hospital from May to July 2025 ?

1.6 Conceptual Framework of patient's characteristics, endoscopic findings, and factors associated with dyspepsia.



CHAPTER TWO

2.0 Literature Review

In disease management, a critical clinical challenge is accurately identifying patients who need further investigation to exclude serious structural conditions, such as peptic ulcer disease or cancer, versus those who can be safely managed empirically. Relying solely on history and physical examination for the clinical diagnosis of dyspepsia is often unreliable and may lead to misdiagnosis.

Evaluation of dyspeptic patients can involve therapeutic trials, Helicobacter pylori testing, upper gastrointestinal (UGI) radiography, and endoscopic examination (34).

High percentages of dyspeptic patient have gastritis and esophagitis; this has been confirmed with different studies that have been done worldwide. In a 2018 UK study of 500 dyspeptic patients, about three-quarters had endoscopic abnormalities. Gastritis and esophagitis were the predominant findings, while malignancy was identified in only 1% (35). Similarly to cross-sectional study in Zhejiang, China (2019) found that roughly 30% of dyspeptic patients had clinically significant endoscopic findings, including esophageal lesions (18%), peptic ulcers (11%), and less than 1% with malignancy (36).

Studies with different study designs and different sample size also have sown almost similar result that, In Brazil, From September 2008 to September 2011, a prospective observational study was carriedout to identify the common findings in a patients presenting with dyspepsia at the tertiary hospital, 306 patients were initially enrolled, with 282 ultimately included in the analysis. The mean age was found 44 years and women comprised 65% of the sample. FD was found in 66%. Pathological endoscopy finding was gastritis (46%), duodenal ulcer 18% and gastric ulcer. Four cases of gastric malignancy were identified (1.4%) (37). Similarly to

the study done in Qatar from January 2011 to December 2017, a Retrospective Study of Endoscopic finding in patients with dyspepsia was done. A total of 733 patients were enrolled, The study participants had a mean age of 42.7 ± 13.5 years, with 59.5% being male. The most common symptom was epigastric pain (79.2%), followed by heartburn (26.1%). It also revealed that over 90% had abnormal findings, most commonly gastritis and esophagitis. Gastric cancer was rare, affecting less than 1% of cases (9).

In a 2019 Iranian study, gastritis was the most frequent endoscopic finding (over half the patients), followed by esophagitis, peptic ulcer, and less common abnormalities like hiatal hernia and gastric metaplasia (37).

Some researchers have found different result as compared to others, where PUD was found to be a common endoscopic finding. A 2022 Ethiopian study of 218 dyspeptic patients found that over one-third had peptic ulcer disease, with other common findings including gastritis/duodenitis and functional dyspepsia. Gastric mass and pyloric obstruction were less frequent (40). Similarly to the study done in 2021A correlation study of clinical, endoscopic, and histopathological observations in patients suspected of peptic ulcer disease in Abuja, Nigeria, revealed that normal findings were the most common, accounting for 41.7% of cases. This was followed by peptic ulcer disease (28%), gastritis (15.9%), gastroduodenitis (6.1%), duodenitis (4.5%), tumors (2.3%), and gastroesophageal reflux disease, which was the least common at 1.5% (41).

A Study done in Eldoret Kenya 2014 concerned upper gastrointestinal endoscopy in patients presenting with upper gastrointestinal symptoms found that, out 1690 patients, 199 (11.8%) diagnosed were cancer, followed by duodenal ulcers in 186 patients (11.0%), while the majority, 513 patients (30.4%), had normal endoscopic findings (42).

In a large Kenyan study involving over 6,000 patients, endoscopy revealed that about one-third had normal findings, while gastritis, duodenal ulcers, and gastric ulcers were the most frequently observed abnormalities (43).

A Tanzanian study in 2014 found high prevalence of gastritis (61%) and GERD (57%) among dyspeptic patients. Peptic ulcer disease affected nearly one-quarter, while gastric cancer was present in about 7% (44).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design

This research employed a hospital-based cross-sectional design, in which both exposures and outcomes were measured at a single point in time among dyspeptic patients.

3.2 Study Area

The study was conducted at Muhimbili National Hospital (MNH) in the endoscopic unit. MNH has established endoscopic unit with specialists in gastroenterology The facility serves over 200 outpatients daily, providing access to a diverse population with varied social, economic, and demographic backgrounds, making it suitable for this study. In addition, it offers a broad range of inpatient surgical services and outpatient care, equipped with main and minor operating theaters, laboratories for various investigations, and a specialized endoscopy unit, including facilities for OGD.

This study area was chosen because of the following reasons.

1. Hospital Status and Coverage: It is Tanzania's largest national referral hospital which serves as a major tertiary care center and receives patients from all over Tanzania, providing a diverse patient population
2. Academic and Research Setting: It functions as a teaching hospital affiliated with Muhimbili University of Health and Allied Sciences (MUHAS), it has established research infrastructure with an experience in conducting clinical studies.
3. Clinical Resources: it has modern endoscopy facilities, experienced gastroenterologists and endoscopists and maintains medical records that can support research

4. Patient Volume: It has a high patient turnover, large number of dyspepsia cases and diverse socioeconomic and demographic representation
5. Gap in Knowledge: They have limited published data on endoscopic findings in dyspeptic patients in Tanzania. Results could inform local clinical practice guidelines and findings could be compared with other regional and international studies.

3.2.1 Muhimbili National Hospital (MNH).

Muhimbili National Hospital (MNH) is Tanzania's main referral and teaching hospital, with approximately 1,500 beds and significant patient turnover, managing thousands of outpatients and inpatients weekly. Patients of general surgery are kept in wards 09, 11, 12, and 13, which together have total number of 112 beds.

3.3. Study population

Dyspeptic patients presented in study area from May to July 2025 who underwent OGD and consented to participate in the study.

3.4 Sample size

The sample size was determined by using power analysis based on the prevalence of dyspepsia patients in the study population, the estimated effective size and desired level of significance and power.

A study conducted in Rwanda by Bangamwabo reported a dyspepsia prevalence of 14.2% (2).

$$\mathbf{N = \frac{Z^2\ P\ (1\text{-}P)}{d^2}}$$

Where:

N = Minimum sample size required

Z = Z - score (1.96 of 95% confidence level, α = 0.05)

d = Desired precision (5%)

P = Prevalence (14.2%) (2)

$$\mathbf{N = \frac{1.69^2\ x\ 0.142\ x\ (1\text{-}0.142)}{0.05^2}}$$

$$\mathbf{N = \frac{189}{}}$$

Sample size was 189.

Therefore, a sample size of 189 was needed to estimate the prevalence of dyspepsia with a 95% confidence level and a 5% margin of error.

3.5 Sampling method

Consecutive sampling technique was used whereby patients were enrolled sequentially based on defined inclusion criteria until the desired sample size had been attained**.**

3.5.1. Research Team Organization

Research team organization is the structure and roles of the people involved in conducting the research. It clarifies roles and responsibilities of each person involved in the study. In this study, three members of the team were involved, principal investigator, Endoscopist and research assistant.

3.5.1.1. Principal Investigator (PI):

He was the main person responsible for planning, conducting, and completing the research. He was responsible for formulating the research questions, designing the methodology, obtaining ethical approval, collecting and analyzing data, and writing the final dissertation

3.5.1.2. Endoscopist:

The endoscopist was central to the clinical component of the study by performing all endoscopic procedures required for data collection. Their responsibilities included, conducting the procedures according to standard clinical protocols, ensuring patient safety, and documenting the findings for research purposes. The endoscopist did not participate in data analysis or interpretation to minimize bias

3.5.1.3. Research Assistants Role:

One research assistant was involved in supporting data collection and organization throughout the study. His responsibilities included assisting with participant recruitment, distributing and collecting questionnaires, transcribing interviews, and entering data into electronic formats. He was trained on ethical research practices, including confidentiality and data protection, before participating in the study.

