INDICATIONS AND FINDINGS OF PATIENTS UNDERGOING UPPER GASTROINTESTINAL ENDOSCOPY AT MUHIMBILI NATIONAL HOSPITAL, DAR ES SALAAM, TANZANIA.

By,

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A Dissertation Submitted in Partial fulfillment of the Requirements for the Degree of Master of Medicine (General Surgery) of Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance of a dissertation entitled: "***Indications and findings of patients undergoing upper gastrointestinal endoscopy at Muhimbili National Hospital, Dar es Salaam",*** in fulfillment of the requirements for the degree of Master of Medicine (General Surgery) of the Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam, Tanzania.

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Prof. Leonard E.K. Lema

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Date

DECLARATION

AND

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I, **Ramadhani Hassani Khamisi**, declare that, this dissertation is my original work and that it has not been presented and will not be presented to any other University for similar or any other degree award.

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DEDICATION

This work is dedicated to my dear and lovely wife, Fatma for her support, patience and care. My son Muhammad Ramadhani and my daughter Zainab Ramadhani for the courage they gave me and for their patience while I was away.

ABSTRACT

Background. OGD is a safe, widely available technique for which demand continues to grow, resulting in an increase in costs and waiting lists for endoscopic procedures [3, 4]. So, the appropriateness of indications for OGD is critical in assessing quality in endoscopy units, improving cost-effectiveness and providing better patient care.[7, 8]

The rationale of the study was to obtain information that will assist in formulating guidelines for upper GI endoscopy examination in Muhimbili National Hospital and probably Tanzania; so that a better quality of care is provided within such a financially constrained environment. The therapeutic services provided at the National Hospital's endoscopy unit are also worth documenting and hence be in a position to suggest some solutions in order to improve or assist patient care.

Objectives. The aim of this study was to profile by documenting the pattern of demographic characteristics, indications, and endoscopic findings of patients undergoing upper GI endoscopy at MNH.

Methodology. A descriptive, prospective, cross-sectional study to establish the profile including indications and the endoscopic findings of all the subjects who attended and did upper gastro-intestinal endoscopy at the MNH endoscopy unit from March 2011 to December 2011 was conducted. The data were analyzed using SPSS to obtain frequencies, mean, and percentage of variables.

Results. A total of 159 subjects aged between 12 and 93years were enrolled in the study whereby 94 (59.1%) were males. Most of the study population was from Dar es Salaam that comprised of 54.1%. The indications for endoscopy procedure were mainly for diagnosis and none was for therapeutic reasons. These included isolated dyspepsia (44.7%) followed by dysphagia (26.4%) and UGI bleeding (9.4%) and others. Combined symptoms comprised of 15.7%. The causes of these symptoms, all diagnosed endoscopically, included Gastritis in 39.0% of cases, malignancy in 20.7% and PUD in 12.6%; Most of the isolated dyspeptic patients had gastritis. Significant endoscopic findings were detected in those with dyspepsia complicated by alarm

symptoms or isolated alarm symptom in those aged 40 yrs and above. There were no therapeutic endoscopic interventions performed during the study period.

Conclusion. OGD plays a pivotal role in diagnosis and management of a number of upper GI diseases. At MNH, it is being utilized mostly by subjects aged 45.3 yrs on average who came mainly from Dar es Salaam and coastal regions of the country. Dyspepsia remained the leading indication for the procedure and the commonest upper GI endoscopic finding was gastritis. 25% of the upper GI malignancies were found between 40 to 50yrs of age. No therapeutic interventions were done during the study period.

Recommendations.

- Guidelines to do Upper GI endoscopy at MNH should be established pending a further evaluation by a larger prospective study, involving a number of endoscopy units in different regions where duration of symptoms and Histopathological results may be included.
- The demand for therapeutic/interventional endoscopy at MNH is high. The Hospital should acquire accessories required for these services, in order to improve quality of health care at the MNH endoscopy unit.
- Surveillance protocols and programme need to be strengthened so that significant people with potential risk for Upper GI malignancy may be picked earlier.

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ACRONYM AND ABBREVIATIONS

ASGE	-	American Society of Gastrointestinal Endoscopy
DU	-	Duodenal ulcer
GERD	-	Gastroesophageal reflux disease
GIT	-	Gastrointestinal tract
GU	-	Gastric ulcer
OGD	-	Oesophago-gastro-duodenoscopy
MNH	-	Muhimbili National Hospital
MUHAS	-	Muhimbili University of Health and Allied Sciences
PUD	-	Peptic ulcer disease
UGIE	-	Upper gastrointestinal Endoscopy
Upper GI	-	Upper gastrointestinal

CHAPTER ONE

Introduction

Gastrointestinal symptoms such as chronic abdominal pain, vomiting and diarrhea are common all over the world.[1] Establishing causes of gastrointestinal diseases leads to more efficient treatment and consequently decreases morbidity and mortality rates. The low prevalence of peptic ulcer that had been documented during 19th century may be attributed to an inability at the time to diagnose uncomplicated peptic ulcer during the patient's life, the statistics were mostly based on autopsy studies.[2] Adolf Kussmaul (1822 – 1902) at University of Freiburg performed the first gastroscopy ever (1868), by introducing his Endoscope into the stomach of the sword swallower.[3] Nevertheless, from 1910 to 1970, the methods of radiology were superior to endoscopy in diagnosing peptic ulcer. Using the side-viewing endoscope, devised by Elsner (1910 / 1911), Rudolf Schindler successfully performed gastroscopies that resulted in his first published book on gastroscopic diagnosis ("Lehrbuch und Atlas der Gastroskopie", 1923).[4] In 1932, Schindler introduced the semi-flexible Wolf-Schindler gastroscope into clinical practice, but still, there was a problem of difficulty of passage, limitations of viewing, and continuing risk of injury.[5] In 1954, the discoveries of image transmission through a flexible bundle of oriented glass fibers - termed a "fiberscope" - by Hopkins and Kapany, followed by development of Hirschowitz's prototype of first fiberscope for clinical use (1957), enabled the commercial production of gastroduodenal fiberscope by American Cystoscope Makers, Inc. (ACMI), in 1960.[6]

Since the beginning of the 1970s, flexible endoscopy of the gastrointestinal tract has been the dominant modality for the diagnosis of certain gastrointestinal diseases. Further development of electronic video technology enabled the advent of video endoscopy (Welch-Allyin Inc, 1983) that revolutionized the methods of teaching in gastrointestinal endoscopy.[7] Nowadays, we have witnessed the new techniques and methods of endoscopy and endosonography that have been brought into clinical practice, highlighting the possibility of imaging beyond white light and beyond mucosal layer, as well. Over the same period, developments in technology and methodology have made possible the use of endoscopy to treat a host of conditions

that once were considered to be manageable only by means of open surgical procedures. The integration of flexible endoscopic techniques into the armamentarium of the GI surgeon permits a more multidimensional approach to the treatment of Gastro-intestinal diseases.[8]

The increasing demand for costly medical technologies and medical services is causing a crisis in the developed countries health care systems. These critical problems might also cause crisis in the developing countries if appropriate measures are not taken in due time. While the goal of maintaining quality of care in the context of cost constraints lies in the ability to determine the appropriateness of care, A procedure is considered appropriate if its health benefit exceeds its health risk by a sufficiently wide margin for the procedure to be worth performing.[1, 9]It's therefore important for the poor countries like Tanzania to design mechanisms which will tackle the above said problems that are facing the developed world today.