3.5.2. Inclusion criteria

All patients who underwent OGD and consented to participate in the study.

3.5.3. Exclusion criteria

Previous Gastric Surgery or Malignancy: History of gastric or esophageal malignancy or prior upper GI surgery because this surgery may distort the normal anatomy of GI tract.

Pregnancy: Pregnant women, due to altered GI physiology and ethical considerations.

3.6 Data collection instrument

The instruments used to collect data on upper gastroendoscopic findings typically included clinical tools, diagnostic technologies and validated questionnaires.

3.6.1 Clinical Assessment Tool

Standardized Patient questionnaires was used to collect information from the patient.

3.6.2. Endoscopy Tools

Endoscopy Machine with High-definition upper gastrointestinal endoscopes with video and Biopsy Tool was used for obtaining tissue samples from suspicious areas.

3.6.3. Diagnostic Tests

Histopathological Analysis of the biopsy specimens analyzed under a microscope to confirm malignancy, inflammation or infection.

3.7. Data collection procedure.

Data were collected from all dyspeptic patients who underwent OGD at Muhimbili National Hospital between May and July 2025, who consented to participate in the study.

Upon presentation to the Endoscopy Unit**,** patients who underwent OGD were identified and screened for eligibility based on the inclusion and exclusion criteria. Eligible patients were informed about the study objectives, procedures, potential benefits, and risks of participating in the study, after which written informed consent was obtained.

A structured questionnaire was used to collect socio-demographic data (such as age, sex, occupation, and education level), clinical history (duration and nature of symptoms, medication use, alcohol consumption, smoking, and presence of comorbidities), and relevant lifestyle factors.

Endoscopic findings were systematically recorded, including evidence of gastritis, duodenitis, gastric ulcer, duodenal ulcer, erosions, esophagitis, or malignancy. Where necessary, biopsy samples were obtained for histopathological examination to confirm diagnosis.

All collected data were entered into a pre-designed data collection form and later transferred to an electronic database for analysis. The process was conducted under strict confidentiality, and each participant was assigned a unique identification code to ensure anonymity.

3.7.1. Variables

3.7.1.1. Independent variables

Dyspeptic symptoms

Systemic diseases (diabetes mellitus, hypertension and obesity).

Past medical history (uses of NSAIDs drugs).

Family/social history (alcohol uses, cigarette smoking).

Laboratory result (Helicobacter pylori).

3.7.1.2 Dependent variables

OGD findings (Esophagitis, gastritis, duodenitis, hiatus hernia, Gastro esophageal reflux disease, PUD, polyps and Functional dyspepsia

and Malignancy).

3.8 Data analysis

Quantitative data was analyzed using Kappa statistic (κ). A descriptive statistic presented to show mode, mean, median and range. Categorical variables were presented in frequency and respective percentages using tables and figures. Binary logistic regression analysis was used to assess social demographic and medical factors associated with positive findings in endoscopic procedure.

3.9 Ethical Consideration

3.9.1 Informed consent

Ethical clearance to conduct this study was obtained from Kairuki University Senate of Research and Publication Committee of Kairuki University. Approval for data collection was sought from respective authorities at Muhimbili National Hospitals.

Written informed consent was obtained from all patients before their inclusion in the study. Participants were informed about the study purpose, their voluntarism in participation, the risks of the endoscopy procedure such as discomfort, perforation or bleeding and their right to withdraw at any point of the study.

Those who were found to have pathological findings were managed in Muhimbili National Hospital with respective of their disease.

3.9.2 Study Benefits and Advantages for Participants

This study provides data on endoscopic findings among dyspeptic patients at Muhimbili National Hospital. The results will support quality improvement initiatives aimed at enhancing care for dyspeptic patients in Tanzania. Additionally, the findings will be shared with the Ministry of Health to contribute to their expanding database and may help guide both patients and policymakers.

3.10 Study limitations and potential Risks to Participants.

Participants may face certain direct risks, especially during the endoscopy procedure such as discomfort, perforation, or bleeding and the patient was informed. The rate of occurrence of these complications was minimum around 0.7% to 2% (24). Any patient who ends up with complications of OGD procedure was treated accordingly at Muhimbili National Hospital. Confidentiality was strictly maintained; patients' names and registration numbers were kept confidential. Ethical approval was obtained from the institutional ethics review committee, and clearance was granted by Kairuki University. Permission to conduct the study was also requested from Muhimbili National Hospital.

3.11 Dissemination.

The findings of this study will be presented at both local and international conferences, contributing to the expanding knowledge on common upper gastrointestinal endoscopic findings in patients with dyspepsia. Additionally, the results will allow comparison between our data and global trends.

These results will also encourage other hospitals in Tanzania to publish their data, contributing to a nationwide database. This will enable comparisons across centers and assist in monitoring the quality of care provided to patients

3.12 Work plan: Gantt chart of proposed plan of implementation

ACTIVITY	2024	2025	2025	2025	2025
	December	Jan – April	May - July	August	September
PROPOSAL DEVELOPMENT					
ETHICAL CLEARANCE					
RECRUITING STAFFS					
PILOT STUDY-TESTING CHECKLIST					
DATA COLLECTION					
DATA PROCESSING					
DATA ANALYSIS					
REPORT WRITING					
REPORT PRESENTATION					
PUBLICATION					

CHAPTER FOUR

4.0 RESULTS

4.1. Socio-demographic

During the period of study, a total of 189 patients were included in the study, with a response rate of 100%. Among them, 110 (58.2%) were females, with a male to female ratio of 1: 1. 4. The patients' ages ranged from 19 to 89 years, with a median age of 48 [IQR, 42-56], and 105 (55.6%) were younger than 50 years. The median age group was 41-50 years (Figure 1). Pre-existing medical co-morbidities were reported in 36 (19.0%) patients, namely diabetes mellitus and obesity by using BMI in 6 (3.2%) and 28 (14.8%) respectively. Smoking and alcohol consumption were documented in 13 (6.9%) and 41 (21.7%) patients, respectively. In the present study, epigastric pain was the most common clinical presentation of upper gastrointestinal tract conditions, occurring in 94.4% of cases (Table 2).

Table 1: Socio-demographic among patients who underwent upper GI endoscopy at Muhimbili National Hospital (N=189).

Patient's characteristics	Number of patients (N)	Percentage (%)
Median age	**48 [IQR, 42-56] years**	
Age (in years)		
≤50	105	55.6
>50	84	44.4
Sex		
Male	79	41.8
Female	110	58.2
History of smoking		
Yes	13	6.9
No	176	93.1
History of alcohol consumption		
Yes	41	21.7
No	148	78.3
Diabetes mellitus		
Yes	6	3.2
No	183	96.8
Obesity		
Yes	28	14.8
No	161	85.2

4.2 Clinical characteristics.

The majority of patients presented with epigastric pain (94.4%) and epigastric burning (87.8%), which were the most common symptoms among dyspeptic patients. Other frequently reported symptoms included postprandial fullness (60.3%) and early satiety (57.1%), indicating typical features of functional or organic dyspepsia. Less common symptoms were melena (4.8%), nausea (4.8%), constipation (3.2%), and vomiting blood (2.1%), suggesting possible peptic ulcer disease or upper gastrointestinal bleeding in a small proportion of patients.

Table 2: Distribution of patients according to presenting symptoms among dyspeptic patient who underwent upper GI endoscopy at Muhimbili National Hospital (N=189).

Symptoms	Frequency (N)	Percentage (%)
Epigastric pain	186	94.4
Epigastric burning	166	87.8
Postprandial fullness	114	60.3
Early satiety	108	57.1
Melena	9	4.8
Nausea	9	4.8
Constipation	6	3.2
Vomiting blood	4	2.1
Difficulty in swallowing	4	2.1
Back pain	3	1.6
Halitosis	2	1.1

4.3. Provisional diagnosis among patients with dyspeptic symptoms before endoscopy

Figure 1 below shows distribution of patients according to provisional diagnosis among dyspeptic patients before undergoing upper GI endoscopy at Muhimbili National Hospital. Gastritis and peptic ulcer diseases were the most frequent provisional diagnoses accounting for 64.0% and 28.0% of cases, respectively.

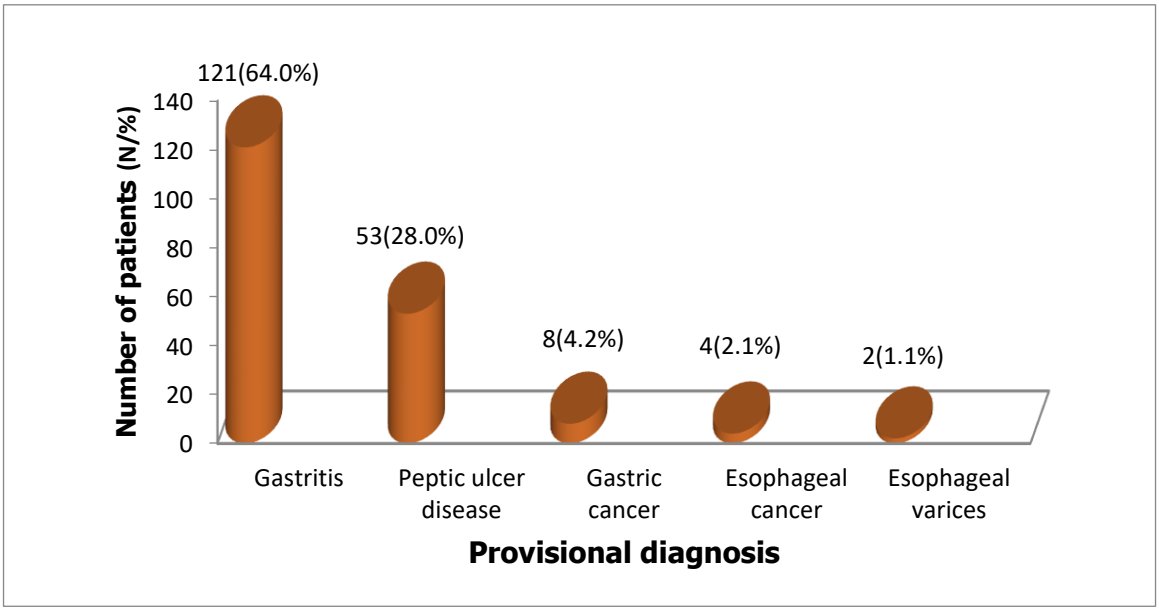


Figure 1: Distribution of patients according to provisional diagnosis among patients who underwent upper GI endoscopy at Muhimbili National Hospital (N=189).

4.3. Endoscopic findings in upper gastrointestinal tract conditions

Out of 189 patients, 184 (97.4%) showed pathological endoscopic findings, with gastritis esophageal candidiasis and esophagitis were the most common endoscopic finding accounting for 70.9%, 15.9% and 9.5% of cases, respectively as shown in Table 3 below.

Table 3: Endoscopic Findings among patients who underwent upper GI endoscopy at Muhimbili National Hospital (N=189).

Anatomical site	Endoscopic findings	Number of patients (N)	Percentage (%)
Esophagus	Esophagitis	18	9.5
	Barrette esophagus	2	1.1
	Esophageal varices	6	3.2
	Normal findings	4	2.1
	Esophageal cancer	3	1.6
	Esophageal candidiasis	30	15.9
Stomach	Gastritis	134	70.9
	Gastric ulcer	15	7.9
	Gastric polyps	2	1.1
	Gastric cancer	8	4.2
	Gastric varices	1	0.5
	Normal findings	1	0.5
Duodenum	Duodenitis	17	9.0
	Duodenal ulcer	1	0.5

4.4 Association of cigarette smoking with upper gastrointestinal tract conditions

In this study, a Chi-square test (χ^2 test) shows cigarette smoking was statistically significantly associated with several upper GI lesions such as gastritis (p-value = 0.012), esophagitis (p-value = 0.011), duodenitis (p-value = 0.001) gastro-duodenal ulcer (p-value = 0.013), gastric ulcer (p-value < 0.001) and esophageal cancer (p-value = 0.023) (Table 4).

Table 4: Association between Cigarette Smoking and Upper Gastrointestinal Lesions in Patients with Dyspepsia at MNH (N=189).

Upper GI conditions	Cigarette smoking		Chi-square	p-value
	Yes (N=13)	No (N=176)		
Gastritis				
Yes	12(9.0%)	124(91.0%)		
No	1(1.9%)	52(98.1%)	56.304	**0.012**
Esophageal candidiasis + upper GI lesions				
Yes	2(6.7%)	28(93.3%)	0.762	0.476
No	11(6.9%)	148(93.1%)		
Esophagitis				
Yes	3(16.7%)	15(83.3%)		
No	10(5.8%)	161(94.2%)	8.533	**0.011**
Duodenitis				
Yes	6(35.3%)	11(64.7%)		
No	7(4.1%)	168(95.9%)	38.99	**0.001**
Gastro-duodenal ulcers				
Yes	10(62.5%)	6(37.5%)		
No	3(1.7%)	170(98.3%)	8.96	**0.013**
Gastric cancer				
Yes	6(75.0%)	2(25.0%)		
No	7(3.9%)	174(96.1%)	65.11	**<0.001**
Gastroesophageal varices				
Yes	1 (14.3%)	6(85.7%)		
No	12 (6.6%)	170(93.4%)	1.009	0.125
Esophageal cancer				
Yes	2	1	3	
No	11	175	186	**0.022**

4.5 Association of alcohol consumption with upper gastrointestinal tract conditions

In this study, Chi-square test (χ^2 test) shows alcohol consumption among dyspeptic patients was significantly associated with gastritis (p-value = 0.003), gastro-duodenal ulcers (p-value = 0.021), gastric cancer (p-value =0.001) (Table 5).

Table 5: Association between Alcohol Consumption and Upper Gastrointestinal Lesions in Patients with Dyspepsia at MNH (N=189)

Upper GI conditions	Alcohol consumption		Chi-square	p-value
	Yes (N=41)	No (N=148)		
Gastritis				
Yes	36(26.9%)	98(73.1%)		
No	5(9.1%)	50(90.9%)	9.31	**0.003**
Esophageal candidiasis + upper GI lesions				
Yes	8(26.7%)	22(93.3%)	0.39	0.087
No	33(20.8%)	126(79.2%)		
Esophagitis				
Yes	4(22.2%)	14(77.8%)		
No	37(21.6%)	134(78.4%)	**1.12**	0.861
Duodenitis				
Yes	6(35.3%)	11(64.7%)		
No	35(20.3%)	137(79.7%)	0.99	0.326
Gastro-duodenal ulcers				
Yes	10(62.5%)	6(37.5%)		
No	31(17.9%)	142(82.1%)	12.11	**0.023**

Gastric cancer				
Yes	**5(62.5%)**	**3(37.5%)**		
No	**36(19.9%)**	**145(80.1%)**	**33.7**	**0.001**
Gastroesophageal varices				
Yes	2 (28.6%)	5(85.7%)		
No	39 (21.4%)	143(78.6%)	0.57	0.752
Esophageal cancer				
Yes	1(33.3%)	2(66.7%)		
No	40(21.5%)	146(78.5%)	1.43	0.442

CHAPTER FIVE

5.0 DISCUSSION

Diseases of the upper gastrointestinal tract, involving the esophagus, stomach, and duodenum, are common worldwide and contribute significantly to morbidity and mortality (45, 46). Upper GI Endoscopy is the preferred procedure for identifying organic disease of the foregut and has become a corner stone in the diagnosis and treatment of many of gastrointestinal disorders (46).