Literature review

Oesophagogastroduodenoscopy (OGD) is a safe, widely available technique for which demand continues to grow, resulting in an increase in costs and waiting lists for endoscopic procedures.[8, 10] However the procedure is expensive and associated with a small but definite rate of complications.[11, 12] So, the appropriateness of indications for OGD is critical in assessing quality in endoscopy units, improving cost-effectiveness and providing better patient care.[13, 14]

Diagnostic OGD is indicated when a patient has abnormal findings on traditional GI x-ray series, dyspepsia, dysphagia, odynophagia, epigastric pain that does not respond to medical therapy, persistent heartburn, or upper GI bleeding. It is also indicated for surveillance of patients at high risk for malignancy and for sampling of GI tissue or fluid.[15]

Dyspepsia is defined as the pain or discomfort centered in the upper abdomen.[16] Pain located in other areas of the abdomen is excluded. Discomfort is a subjective negative feeling that may not be interpreted by the patient as pain and may include a variety of other symptoms such as fullness in the upper abdomen, early satiety, bloating, or nausea. Dyspeptic symptoms may be continuous or intermittent and may be of short or long duration.[17] One third of adults experience pain or discomfort in the upper abdomen during a given year.[18] Of these, one quarter seek treatment, making dyspepsia the presenting complaint in 4% of patients visiting primary care physicians.[19, 20] Consequently, dyspepsia has been shown to be a leading indication for the upper GI endoscopy, such as found by Danbouchi et al and Maleu et al in Zaria, Nigeria [21, 22]

Overall, dyspepsia is common in the general population and it is not clear whether the incidence of malignancy in patients with uncomplicated dyspepsia is different from those without dyspepsia.[23] Clinical history and examination show a diagnostic accuracy of only 45%–50%. The accuracy increases to 70%–80% on using a predefined questionnaire. The latter is time consuming and is not practical in day-to-day practice. Performing an endoscopy for all patients with dyspepsia is also not practical, especially with the increased workload in the endoscopy suite.

Nevertheless, Clinical diagnosis needs to be confirmed by OGD in diagnosing the underlying cause of dyspepsia.[8]

The role of an empirical therapy has been highlighted by earlier workers. [18] Several studies have examined the discriminant value of various alarm symptoms for identifying the high-risk patients for early referral.[25, 26]At this juncture, a system would call for specific set of guidelines. The set guidelines are essential in order to enhance the quality of healthcare, reduce the cost and avoid unnecessary workload, and these need to be tailored. Also, the guidelines for appropriate use of upper GI endoscopy may result in a more rational selection of patients worldwide. A number of alarm features have been suggested as indicators of high risk for a serious disease.[27, 28]These features include recent onset of dyspepsia in an older subject, occurrence at any age of the so-called alarm symptoms which include dysphagia, vomiting and/or weight loss.

Age is an important criterion while screening patients with dyspepsia for cancer. Among the Western population, the incidence of oesophageal and gastric cancers is very low for patients below the age of 45 years, and the Western recommendations do not justify the use of endoscopy in these patients to detect early cancer[29]. According to the American Society for Gastrointestinal Endoscopy report, only 1% of all dyspeptic patients will have an oesophageal or gastric cancer, and only six per 10,000 patients will have "early" gastric cancer at endoscopy. These criteria may not hold true in regions with a high prevalence of gastric and oesophageal cancers.[30] Indications for endoscopy ultimately need to be tailored accordingly in any one region. A normal endoscopy of dyspepsia cannot be dismissed as irrelevant. Reassurance provided by normal findings may subsequently result in fewer symptoms, avoidance of unnecessary treatment and decreased consultation rate[31]. However scoping on all the dyspeptic patients is not practical.[9]

Peptic ulcer disease is the other leading indication for upper GI endoscopy. These ulcers by definition, are focal defects in the gastric or duodenal mucosa which may extend into the Submucosa or deeper. They may be acute or chronic, and ultimately are caused by an imbalance between the action of peptic acid and mucosal defenses. Peptic ulcer remains a common outpatient diagnosis, but the number of physician

visits, hospital admissions, and elective operations for peptic ulcer disease has decreased steadily and dramatically over the past 3 decades.[32]These trends all predated the advent of fiberoptic endoscopy, highly selective vagotomy, and the use of H_2-blockers.[33]However, the incidence of emergency surgery and the death rate associated with peptic ulcers are fairly stable.[34] These epidemiologic trends probably represent the net effect of several factors, including decreasing prevalence of *H. pylori* infection, better medical therapy, increases in outpatient management, and the use of NSAIDs and aspirin (with and without ulcer prophylaxis).[34]

It is difficult to establish the true prevalence of peptic ulcer, because no one has done endoscopy on a large, representative sample of the population with and without dyspeptic symptoms. Probably about 10 per cent of adults in the United States of America and Europe suffer from an ulcer some time in their lives. Among individuals presenting to open-access endoscopy clinics with symptoms, between 10 and 19 per cent are found to have peptic ulcer[29]. The ratio of duodenal ulcer to gastric ulcer is 4:1[30]. However, there is evidence that the incidence and severity of the disease is decreasing in the West, and that this decrease started before the introduction of powerful acid-suppressing drugs.[35]In Sweden, elective hospital admissions for peptic ulcer diminished from 64 per 100 000 of the population in 1950 to 11 per 100 000 in 1986. In contrast, for the 10 years after the introduction of H_2-receptor antagonists in the United Kingdom, whereas the elective admissions diminished considerably, emergency admissions for bleeding or perforation remained the same overall but actually increased in males and females over 65 years of age.[35]

In Eastern Asia and African countries the pattern of peptic ulcer varies and is changing.[39] In Singapore, for example, the changes vary in different racial groups. In Japan, where gastric cancer is so common, benign peptic ulcer has a lower prevalence than in the West. In some African countries there is high local prevalence due to specific dietary habits, and migration to the towns in many developing countries has been accompanied by an increase, or increased diagnosis, of peptic ulceration[29, 30]

Fiberoptic endoscopy is the principal method of diagnosis, as it enables biopsies to be taken to exclude malignancy in gastric ulcers, and to do a rapid Urease test or

histological examination for *Helicobacter*. The ^{14}C breath test is used to confirm eradication to avoid a further gastroscopy. A frequent clinical problem is the patient who is referred for gastroscopy having been started on acid-inhibitory drugs several weeks before. If no ulcer is seen, it is often impossible to know whether there was an acute ulcer that has healed, or whether the diagnosis was not peptic ulceration. In these circumstances, it is best to stop the treatment and arrange to endoscope the patient as soon as the pain recurs. Ideally, patients should not be put on powerful acid-reducing drugs, which heal ulcers rapidly, before a diagnosis is made, otherwise they may be condemned to long periods of drug therapy or to *Helicobacter* elimination for the wrong reasons.[36]