In this study, patients who underwent endoscopy had a median age of 48 years. "This value is somewhat higher than 47 years, and 36years that were found in Nigeria and Ethiopia (47, 48). Most patients were female, a finding consistent with some reports (49, 50). but differ from studies in Tanzania and Nigeria that observed male predominance (8, 51). The higher prevalence of common upper gastrointestinal pathologies among female cannot be explained by this study, and requires further in-depth investigation of the underlying risk factors.

In keeping with findings from other studies (52, 53), the documented rates of smoking and alcohol consumption among dyspeptic patients in the current study were 6.9% and 21.7%, respectively.

The findings of this study showed a significant link between smoking and upper GI lesions; (52). Cigarette smoking was statistically significantly associated with several upper GI lesions such as gastritis, esophagitis, duodenitis, gastro-duodenal ulcers, gastric and esophageal cancer. This aligns with previous literature suggesting that smoking promotes acid secretion, weakens mucosal defenses, and delays healing (52).

On the other hand, alcohol consumption has been reported to be associated with increased risk for gastritis and peptic ulcer. Alcohol has been shown to stimulate gastric acid secretion and elevate serum gastrin, which can disrupt the protective gastric lining and contribute to mucosal damage (53).

In this study, pre-existing medical co-morbidities such as diabetes mellitus, obesity and dyslipidemia were reported in 19.0% of cases, which is lower than 38% that was reported by Meira *et al*. (54). It has been reported in literature that the presence and severity of co-morbidities can affect the outcome of upper GI endoscopy and may have a higher risk of complications and a longer recovery time (54). Studies suggest a correlation between obesity and a higher prevalence of pathological endoscopic findings (52, 55). Several studies have reported that obesity increases the risk of pathological endoscopic findings, particularly gastritis and esophagitis, and diabetes, particularly type 2, further elevates the risk of these abnormal findings in obese individuals, according to medical research studies (54, 55), the data of this study support this association. This means that obese people are more likely to have conditions like inflammation of the stomach (gastritis) or esophagus (esophagitis) that are identified during endoscopic procedures (55).

As reported in this study, epigastric pain syndrome like epigastric pain or heartburn was the most common clinical presentation of upper gastrointestinal tract conditions similar to studies conducted in northern Uganda (56) and Burkina Faso (57). As well as studies conducted in Qatar in 733 patients, where epigastric pain was the most frequent presenting symptom (58). However, other studies have described postprandial distress syndrome as more prevalent (16).

It is important to note that dietary habits could have a significant role in this issue, as some diets can potentially increase the risk of dyspepsia and some of them could be protective.

Upper gastrointestinal (GI) lesions identified during endoscopy can be located in the esophagus, stomach or duodenum (36, 37). In this study, the stomach was the most common anatomical site identified during upper GI endoscopy. This anatomical location of the lesion is in accordance with other studies conducted elsewhere (8, 42-44). This finding can be explained by differences in communities related to diet and prevalence of risk factors like *H. pylori* infection.

Upper gastrointestinal (GI) endoscopy in patients with dyspepsia can reveal a variety of pathological endoscopic findings on the esophagus, stomach and duodenum (8, 56, and 60). In this study, nearly all patients (97.4%) had pathological endoscopic findings, which mirrors results from several African studies conducted in Ethiopia (60), Nigeria (59) and Uganda (56) where pathological endoscopic findings were documented in 96.4%, 82.1% and 80.5% of dyspeptic patients, respectively. In contrast, a meta-analysis from developed countries reported that only about half of dyspeptic patients had endoscopic abnormalities (61), which showed pathological endoscopic findings in only 51% of dyspeptic patients in developed countries.

These findings highlight a high burden of endoscopic abnormalities in dyspeptic patients across these African countries. The consistency in the prevalence of these findings across different studies and locations suggests a regional trend, potentially influenced by factors like risk factors, healthcare access, and lifestyle changes. The low incidence of normal endoscopic findings (2.6%) among dyspeptic patients in this study may be related to functional dyspepsia with perfectly normal mucosa.

In keeping with findings from other studies done elsewhere (8, 14, 56, 57), Gastritis predominated among our findings, which may be linked to the high prevalence of Helicobacter pylori infection in Tanzania (44). Similarly, our study is contrary to another study in Ethiopia, which reported that the most common abnormal endoscopic finding was esophageal cancer (60). Potential reasons for the high prevalence of gastritis observed in this study may be due to the high prevalence of *H. pylori* in this region, and other factors. In a study done by Kibira and his colleagues in Dar es Salaam in 2025 at Temeka regional referral Hospital about prevalence and factors associated with Helicobacter Pylori infection among patients with dyspeptic symptoms found that, the prevalence of Helicobacter Pylori infection was 43.77% (45). Therefore, tackling these factors is essential for reducing complications, including gastric cancer.

Esophageal candidiasis accompanied with upper GI lesions has been recognized as a second common finding in many upper gastrointestinal studies, often following or alongside other lesions (63). Esophageal candidiasis, often identified endoscopically as white plaque-like lesions, is usually associated with immunosuppression but may also occur under other conditions such as prolonged antibiotic use (63). In this study, esophageal candidiasis accompanied with other GI lesions was the second most prevalent upper gastrointestinal lesion. Similar finding was also reported in a previous study done elsewhere (64). This observation aligns with prior research, suggesting a potential connection between esophageal candidiasis and other gastrointestinal issues. A study done in China which was looking on Particular Candida albicans Strains in the digestive tract of dyspeptic Patients found that, a possible link between particular *C. albicans* strain genotypes and the host microenvironment. Positivity for particular *C. albicans* genotypes could signify susceptibility to dyspepsia.

Microenvironment like long term uses of Proton pump inhibitors reduce stomach acidity, which normally helps control fungal growth, also Antibiotics**,** diabetes**,** immunosuppression**,** or malnutrition can disturb the normal bacterial balance or immune defense, favoring *Candida* overgrowth (46).

Among patients with dyspepsia, the occurrence of esophagitis as detected by upper GI endoscopy varies, but it's generally a common finding. A recent meta-analysis published in 2023 reported an 8.5-20% prevalence of esophagitis in patients with dyspepsia (64). In the current study, esophagitis was found in 9.5% of cases, which is comparable to other studies done elsewhere (64). Factors that may contribute to the rising frequency of esophagitis include increasing obesity rates, longer life expectancy, changes in dietary habits, the use of medications affecting esophageal function, and improved health-seeking behaviors (63).

In the present study, gastro-duodenal ulcer was reported in 8.5% of cases. There was a significant association observed between cigarette smoking and gastro-duodenal ulcers in this study. This finding agrees with one study in the United States which confirmed a strong association between smoking and gastro-duodenal ulcers, with smokers having a higher risk of developing ulcers compared to non-smokers (52). Numerous studies (52, 53), including those by Acheampong and his colleagues (65), have demonstrated a clear association between cigarette smoking and increased risk of gastro-duodenal ulcers. While some studies may have focused on specific aspects of this relationship, the overall body of evidence strongly supports a link (52). Cigarette smoking is considered to be a significant risk factor for gastro-duodenal ulcers, and upper GI endoscopy plays a crucial role in diagnosing and assessing these ulcers, allowing clinicians to visualize the ulcers, determine their location and size, and potentially identify the cause, such as *H. pylori* infection or NSAID use (52). Clinical

observations indicate that cigarette smokers have a higher likelihood of developing ulcers that are more challenging to heal (52).

Upper gastrointestinal malignancies include cancers of the esophagus, stomach, and other related organs (65). These malignancies are a significant public health concern, with regional variations in incidence and mortality. Factors like diet, tobacco and alcohol use, and genetic predisposition contribute to the risk of developing these malignancies (63). While some studies show a stronger association between smoking and esophageal cancer, smoking and smokeless tobacco use are both associated with increased risk of stomach cancer (52). In this study, gastric cancer (4.2%) was more predominant than esophageal cancer (1.6%). This finding is in line with an Indian study which found a higher proportion of gastric cancer (5%) than of esophageal cancer (1.3%) among dyspeptic patients (65), but in contrast to studies conducted elsewhere that reported incidence of esophageal cancer than gastric cancer (40). While there's evidence linking tobacco use to upper GI cancers, more research is needed to fully understand the mechanisms and the specific impact of different forms of tobacco use in Tanzania.

Upper gastrointestinal (GI) endoscopy is generally more accurate than clinical evaluation alone for diagnosing conditions of the upper GI tract. While clinical assessment can provide clues, endoscopy allows for direct visualization and tissue sampling, leading to more precise diagnoses and targeted treatments (67). The diagnostic accuracy of clinical diagnosis compared to upper GI endoscopy finding ce evaluated using metrics like sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy. Provisional diagnosis, based on symptoms, often has high sensitivity (ability to correctly identify those with the condition) and PPV (proportion of positive results that are true

positives) for predicting endoscopic abnormalities, but can have lower specificity (ability to correctly identify those without the condition) and NPV (proportion of negative results that are true negatives). The diagnostic accuracy of clinical diagnosis in upper GI conditions vary widely, and in general, there is poor agreement between clinical and endoscopic diagnoses (68). In the current study, the diagnostic accuracy of provisional diagnosis in the detection of upper GI conditions ranged from 37.0-71.4% demonstrating a sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of 14.7-72.0%, 20.0-80.0%, 75.0-98.7% and 14.7-57.0%, respectively. There was moderate to substantial concordance with endoscopic observations (κ = 0.42-0.76). These results are consistent with those reported in other studies (68).

The finding that the diagnostic accuracy of provisional diagnosis among dyspeptic patients was low compared to endoscopic diagnosis.

These results indicate that while provisional clinical diagnoses achieved moderate sensitivity and predictive value, specificity and negative predictive value were relatively low. Endoscopy therefore remains essential, consistent with other studies that also report moderate agreement between clinical and endoscopic diagnoses.

5.1.1 Study limitations

First, this study was conducted in a tertiary care center, which may result in a selection bias due to it having been carried out in a single tertiary care institution.

Second, the use of a cross-sectional study design limits the ability to determine the temporal sequence of events, thereby preventing the establishment of clear causal relationships

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1. CONCLUSION

This study demonstrated that epigastric pain was the most frequent clinical presentation among the study patients, whereas gastritis was the predominant finding in both clinical and endoscopic observation. Smoking, alcohol consumption and being female were found to be significant associated factors for several upper GI conditions. Clinical impression helps on directing the appropriate diagnosis.

6.2. RECOMMENDATIONS

From this study the following recommendations can be made:s

- In hospitals without access to OGD, the leading provisional diagnoses for dyspeptic patients in Tanzania should include gastritis, esophagitis, and candidiasis.
- Provisional diagnosis among dyspeptic patients should be supplemented with upper GI endoscopy in order to improve the diagnostic accuracy of clinical diagnosis in our setting and may help in early diagnosis of malignancy and reducing morbidity.
- A larger sample size from a variety of institutions could potentially increase the validity of the study and facilitate further assessment of risk factors in patients with dyspepsia.
- Future studies that consider our limitations should be done to validate our findings, provide more accurate diagnostic information, and better understand the underlying causes of dyspepsia

7.0 REFERENCES

1. Hossain MS, Das S, Begum SMKN, Rahman MM, Mazumder RN, Gazi MA, et al. Asymptomatic Duodenitis and Helicobacter pylori associated Dyspepsia in 2-Year-Old Chronic Malnourished Bangladeshi Slum-Dwelling Children: A Cross-Sectional Study. J Trop Pediatr [Internet]. 2021 [cited 2023 Dec 10];67(1):1–8. Available from: /pmc/articles/PMC7948384/

2. Bangamwabo JB, Chetwood JD, Dusabejambo V, Ntirenganya C, Nuki G, Nkurunziza A, et al. Prevalence and sociodemographic determinants of dyspepsia in the general population of Rwanda. BMJ Open Gastroenterol [Internet]. 2020 May 6 [cited 2023 Dec 19];7(1):387. Available from: /pmc/articles/PMC7222881/

3. Patil A, Agarwal J, Jadhav S, Talwar G. Prevalence of Peptic Ulcer Disease among the Patients with Abdominal Pain Attending the Department Of Surgery in Gujarat Adani Institute of Medical Science, Bhuj, India. IJAR - Indian J Appl Res [Internet]. 2015 Dec 1 [cited 2023 Dec 1];Volume 5 I(12):324–8. Available from: https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/article/prevalence-of-peptic-ulcer-disease-among-the-patients-with-abdominal-pain-attending-the-department-of-surgery-in-gujarat-adani-institute-of-medical-science-bhuj-india/ODE1

4. Torlutter M, Onwukwe SC, Pretorius D, Mpangula NM, Omole OB. Dyspepsia: literature review and evidence for management in primary care. South African Fam Pract. 2018;60(3):25–32.

5. Khademolhosseini F, Mehrabani D, Zare N, Salehi M, Heydari S, Beheshti M, et al. Prevalence of Dyspepsia and its Correlation with Demographic Factors and Lifestyle in Shiraz, Southern Iran. Middle East J Dig Dis [Internet]. 2010 Jan [cited 2023 Dec 16];2(1):24. Available from: /pmc/articles/PMC4154903/

6. Lee YJ, Adusumilli G, Kyakulaga F, Muwereza P, Kazungu R, Blackwell TS, et al. Survey on the prevalence of dyspepsia and practices of dyspepsia management in rural Eastern Uganda. Heliyon [Internet]. 2019 Jun 1 [cited 2023 Dec 19];5(6). Available from: /pmc/articles/PMC6580192/

7. Badi A, Naushad VA, Purayil NK, Chandra P, Abuzaid HO, Paramba F, et al. Endoscopic Findings in Patients With Uninvestigated Dyspepsia: A Retrospective Study From Qatar. Cureus [Internet]. 2020 Oct 26 [cited 2023 Dec 6];12(10). Available from: https://www.cureus.com/articles/43769-endoscopic-findings-in-patients-with-uninvestigated-dyspepsia-a-retrospective-study-from-qatar

8. Shiban SA. Dyspepsia among Endoscopy Patients in Two Major Hospitals in Jordan: Correlation with Psychological and Lifestyle Disorders. Int J Hum Heal Sci. 2018;2(2):78.

9. Ayana SM, Swai B, Maro VP, Kibiki GS. Upper gastrointestinal endoscopic findings and prevalence of Helicobacter pylori infection among adult patients with dyspepsia in northern Tanzania. Tanzan J Health Res [Internet]. 2014 Feb 18 [cited 2023 Dec 1];16(1). Available from: https://www.ajol.info/index.php/thrb/article/view/88944

10. Puttaraju S, R. M. SS. Study of upper gastrointestinal endoscopy in patients with gastrointestinal symptoms. Int Surg J. 2019;6(10):3595.

11. Jannathul F, Noorzaid M, Norain AL, Dini S, Nurul H, Nurulnasuha N. A descriptive study on lifestyle factors influencing gastritis among university students of unikl rcmp in malaysia. Indian J Nat Sci. 2016;6(35):10753–6.

12. Toscano EP, Madeira FF, Dutra-Rulli MP, Gonçalves LOM, Proença MA, Borghi VS, et al. Epidemiological and clinical-pathological aspects of helicobacter pylori infection in brazilian children and adults. Gastroenterol Res Pract. 2018;2018.

13. Samy Azer, Awosika AO, Akhondi H. Continuing Education Activity. Gastritis. 2012;(iv):3–5.

14. Kayaçetin S, Güreşçi S. What is gastritis? What is gastropathy? How is it classified? Turkish J Gastroenterol. 2014;25(3):233–47.