Endoscopy can be used to document healing of gastric and duodenal ulcers after appropriate medical treatment. Endoscopy discriminates patients that have intractable symptoms due to a refractory ulcer from those without endoscopic evidence of an ulcer. The latter finding suggests the need to pursue other etiologies for the presumed 'ulcer' symptoms.[20]

Olokoba et al[37] in their study involving 49 patients who underwent upper G I endoscopy in Nigeria found that, the commonest indication for the procedure was peptic ulcer disease (59%); Similar to the findings shown in a study by Samaila et al in Katsina in Nigeria in which they also found that the commonest indication for the procedure was peptic ulcer disease.[38]

Barrett's esophagus also warrants endoscopy. This is the condition in which columnar epithelium replaces the squamous epithelium that normally lines the distal esophagus. The condition develops when gastroesophageal reflux disease damages the squamous esophageal mucosa and the injury heals through a metaplastic process in which columnar cells replace squamous ones. The columnar epithelium that characterizes Barrett's esophagus is an incomplete form of intestinal metaplasia (called specialized intestinal metaplasia) that predisposes patients to adenocarcinoma. Esophageal adenocarcinoma develops in approximately 0.5 percent of patients with Barrett's esophagus per year.[39]This is a tumor found predominantly in Caucasian men, among whom the frequency of esophageal adenocarcinoma has inexplicably quadrupled over the past few decades.[40] Although gastroesophageal

reflux disease is the main recognized risk factor for this cancer presumably because it causes Barrett's esophagus, it is not clear whether the rising incidence of the tumor is due to an increasing frequency of gastroesophageal reflux disease alone in the general population.[41]

The diagnosis of Barrett's esophagus is based on the endoscopic findings of columnar epithelium lining the distal esophagus and confirmed by the presence of specialized intestinal metaplasia in esophageal-biopsy specimens. To document the findings of columnar epithelium in the distal esophagus, the endoscopist must identify both the squamocolumnar and gastroesophageal junctions.[42]The juxtaposition of pale squamous epithelium and reddish columnar epithelium forms a visible line called the Z line, or the squamocolumnar junction. The gastroesophageal junction, the point at which the esophagus ends and the stomach begins, is the most proximal part of the gastric folds. Often, the Z line and the gastroesophageal junction coincide. When the Z line is located above the gastroesophageal junction, there is a columnar lined segment of esophagus. For decades, Barrett's esophagus was identified predominantly in patients with severe Gastroesophageal reflux disease on the basis of the finding of long segments of columnar epithelium extending more than 3 cm above the gastroesophageal junction. Patients with Barrett's esophagus should undergo regular endoscopic surveillance for curable neoplasia to decrease the risk of death from esophageal cancer.[43]

The American College of Gastroenterology recommends that endoscopic surveillance be performed every two to three years in patients without dysplasia, on the basis of an estimated incidence of cancer in patients with Barrett's esophagus of 1 to 2 percent per year. Recent studies suggest that the true incidence of cancer is approximately 0.5 percent per year. Therefore, less frequent surveillance done every three to five years seems appropriate in patients without dysplasia.[44]

Another condition that merits active surveillance by OGD is the gastric stump cancer. Gastric stump cancer has been reported in 5 to 6 per cent of patients who have previously undergone gastric resection for benign disease. The incidence is related to the development of dysplasia. Because of the 2- to 4-fold increased risk of

cancer development, selected surveillance of symptomatic patients has been recommended beginning 15 years after the original operation.[45]

Another category of patients who need active surveillance and evaluation is that with chronic anaemia and/or iron deficiency. Upper gastrointestinal endoscopy is recommended in iron-deficiency anaemia and/or iron deficiency, after any non-gastrointestinal origin has been eliminated: i) as first choice when the clinical context suggests a problem in the upper gastrointestinal tract and in patients whose general state of health is poor (very old, concomitant disease); ii) in all other cases, after inconclusive colonoscopy and, if possible, during the same anaesthesia session.[46]

Surveillance and follow-up of known pathology are also important roles for upper GI endoscopy. Potential indications include Barrett's esophagus where detection of dysplasia is critical to appropriate management. Barrett's metaplasia predisposes patients to esophageal adenocarcinoma in about 9 to 15 per cent of cases. The degree of risk increases with segments greater than 8 cm and with presence of high-grade dysplasia within the Barrett's mucosa.[17]

Achalasia, Plummer-vinson syndrome and caustic ingestion also deserve special mention. Plummer–Vinson syndrome is a rare condition characterized by cervical esophageal webs seen primarily in women with associated iron-deficiency anemia. Since cervical esophageal squamous cell cancers develop in 10 to 12 per cent of these patients, surveillance endoscopy can be beneficial. Squamous cell cancers also develop in 2 to 7 per cent of patients with Achalasia. Patients with chronic dilatation and stasis warrant aggressive follow-up.[17]

Patients who survive lye (caustic) ingestion face a 1000-fold increased risk of cancer development compared with the general population. The time from the caustic burn until the onset of cancer averages about 40 years, but may be as short as 9 years. If the damaged esophagus was left *in situ*, endoscopic screening is appropriate beginning 20 years after injury or upon development of dysphagia.[18]

Due to their malignant potential, adenomatous gastric polyps and duodenal polyps merit endoscopic surveillance. Such polyps are frequently seen in patients with colon polyposis syndromes. Note that most gastric polyps in these syndromes represent

fundic gland hyperplasia, while associated duodenal polyps are usually adenomatous. These polyps should be followed as described for colonic polyps. Cancer risk in these adenomatous polyps, as with their colonic counterparts, increases with polyp size.[19]

Upper gastrointestinal bleeding is one of the major indications for upper GI endoscopy. Whether bleeding stems from Oesophageal varices, Mallory–Weiss tears, or peptic ulcer, endoscopy is preferred given its ability to both diagnose and treat the bleeding source in one setting. Despite new developments in endoscopic therapy, the mortality from upper gastrointestinal hemorrhage has changed little in the past 30 years. The primary predictor of morbidity remains the magnitude of blood loss before the initial assessment. Endoscopy is critical in the initial evaluation and treatment of bleeding and should be performed soon after the patient has stabilized.[47] Hemodynamic instability associated with hemetemesis or hematochezia clearly mandate endoscopic evaluation after stabilizing the patient. Upper gastrointestinal endoscopy accurately identifies the bleeding site and source in about 90 per cent of cases and may also reduce health care cost by accurately triaging patients' care on initial presentation. At the same time, successful treatment can ordinarily be achieved in most settings using a variety of techniques[48]. A thorough endoscopic examination usually reveals the bleeding source(s), rate of bleeding, and stigmata of recent hemorrhage.

Though there is a 70 to 85 per cent rate of spontaneous cessation of hemorrhage, certain endoscopic findings are associated with a higher probability of continued hemorrhage or re-bleeding from ulcers. Pulsatile arterial bleeding has an 85 per cent risk of continued hemorrhage. A visible vessel has a re-bleeding risk of about 50 per cent. Lesions with an adherent clot or pigmented protuberance have a 20 to 40 per cent risk of re-bleeding. A flat pigmented spot has a 5 to 10 per cent chance of continued bleeding. Lesions with a clean base are at low risk (5 per cent) of rebleeding.[48]Endoscopic hemostasis reduces the need for surgery, blood transfusion, and length of hospital stays. Lesions that suggest increased bleeding risk should be treated endoscopically, using either thermal or injection therapy; endoscopic therapy significantly decreases the risk of re-bleeding. Thermal therapies, control bleeding by

using heat to induce vessel shrinkage via tissue coagulation and collagen contraction.[47]

Hemorrhage from esophageal varices occurs in 30 per cent of patients with cirrhosis and is associated with 30 per cent mortality.[49]Endoscopic intervention plays a vital role in management of this serious clinical problem. Initially, volume replacement and appropriate repletion of coagulation factors are essential. The stomach is lavaged to clear blood clots. In patients with mental obtundation, endotracheal intubation will protect the airway. In the presence of massive bleeding, infusion of intravenous vasopressin or balloon tamponade may be necessary. Since complications and transfusion requirements may be increased when eosphageal tamponade precedes endoscopic intervention, this should be avoided when possible.

Upper GI endoscopy is performed to establish the diagnosis. Upon confirmation of variceal bleeding, endoscopic treatment is undertaken. Injection sclerotherapy is usually effective and is the initial treatment of choice for control of acute esophageal variceal bleeding in most patients.[50]Sclerotherapy significantly reduces re-bleeding and provides a survival advantage when compared with no sclerotherapy. Nevertheless, re-bleeding occurs rather frequently (30 to 50 per cent) following sclerotherapy; the rate is significantly greater than that associated with shunt surgery. Complications such as fever, chest pain, pleural effusion, and esophageal stricture are infrequently seen.[49]

At this time, no sclerosant is universally accepted. In the United States, the most commonly used agents are 0.7 to 3.0 per cent sodium tetradecyl sulfate and 5 per cent sodium morrhuate. A recent, prospective, randomized study reported equal efficacy between sodium tetradecyl sulfate and polidocanol, but favored polidocanol because of fewer complications. Ethanolamine is the most commonly used agent in Europe.[49] Sclerosants are injected either intravariceally or paravariceally. Intravariceal injection is preferred, since acute variceal bleeding is more effectively controlled (91 compared with 19 per cent, respectively). Injection is begun just above the gastroesophageal junction. The needle is placed into the varix and a test dose of 0.5 ml is injected to ensure intravariceal placement. Once placement is confirmed, an additional 1.5 ml is injected. This technique is repeated circumferentially around the

esophagus until all varices at this level have been treated. Injections are continued 2- to 3-cm proximally, again injecting circumferentially until only small caliber vessels are encountered. The total volume of sclerosant used should not exceed 20 ml per session. If active variceal bleeding is encountered, injections are begun just proximal to the bleeding site and continued until bleeding subsides. The session is usually repeated 5 days later and then continued at 1- to 3-week intervals until varices are ablated.[50]

Because of a notable incidence of complications and re-bleeding, alternatives have been sought. Most recently, attention has focused on endoscopic variceal ligation. With this technique, varices are ligated with elastic bands similar to those used for hemorrhoidal banding. Several reports of the technique suggest superior results in terms of decreased re-bleeding, decreased esophageal stricture, and faster variceal obliteration.[51]

Prophylactic endoscopic intervention has been considered as a means of preventing initial bleeding episodes and improving overall survival in patients with cirrhosis. Results cast doubt on any benefit of prophylactic sclerotherapy. The Veterans Affairs Cooperative study was terminated prematurely owing to increased mortality in the prophylactic sclerotherapy group.[52]It is conceivable; however, that prophylactic banding may prove more promising. Several reports demonstrate a reduced incidence of initial bleeding with prophylactic variceal banding and at least one report demonstrated a significant survival advantage. Confirmation of these results awaits future studies.

Propranolol may offer benefit for acute variceal bleeding, slowing acute bleeding as well as preventing hemorrhage. Propranolol may also reduce re-bleeding when added to long-term sclerotherapy regimens. However, other studies reported conflicting results indicating the need for more prospective randomized data. Sclerotherapy is superior to propranolol alone in controlling variceal hemorrhage though neither intervention confers survival advantage. Octreotide is another promising medical therapy which may prevent variceal re-bleeding. Octreotide appears to be of greatest utility when combined with either sclerotherapy or endoscopic band ligation.[53]

When patients complain of dysphagia or odynophagia, prompt endoscopic investigation is warranted. Strictures may be secondary to caustic burns, or of neoplastic origin but most commonly a benign stenosis secondary to gastroesophageal reflux. Dilation resolves or improves dysphagia in 80 to 90 per cent of patients with benign strictures. Guidewire-directed dilators are particularly useful for long, tortuous, or extremely narrow (less than 10 mm) strictures as well as those within hiatus hernias. These rigid devices are made of polyvinyl chloride and house a hollow core that allows passage over endoscopically or fluoroscopically placed guidewires. With guidewire techniques, routine fluoroscopy is seldom required except when the diameter of the stricture precludes endoscope passage.[50, 54]

Malignant esophageal strictures may also benefit from endoscopic intervention. Following endoscopic assessment of tumor location and length, patients with dysphagia can be palliated with dilatation and, occasionally, insertion of an esophageal endo-prosthesis, such as the widely accepted recently self expandable metallic stents.[55]

Dysphagia/odynophagia, upper abdominal pain, and unexplained vomiting may all be related to anatomic esophageal lesions, which can be readily visualized endoscopically. While lesions such as Zenker's diverticulas (also known as pharyngoesophageal diverticula) may require barium swallow for diagnosis, esophageal webs and tumors are better evaluated endoscopically. Since most esophageal tumors are cancerous, esophageal obstructive symptoms mandate oesophagoscopy for potential inspection, biopsy, and occasionally treatment of the underlying pathology.[56]

Problem Statement.

There are many reports in the literature on the yield of Upper GI endoscopy. However, no data are available in MNH on the profile of subjects attending endoscopy Unit for examination. Therefore, there's no information on the actual changes in specific Upper GI morbidity patterns in patients sent for Upper GI Endoscopy.

Oesophago-gastro-duodenoscopy is a safe, now widely available technique for which demand is continuously growing very fast in our locality, resulting in an increase in the costs and waiting lists for endoscopic procedure. Endoscopy must stand up to rigorous audit in order to ensure delivery of quality services by limiting unnecessary procedures, but at the same time avoid underutilization, for which potential morbid Upper GI lesions may not otherwise be identified earlier.

The procedure is expensive, somewhat unpleasant for the patient, and carries a small risk of complications. The cost and risk must be carefully weighed against the potential advantage. Nevertheless, the management of dyspepsia, for instance, is rapidly changing with newer tests, newer concepts concerning the pathogenesis, and more effective and powerful drugs. Hence we believe that current practices require modification in the light of changing circumstances.

Several studies have examined the discriminant value of various alarm symptoms for identifying the high-risk patients for early referral.[25, 26]Unlike the developed world; there are no set guidelines in Tanzania and most African countries for clinicians to predict an appropriate outcome. The set guidelines are essential in order to enhance the quality of healthcare, reduce the cost and avoid unnecessary workload, and these need to be tailored accordingly depending on the epidemiological data of GIT disease in a given locality and country.