15. Feyisa ZT, Woldeamanuel BT. Prevalence and associated risk factors of gastritis among patients visiting Saint Paul Hospital Millennium Medical College, Addis Ababa, Ethiopia. PLoS One [Internet]. 2021 Feb 1 [cited 2023 Dec 5];16(2). Available from: /pmc/articles/PMC7872234/

16. Han Y, Jung HK, Chang JY, Moon CM, Kim SE, Shim KN, et al. Identification of distinctive clinical significance in hospitalized patients with endoscopic duodenal mucosal lesions. Korean J Intern Med [Internet]. 2017 [cited 2023 Dec 6];32(5):827. Available from: /pmc/articles/PMC5583440/

17. Lewis S, Stableforth W, Awasthi R, Awasthi A, Pitts N, Ottaway J, et al. An examination of the relationship between the endoscopic appearance of duodenitis and the histological findings in patients with epigastric pain. Int J Clin Exp Pathol. 2012;5(6):581–7.

18. Stern E, Journey JD. Peptic Ulcer Perforated. StatPearls [Internet]. 2019;1–8. Available from: http://www.ncbi.nlm.nih.gov/pubmed/30855910

19. Journal I, Vol HS. Original article: Proportion of Peptic Ulcer Patients Based on Esophagogastroduodenoscopy (EGD) Examination at Jakarta Haji Hospital 2015-2018. 2018;05(01):27–30.

20. Malik TF, Gnanapandithan K, Singh K. Peptic Ulcer Disease. Sex/Gender-Specific Med Gastrointest Dis [Internet]. 2023 Jun 5 [cited 2023 Dec 5];131–51. Available from: https://www.ncbi.nlm.nih.gov/books/NBK534792/

21. Ray-Offor E, Opusunju KA. Current status of peptic ulcer disease in port harcourt metropolis, nigeria. Afr Health Sci. 2020;20(3):1446–51.

22. Yu Z, Zuo T, Yu H, Zhao Y, Zhang Y, Liu J, et al. Outcomes of upper gastrointestinal cancer screening in high-risk individuals: a population-based prospective study in Northeast China. BMJ Open [Internet]. 2022 [cited 2023 Dec 6];12:46134. Available from: http://dx.doi.org/10.1136/bmjopen-2020-046134

23. Gado A, Ebeid B, Abdelmohsen A, Axon A. Endoscopic evaluation of patients with dyspepsia in a secondary referral hospital in Egypt. Alexandria J Med. 2015 Sep 1;51(3):179–84.

24. Liang J, Jiang Y, Abboud Y, Gaddam S. Role of Endoscopy in Management of Upper. 2023.

25. Grossi L, Ciccaglione AF, Marzio L. Esophagitis and its causes: Who is "guilty" when acid is found "not guilty"? World J Gastroenterol. 2017;23(17):3011–6.

26. Antunes C, Sharma A. Esophagitis. 2023;1–8.

27. Trukhmanov AS. Diagnosis and treatment of gastroesophageal reflux disease. Ter Arkh. 2011;83(8):44–8.

28. Antunes C, Aleem A, Curtis. SA. Gastroesophageal reflux disease. Pract Gastroenterol Hepatol Esophagus Stomach. 2010;219–28.

29. Gado A, Ebeid B, Abdelmohsen A, Axon A. Prevalence of reflux esophagitis among patients undergoing endoscopy in a secondary referral hospital in Giza, Egypt. Alexandria J Med [Internet]. 2015;51(2):89–94. Available from: http://dx.doi.org/10.1016/j.ajme.2013.09.002

30. Badillo R, Francis D. Diagnosis and treatment of gastroesophageal reflux disease. World J Gastrointest Pharmacol Ther [Internet]. 2014 Aug 8 [cited 2023 Dec 6];5(3):105. Available from: /pmc/articles/PMC4133436/

31. Dávila-collado R, Jarquín-durán O, Dong LT, Espinoza JL. Epstein–Barr virus and Helicobacter pylori co-infection in non-malignant gastroduodenal disorders. Pathogens. 2020;9(2):1–25.

32. Stanghellini V. Functional Dyspepsia and Irritable Bowel Syndrome: Beyond Rome IV. Dig Dis. 2017;35(1):14–7.

33. Adriani A, Ribaldone DG, Astegiano M, Durazzo M, Saracco GM, Pellicano R. Irritable bowel syndrome: The clinical approach. Panminerva Med [Internet]. 2018 Dec 1 [cited 2023 Dec 5];60(4):213–22. Available from: https://pubmed.ncbi.nlm.nih.gov/30257542/

34. Gado A. Alexandria University Faculty of Medicine Endoscopic evaluation of patients with dyspepsia in a secondary referral hospital in Egypt. Alexandria J Med. 2015;51(3):179–84.

35. Ching HL, Hale MF, Sidhu R, McAlindon ME. Reassessing the value of gastroscopy for the investigation of dyspepsia. Frontline Gastroenterol. 2018;9(1):62–6.

36. Mao LQ, Wang SS, Zhou YL, Chen L, Yu LM, Li M, et al. Clinically significant endoscopic findings in patients of dyspepsia with no warning symptoms: A cross-sectional study. World J Clin Cases [Internet]. 2021 May 5 [cited 2023 Dec 8];9(15):3597. Available from: /pmc/articles/PMC8130061/

37. Faintuch JJ, Silva FM, Navarro-Rodriguez T, Barbuti RC, Hashimoto CL, Rossini ARAL, et al. Endoscopic findings in uninvestigated dyspepsia. BMC Gastroenterol. 2014;14(1).

38. Badi A, Naushad VA, Purayil NK, Chandra P, Abuzaid HO, Paramba F, et al. Endoscopic Findings in Patients With Uninvestigated Dyspepsia: A Retrospective Study From Qatar. Cureus [Internet]. 2020 Oct 26 [cited 2023 Dec 8];12(10). Available from: /pmc/articles/PMC7688183/

39. Jafari Heidarloo A, Majidi H, Mehryar HR, Hoseini Azar MR, Hasani L. Evaluation of the endoscopic findings in patients with dyspepsia. J Anal Res Clin Med. 2019 Feb 10;7(1):12–7.

40. Assefa B, Tadesse A, Abay Z, Abebe A, Tesfaye T, Tadesse M, et al. Peptic ulcer disease among dyspeptic patients at endoscopy unit, University of Gondar hospital, Northwest Ethiopia. BMC Gastroenterol. 2022;22(1):1–7.

41. Okoye OG, Olaomi OO, Nwofor AME, Jibrin P, Batta CS, Yaú AG, et al. Correlation of Clinical, Endoscopic, and Pathological Findings among Suspected Peptic Ulcer Disease Patients in Abuja, Nigeria. Gastroenterol Res Pract. 2021;2021.

42. Ayuo PO, Some FF, Kiplagat J. Upper gastrointestinal endoscopy findings in patients referred with upper gastrointestinal symptoms in Eldoret, Kenya: A retrospective review. East Afr Med J. 2014;91(8):267–72.

43. Makanga W, Nyaoncha A. Upper Gastrointestinal Disease in Nairobi and Nakuru Counties, Kenya; A Two Year Comparative Endoscopy Study. Ann African Surg. 2014;11(2):35–9.

44. Ayana SM, Swai B, Maro VP, Kibiki GS. Upper gastrointestinal endoscopic findings and prevalence of helicobacter pylori infection among adult patients with dyspepsia in northern Tanzania. Tanzan J Health Res. 2014;16(1):1–9.

45. Kibira PN, Tungu M. Prevalence and factors associated with Helicobacter Pylori infection among patients with dyspeptic symptoms in Tanzania: Experience from temeke regional referral hospital in Dar Es Salaam. PLoS One. 2025;20(4 April).

46. Gong YB, Zheng JL, Jin B, Zhuo DX, Huang ZQ, Qi H, et al. Particular candida albicans strains in the digestive tract of dyspeptic patients, identified by multilocus sequence typing. PLoS One. 2012;7(4).