Study Rationale

Because of lack of information about the prevalence of upper gastro-intestinal diseases in our locality and probable high rate of endoscopic examinations in MNH, the present study is designed to characterize the clinical, endoscopic and pathological features of patients undergoing upper GI endoscopy in comparison to other centers.

The goal of maintaining quality of care in the context of cost constraints lies in the ability to determine the appropriateness of care. A procedure is considered appropriate if its health benefits exceed its health risk by a sufficiently wide margin for the procedure to be worth performing.

In 1988 the American Society for Gastrointestinal Endoscopy (ASGE), developed guidelines to evaluate the relationship between appropriateness of use of OGD and relevant endoscopic findings.[30]However the criteria for ordering an OGD, created under particular circumstances of referral and epidemiological patterns of disease occurrence, do not necessarily apply to different populations, worldwide.

This study will assist as a baseline for setting up standardized guidelines for upper GI endoscopy examination in Muhimbili National Hospital and probably Tanzania. It will thus, provide basis to formulate a tool for screening of referred cases for the purpose of determining the appropriateness of OGD, so that a better quality of care is provided within such a financially constrained environment.

This study is also being done as a partial fulfillment of the requirement for the award of the degree of Master of Medicine, of Muhimbili University of Health and Allied Sciences.

1. Study Objectives.

1.1 Broad Objective

To study indications and findings of patients undergoing upper GI endoscopy at MNH within a defined period.

1.2 Specific Objectives

1. To document the demographics of subjects undergoing OGD at MNH
2. To determine the indications for upper GI endoscopy at MNH
3. To determine the endoscopic findings on patients undergoing Upper GI endoscopy at MNH

CHAPTER TWO

Methodology

2.1. Study design

This was a ten months descriptive prospective study, employing quantitative method of data collection.

2.2. Study setting

The study was conducted at MNH; this hospital serves as a national referral and a public university teaching hospital, based in Dar es Salaam, the commercial city of Tanzania. The hospital has a bed capacity of 1500 and attending to about 5000 outpatients per week. The Hospital staff stands at 2800 personnel.

The endoscopy unit is located at the Outpatient complex building, where it receives patients on an open access basis; where a referring physician, general practitioner or medical practitioner of the hospital requests an examination for a particular patient. A summary of clinical findings and provisional diagnosis appear in the request form. Demographic data of each patient is also included in the request form.

The unit receives patients both from clinical departments of the hospital and other health facilities. There are those patients who come from private hospitals to attend the unit specifically for the upper GI endoscopy. Patient categories, therefore, include both public and private cases that are either outpatients or inpatients.

2.3. Study population

The study involved all patients who underwent upper GI endoscopy for any reason at MNH Endoscopy Unit during the study period of March to December 2011.

2.4. Eligibility

2.4.1Inclusion criteria:

Any patient who consented for the study and examined within the specified period of the study was eligible for the study.

2.4.2. Exclusion criteria

Anyone whose procedure was abandoned for any reason was not included in this study.

2.5. Data collection.

Data collection was done using a structured questionnaire that captured demographic data, indications and findings at endoscopy. The files of patients were sought by the investigator himself for data collection. A well informed research assistant collected data from those subjects who didn't have files.

2.6. Materials and Procedure.

The endoscopy unit booking and register books were examined, patients' case notes were reviewed, and the indications for the examination for each patient were obtained.

The upper GI endoscopes in use at the endoscopy unit of the hospital were Olympus GIF Q150 model with an Olympus CLE-150 light source; and Olympus GIF-Q40 with its light source CLK-40.

Every patient scheduled for the endoscopy procedure, was counseled and reassured of the procedure. Local anaesthesia was achieved using a spray of 10% xylocaine spray to the mucous membrane of the tongue and the patient was instructed to swallow slowly, of which one dose (each spray) contains 10mg of Lidocaine. A maximum of three doses were sprayed per single patient. Alternatively, a 2% Xylocaine gel that contains 2.0% w/v lignocaine was used. No sedation was provided to the patient unless; on occasion that the patient was too anxious a 10mg Midazolam tablet was given to allay the anxiety. The scope was introduced through the mouth past the upper oesophageal sphincter into the oesophagus, then the stomach and finally the duodenum. Examination was completed on gentle withdrawal of the scope. The fundus of the stomach was examined by retroversion of the scope.

When a gastric ulcer or any other suspicious lesion was seen, a biopsy was taken for histopathology studies. Endoscopic gastritis was judged to be present if nodularity was seen in the antrum or if erosion or intramucosal bleeding were present. In

addition, presence of red stripes especially in the antrum was considered an endoscopic sign of gastritis. Barrett's oesophagus was judged to be present if the typical macroscopic appearance of pale epithelium was present in the distal Oesophagus.

Any lesion whether ulcerative or a growth with irregular margins and surface, was regarded suspicious for malignancy and biopsy was taken for histological study. The whitish desquamations stack on to the mucosa of Oesophagus was diagnosed to be Oesophageal Candidiasis.

2.7. Data management and analysis

Data was regularly cleared weekly by the investigator, coded and entered into a software data base system and stored. The SPSS version 6 was used to analyse the data, and categorical variables were summarized into frequencies and displayed on pie chart and tables.

2.8. Ethical consideration and clearance

2.8.1 All patients were counseled about this study before they accepted to participate.

2.8.2 A written consent was obtained from patients who accepted to participate by signing the prepared consent form.

2.8.3 Patient particulars were kept safe with no identifiers.

2.8.4 Permission to carry out research was obtained from MUHAS ethical research committee. No change of protocol was instituted.

CHAPTER THREE

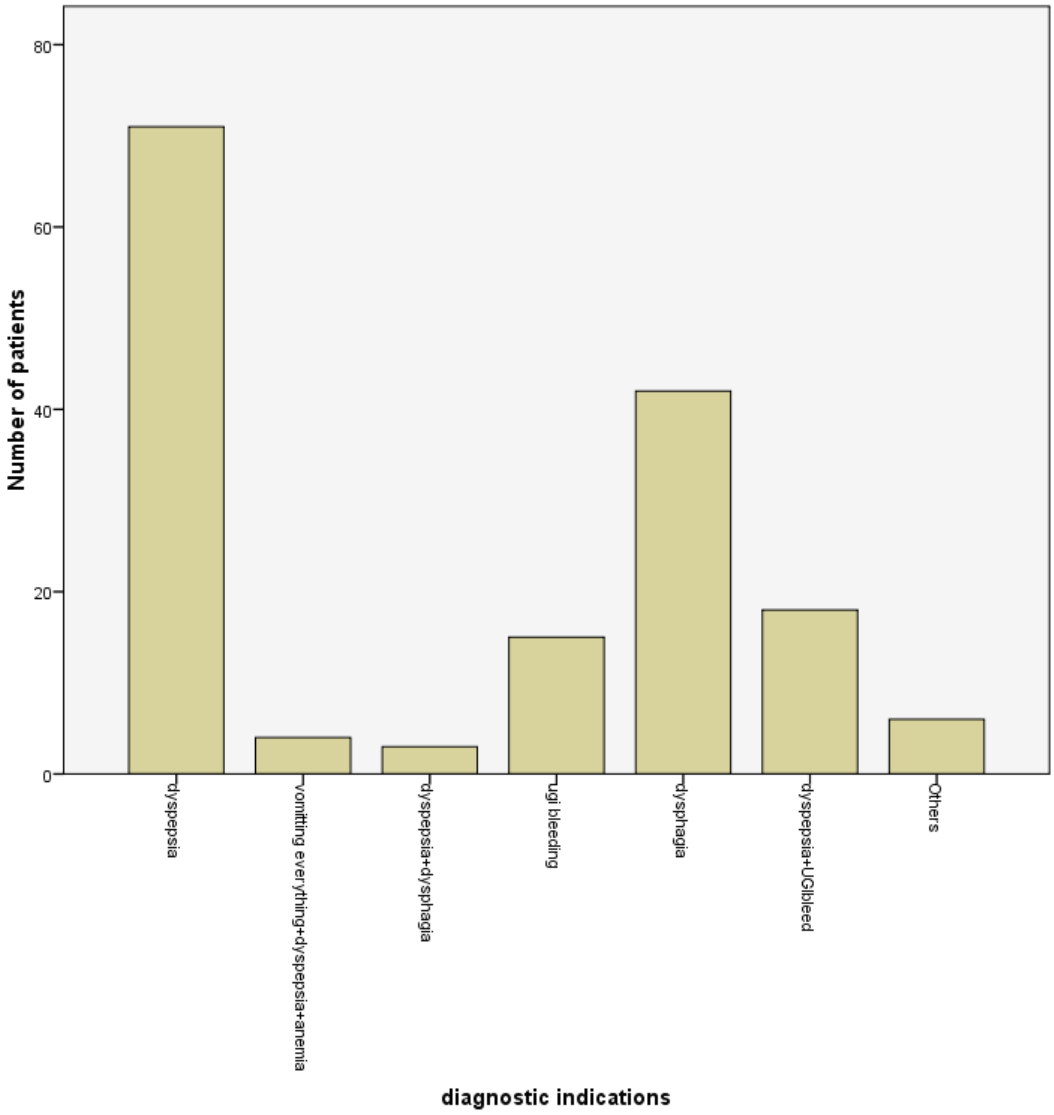
RESULTS:

Table 1. Distribution of patients undergoing OGD at MNH by age and sex

Age groups (in years)	Sex		Total (numbers)	Percent (%)
	Male	Female		
<30	20	17	37	23.3
31-50	38	28	66	41.5
>51	36	20	56	35.2
Total	94	65	159	100.0

- Ages of the study patients ranged from 12 to 93 years. The mean age was 45.3 years.
- The mode was in the 31 to 50 yrs age group which accounted for 41.6% of all the cases.
- Males were more than females with male to female ratio of 1.44:1

Figure 1: Indications of upper GI endoscopy



- Dyspepsia was the indication for upper GI endoscopy in 44.7% of cases followed by dysphagia in 26.4% and Upper GI bleeding that accounted for 9.4%.

- Other isolated indications were early satiety, PUD, and anemia; each contributing 0.6% of the cases.

- Combined indications comprised of dyspepsia and Upper GI bleeding in 11.3% of the cases. Others included vomiting everything, dyspepsia and anemia in 2.5%, dyspepsia and dysphagia in 2.5%, Upper GI bleeding, dysphagia and anemia in 0.6%, dyspepsia and PUD, and Upper GI biopsy and dysphagia in 0.6% each.

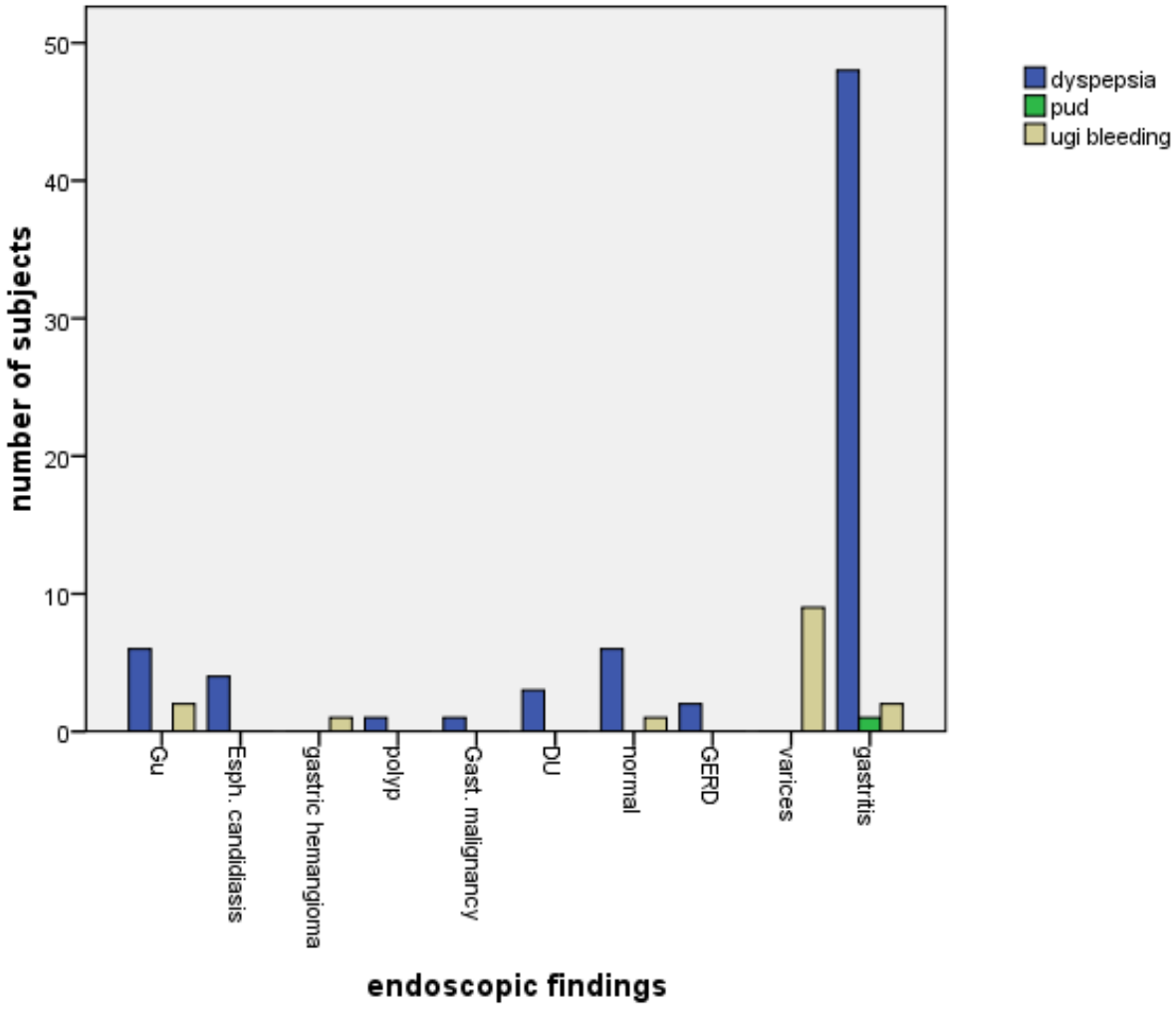
Table 2. Distribution of Endoscopic findings for OGD done at MNH