APPENDICES

APPENDIX I: INFORMED CONSENT FORM (IN ENGLISH VERSION)

CONSENT OF PARTICIPATE IN THE STUDY

My name is Dr. Ahmed Mohamed Khalfan, I am conducting a study on the Upper gastrointestinal endoscopic finding in patients presenting with dyspepsia in Dar ess Salaam.

STUDY OBJECTIVE

The study will highlight on knowledge and create awareness on the common gastrointestinal endoscopic findings in dyspeptic patients which will help in accurate diagnosis and improve patient care.

HOW TO BE INVOLVED

A structured questionnaire will be used through an interview and the data will be collected, also some of the information will be obtained from computer system.

CONFIDENTIALITY

Confidentiality will be observed; identification numbers and serial numbers will be only used on this study.

PARTICIPATION AND RIGHT TO WITHDRAW

Participants are allowed to participate in this study without coercion and they can withdraw from the study if the environment won't be favorable for them.

BENEFITS

The study will provide data on the common gastrointestinal endoscopic findings in dyspeptic patients which will be used quality improvement initiatives and guide measures to enhance care for dyspeptic patients in Tanzania.

Please feel free to contact me directly if you have any concerns regarding this study, Dr Ahmed Mohamed Khalfan, Kairuki University. Tel. +25572182838. Email address: dr.ahmed00003@gmail.com.

The supervisor of this study are: Professor Mbembati and Dr Samuel Swai

Participant agreement.

I ……. have read the contents in this form. My questions have been answered. I am willing to participate in this study.

Signature of participant ……Date…….……

Signature of Researcher ……. Date…….

APPENDIX II: INFORMED CONSENT (SWAHILI VERSION)

RUHUSA YA KUWEPO KWENYE UTAFITI

Kwa majina kamilini Dr. Ahmed Mohamed Khalfan, ni mwanafunzi wa shahada la uzamili katika kitengo cha upasuji kiliopo Kairuki.

MADHUMUNI YA UTAFITI

Utafiti huu utatoa ujuzi nakujenga ufahamu juu yamatokeo yakipimo cha kamera chenye kuchunguza maradhi ya mfumo wakumeng'enya chakula ambapo itasaidia kwenye kuboresha matibabu yamaradhi hayo.

JINSI YA KUSHIRIKI

Taarifa zitachukuliwa kwa njia yamahojiano na baadae kuhifadhiwa kwenye nyaraka tofauti za hospitali.

USIRI

Usiri wa washiriki utatunzwa na namba maalamu ya utambulisho itatumika badala ya majina yao ili kufanikisha utafiti wa zoezi hili.

USHIRIKI NA HAKI YA KUJITOA

Ni hiyari kushiriki kwenye utafiti huu na iwapo mtu ataona mazingira hayamruhusu basi yupo huru kujitoa na anaweza kuendelea na matibabu yake kama kawaida bila madhara yoyote kumkabili.

FAIDA

Utafiti utatoa data juu ya matokeo ya matokeo ya kipimo cha kamera chenye kuchunguza maradhi ya mfumo wa wakumengenya chakula. Hii itaarifu hatua za kuboresha ubora zitakazo chukuliwa ili kutoa huduma bora kwa wagonjwa wamfumo wa kumengenya chakula nchini Tanzania.

MAWASILIANO

Iwapo kutakuwa na maswali na utafiti huu basi wasiliana na Dr. Ahmed Mohamed Khalfan, Kairuki chuo kikuu cha afya na sayansi,

Simu +25572182838, barua pepe; dr.ahmed00003@gmail.com.

Wasimamizi wa utafiti huu ni: Professor Mbembati and Dr Samuel Swai

Iwapo utakubali kushiriki kwenye utafiti huu tafadhali weka sahihi

Mimi……. Nimesoma maelezo ya fomu hii

Nimeyaelewa na nimekubali kushiriki katika utafiti huu.

Sahihi ya mshiriki…….

Tarehe……

Sahihi ya mtafiti……

Tarehe……

APPENDIX III: CHECK LIST (ENGLISH LANGUAGE)

INTRODUCTION

1. Name: ……
2. Age ……
3. Gender: …….
4. Occupation: ……

PATIENT COMPLAIN

5. Epigastric pain. ☐
6. Postprandial fullness ☐
7. Early satiety. ☐
8. Epigastric burning. ☐
9. Other…….

SYSTEMIC DISEASE

10. Diabetes Mellitus . ☐
11. Obesity. ☐
12. Dyslipidemia. ☐

PAST MEDICAL HISTORY

13. Long time uses of NSAIDs ☐

FAMILY/SOCIAL HISTORY

14. Smoking status: ☐
15. Alcohol use: ☐
16. Others ☐

DIAGNOSIS

17. ……

UPPER GASTROINTESTINAL ENDOSCOPIC FINDINGS

ESOPHAGUS

18. Esophagitis ☐
19. Barrett's esophagus ☐
20. Esophageal varices. ☐
21. Esophageal strictures ☐
22. Esophageal ulcers ☐
23. Benign Esophageal tumors ☐
24. Malignant Esophageal tumors ☐
25. Hiatal hernia ☐

STOMACH

26. Gastritis. ☐
27. Gastric ulcers. ☐
28. Benign Gastric tumors ☐
29. Malignant Gastric tumors ☐
30. Gastric polyps ☐
31. Gastric varices. ☐
32. Ménétrier's disease ☐

DUODENUM

33. Duodenitis ☐
34. Duodenal ulcers ☐
35. Benign Duodenal tumors ☐
36. Malignant Duodenal tumors ☐
37. Celiac disease changes ☐

APPENDIX IV: ORODHA YA KUKAGUA (LUGHA YA KISWAHILI)

UTANGULIZI

1. Jina: .....
2. Umri: .....
3. Jinsia: .....
4. kazi: .....

SHIDA YA MGONJWA

5. Maumivu y atumbo. ☐
6. Tumbo kujaa sana baada ya kula ☐
7. Kushiba haraka. ☐
8. Maumivu ya kuungua tumboni. ☐
9. Mengineyo…….

MAGONJWA YA MGONJWA

10. Maradhi ya kisukari. ☐
11. Uzito wamwili uliopitiliza. ☐
12. Kiwango kikubwa cha mafuta mwilini ☐

HISTORIA ZA KIMATIBABU

13. Utumiaji sana wa dawa za NSAIDs ☐

HISTORIA ZA FAMILIA, KIJAMII NA UKOO

14. Uvutaji wa sigara: ☐

15. Utumiaji wa pombe: ☐

16. Mengineyo ☐

MARADHI YANAYOMSUMBUA MGONJWA

17. .....

MATOKEO YA UCHUNGUZI WA ENDOSKOPIA YA SEHEMU YA JUU YA MFUMO WA MMENG'ENYO WA CHAKULA

UMIO (ESOPHAGUS)

18. Uvimbe wa umio. ☐

19. Umiowa Barrett. ☐

20. Mishipa ya damu iliyovimba kwenye umio. ☐

21. Kifinyiko cha umio. ☐

22. Vidonda vya umio. ☐

23. Uvimbe wa umio usio wa saratani. ☐

24. Uvimbe wa umio wa saratani. ☐

25. Hernia ya hiatal. ☐

TUMBO (STOMACH)

26. Uvimbe wa tumbo. ☐
27. Vidonda vya tumbo. ☐
28. Uvimbe wa tumbo usio wa saratani. ☐
29. Uvimbe wa tumbo wa saratani. ☐
30. Polipu za tumbo. ☐
31. Mishipa ya damu iliyo vimba kwenye tumbo. ☐
32. Maradhi ya Ménétrier. ☐

DUODENI (DUODENUM)

33. Uvimbe wa duodeni. ☐
34. Vidonda vya duodeni. ☐
35. Uvimbe wa duodeni usio wa saratani. ☐
36. Uvimbe wa duodeni wa saratani. ☐
37. Mabadiliko ya ugonjwa wa Celiac. ☐

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Email: irec@ku.ac.tz
Website: www.ku.ac.tz

Ref. No. KU/IREC/27.10/563 **1 May, 2025**

Dr. Ahmed Mohamed Khalfan,
Kairuki University,
70 Chwaku Street,
Mikocheni,
P. O. Box 65300.
Dar es Salaam, Tanzania.