Endoscopic findings	Frequency (numbers)	Percent (%)	Cumulative Percentage
Gastritis	62	39.0	39.0
OE Malignancy	29	18.2	57.2
GU	13	8.2	65.4
Normal	12	7.5	73.0
Varices	10	6.3	79.2
Esph. candidiasis	9	5.7	84.9
DU	7	4.4	89.3
Oesophagitis	7	4.4	93.7
Gast. malignancy	4	2.5	96.2
Achalasia	2	1.3	97.5
Barret's Oesophag.+ gastritis	1	0.6	98.1
Gastric hemangioma	1	0.6	98.7
Polyp	1	0.6	99.4
Stricture	1	0.6	100.0
Total	159	100.0	

- Gastritis was found in 39.0% of all the cases, and Oesophagitis was found in 4.4%.
- GU constituted 8.2% of the cases and duodenal ulcer constituted 4.4% of the cases.
- Oesophageal malignancy was found in 18.2% of the cases while Gastric malignancy was found in 2.5% of the study patients.
- 12 study subjects (7.5%) had normal endoscopic findings.
- Achalasia, Barrett’s oesophagus, benign stricture, and gastric haemangioma were found in one of the study patients each.

Figures 2-6. Relationship of indications for OGD in relation to Endoscopic findings.

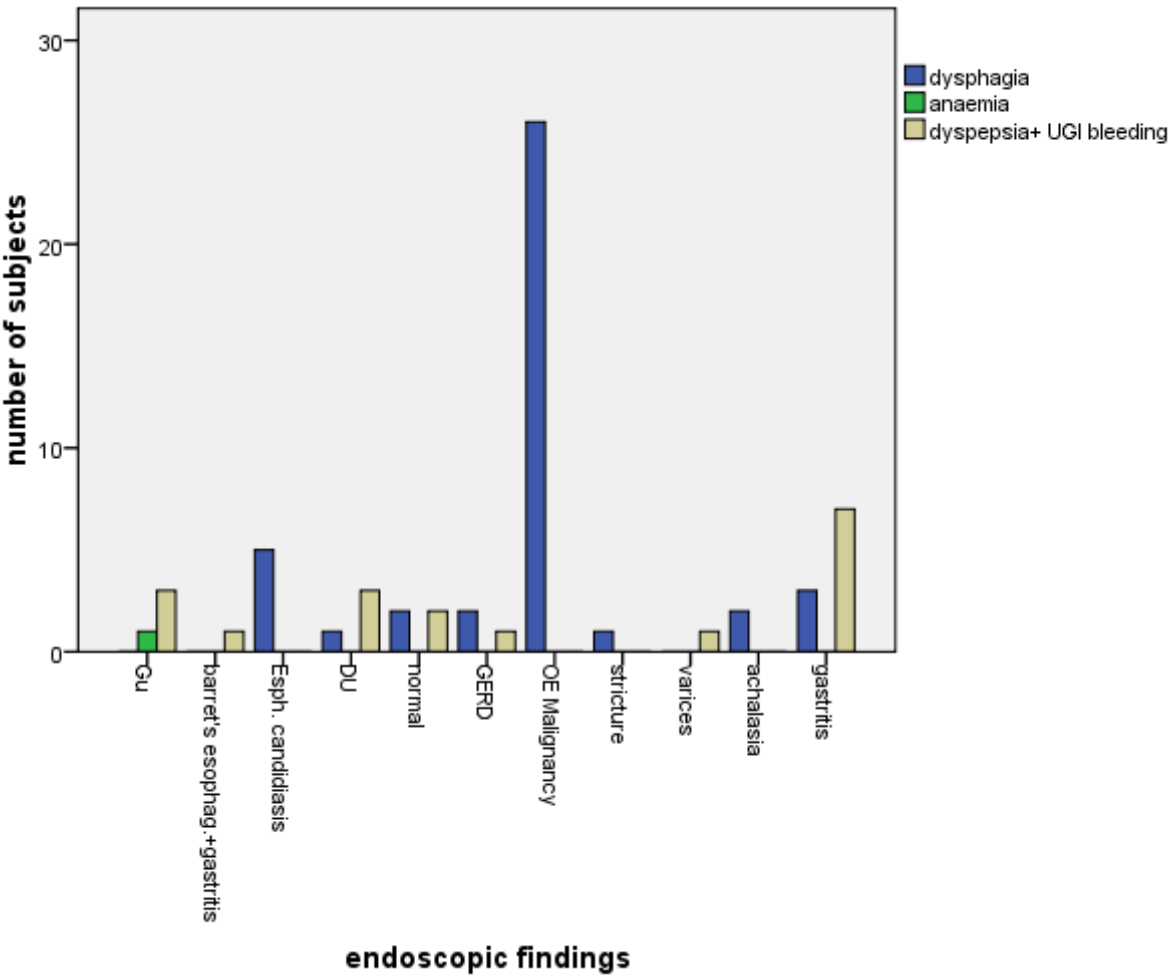
Figure 2.Endoscopic findings of patients who presented with dyspepsia, PUD, or Upper GI bleeding



- 48 out of 71 dyspeptic patients (67.6%) had Gastritis; 6 (8.5%) had GU, three (4.2%) had DU, 4 (5.6%) had oesophageal Candidiasis, 6(8.5%) had normal endoscopic findings, two (2.8%) had suspected GERD, and one (1.4%) had suspected gastric malignancy that was eventually confirmed histologically and another one case of a gastric polyp.

- Nine out of 15 patients (60%) who had isolated upper GI bleeding had varices, two (13.3%) had GU and gastritis each, one case each (6.7%) had haemangioma of the stomach and normal endoscopic findings.