RE: ETHICAL CLEARANCE CERTIFICATE FOR CONDUCTING HEALTH RESEARCH

I am pleased to inform you that the research titled: **Upper Gastrointestinal Endoscopy Findings in Patients Presenting with Dyspepsia at Muhimbili National Hospital (Khalfan, A. M., 2025)** has been granted ethical approval.

This approval is in effect for one year from the above date.

- Any changes in the procedures should be reported to the Institutional Research Ethics Committee.
- Significant changes will require the submission of a revised request for ethical approval.
- You will be required to submit **a study progress report** every six months.

Permission to publish your findings should be sought from the National Institute for Medical Research (NIMR) before submission to a publisher and not concurrently.

CHAIR PERSON

Name: Prof. Frederick Kaijage

Signature:

SECRETARY

Name: Prof. Columba Mbekenga

Signature:

DIRECTOR POSTGRADUATE STUDIES AND RESEARCH INSTITUTE
KAIRUKI UNIVERSITY
P. O. Box 65300, DSM

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH

MUHIMBILI NATIONAL HOSPITAL

In reply please quote;
Ref. No.: MNH/CRTCU/Perm/2025/227 Date: 4th June, 2025

Head of Department,
Surgery,
Internal Medicine,
Muhimbili National Hospital

RE: PERMISSION TO COLLECT DATA AT MNH

Name Student	**Ahmed Mohamed Khalfan**
Title	**"Upper Gastrointestinal Endoscopy Findings in Patients Presenting with Dyspepsia at Muhimbili National Hospital"**
Institution	Kairuki University
Supervisor	Prof. Naboth Membati
Co- Supervisor	Dr. Victor Sensa (MNH)
Period	5th June, 2025 to 4th November, 2025

Approval has been granted to the above principal investigators to collect data at MNH. Dissemination of study findings at MNH shall be overseen by **Dr. Victor Sensa (MNH)** supervisor

Kindly ensure the named principal investigator abide to the ethical principles and other conditions of the research approval.

Sincerely,

HEAD, TEACHING, RESEARCH & CONSULTANCY UNIT
P.O. Box 65000
DAR-ES-SALAAM
MUHIMBILI NATIONAL HOSPITAL

Dr. Robert D. Moshiro
Head of Clinical Research, Training and Consultancy Unit

c:c DSS, DMS
c:c Dr. Victor Sensa

Upanga West, Kalenga Street, Plot No. 10480/3, P.O. BOX 65000, Dar es Salaam, Tanzania
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KAIRUKI UNIVERSITY

DEPARTMENT OF GENERAL SURGERY

RESEARCH DISSERTATION

PATIENTS CHARACTERISTICS ENDOSCOPIC FINDING AND FACTORS ASSOCIATED WITH DYSPEPSIA AT MUHIMBILI NATIONAL HOSPITAL

FROM MAY - JULY 2025

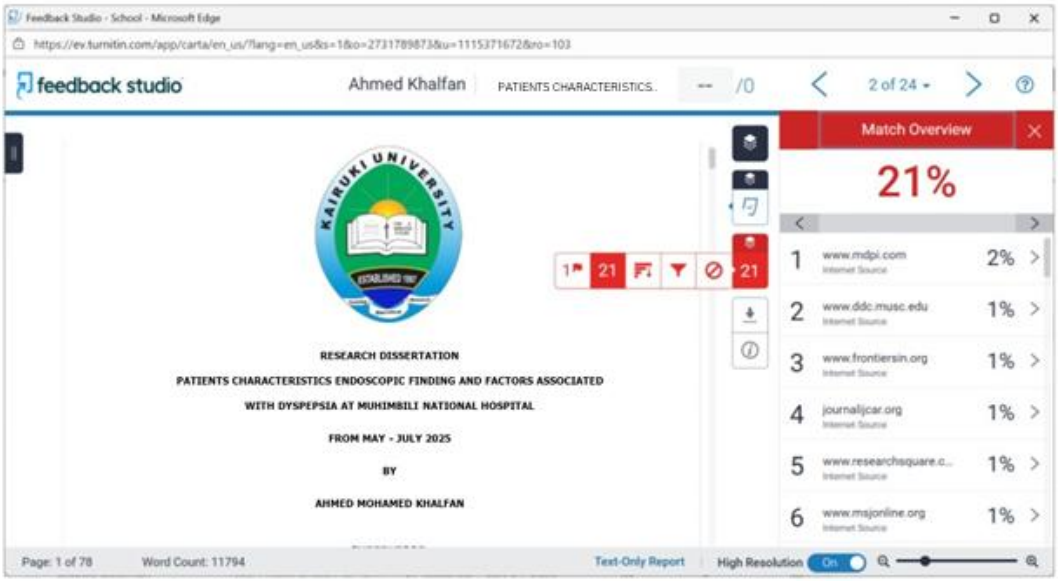
BY

AHMED MOHAMED KHALFAN

SUPERVISOR

PROF. NABOTH MEHBATI

DR. JEROME MKIRAHWENI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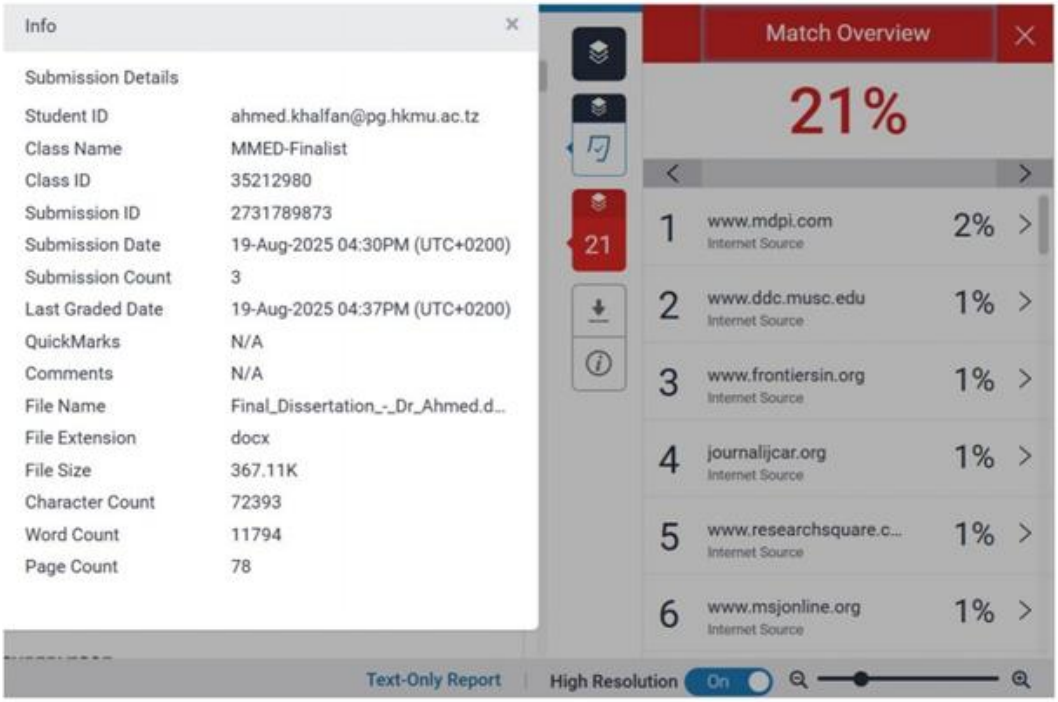
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