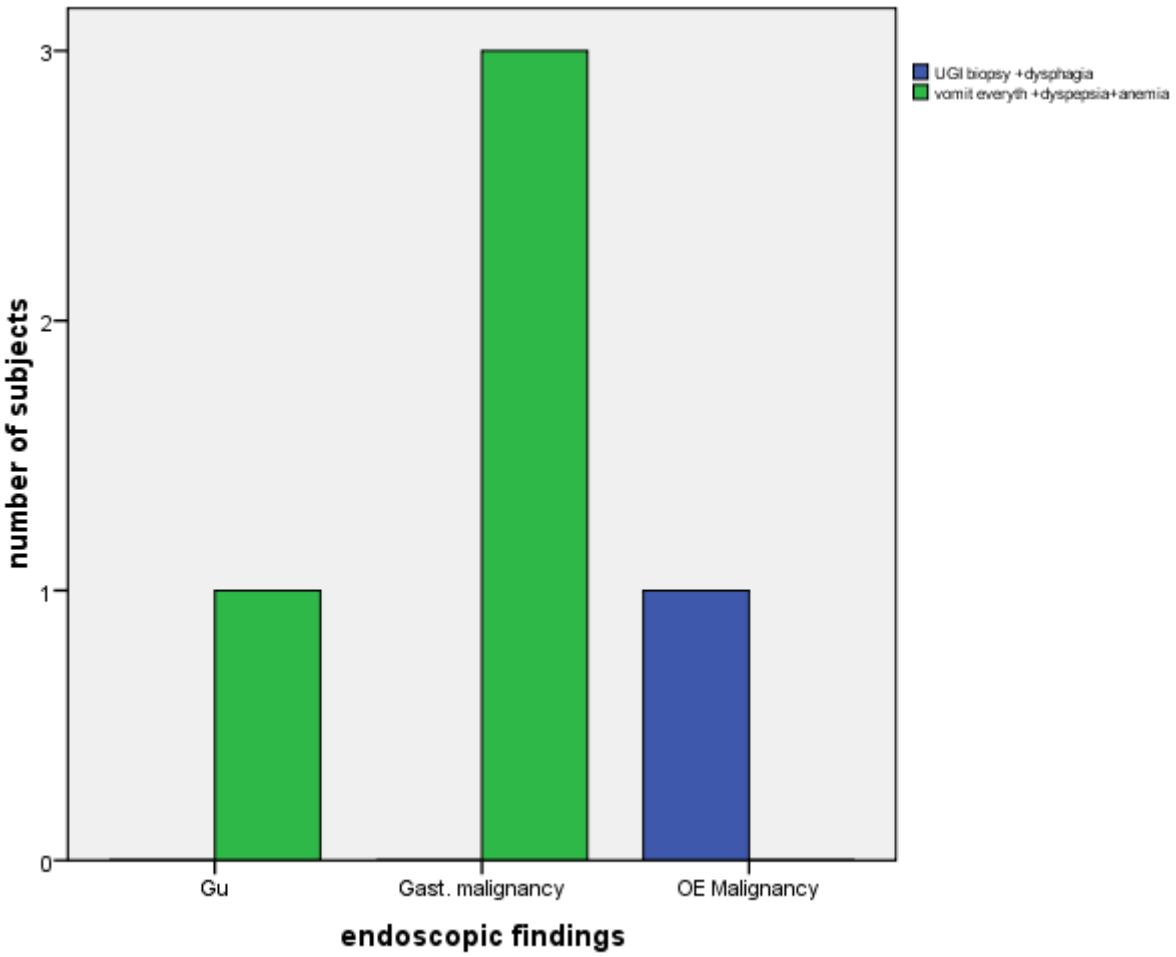
Figure 3: Endoscopic Findings of patients who presented with dysphagia, anaemia or dyspepsia and UGI bleeding.



- 26 out of 42 patients (61.9%) with dysphagia were found to have suspected oesophageal malignancy, one case each (2.3%) had DU and benign oesophageal stricture, 5 (11.9%) had Oesophageal Candidiasis, 2 subjects (4.8%) had suspected GERD, two other had Achalasia and two other had normal endoscopic findings; and 3 patients (16.7%) had gastritis.

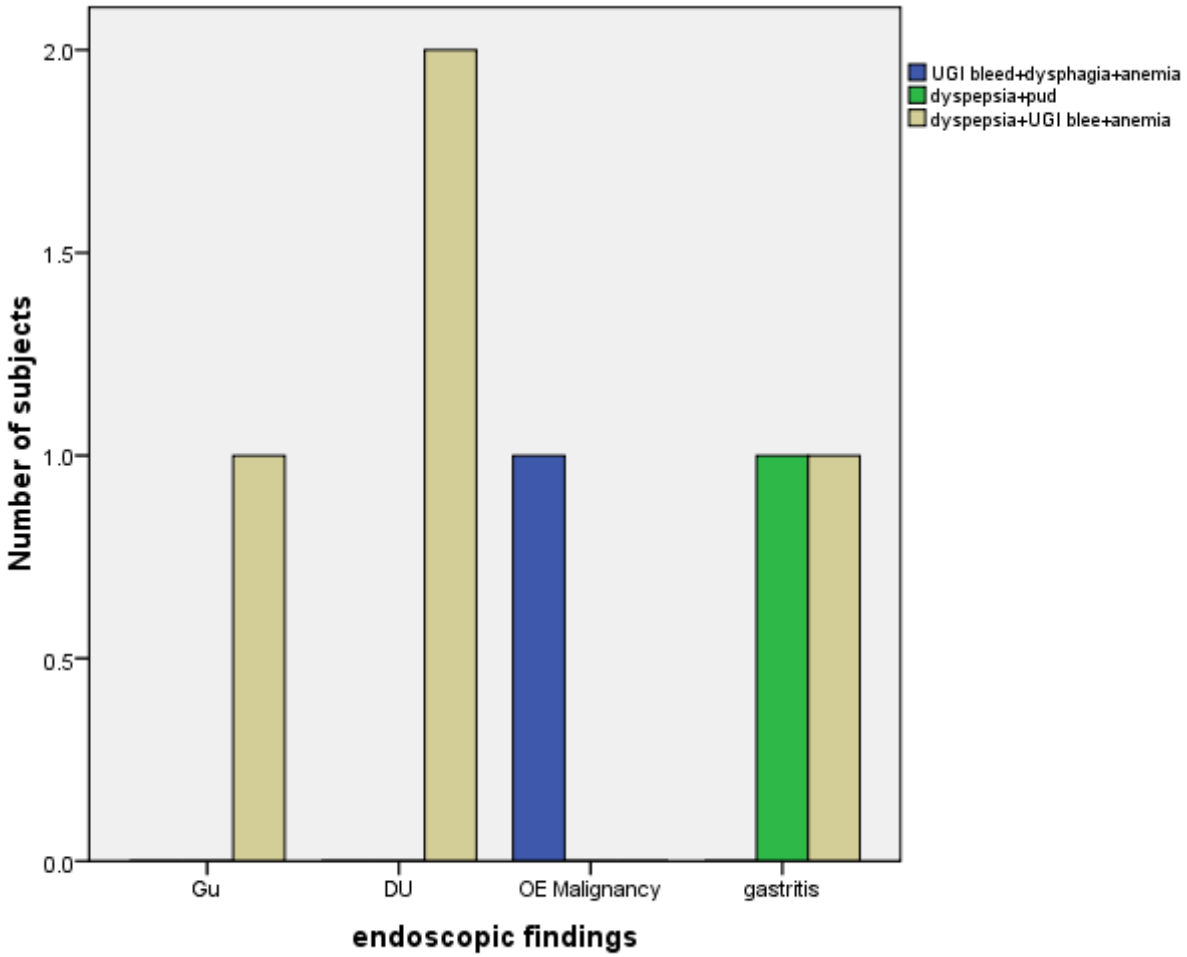
- The one patient who had anemia of undefined cause was found to have a gastric ulcer.
- Seven out of 18 patients (38.9%) who had dyspepsia and UGI bleeding had Gastritis; 3 cases each (16.7%) had DU and GU, 2 patients (11.1%) had normal endoscopic findings, and one case each (5.6%) had suspected GERD, Varices, and suspected Barret's oesophagus.

Figure 4. Endoscopic findings of patients who presented with vomiting, dyspepsia and anemia or UGI biopsy and dysphagia



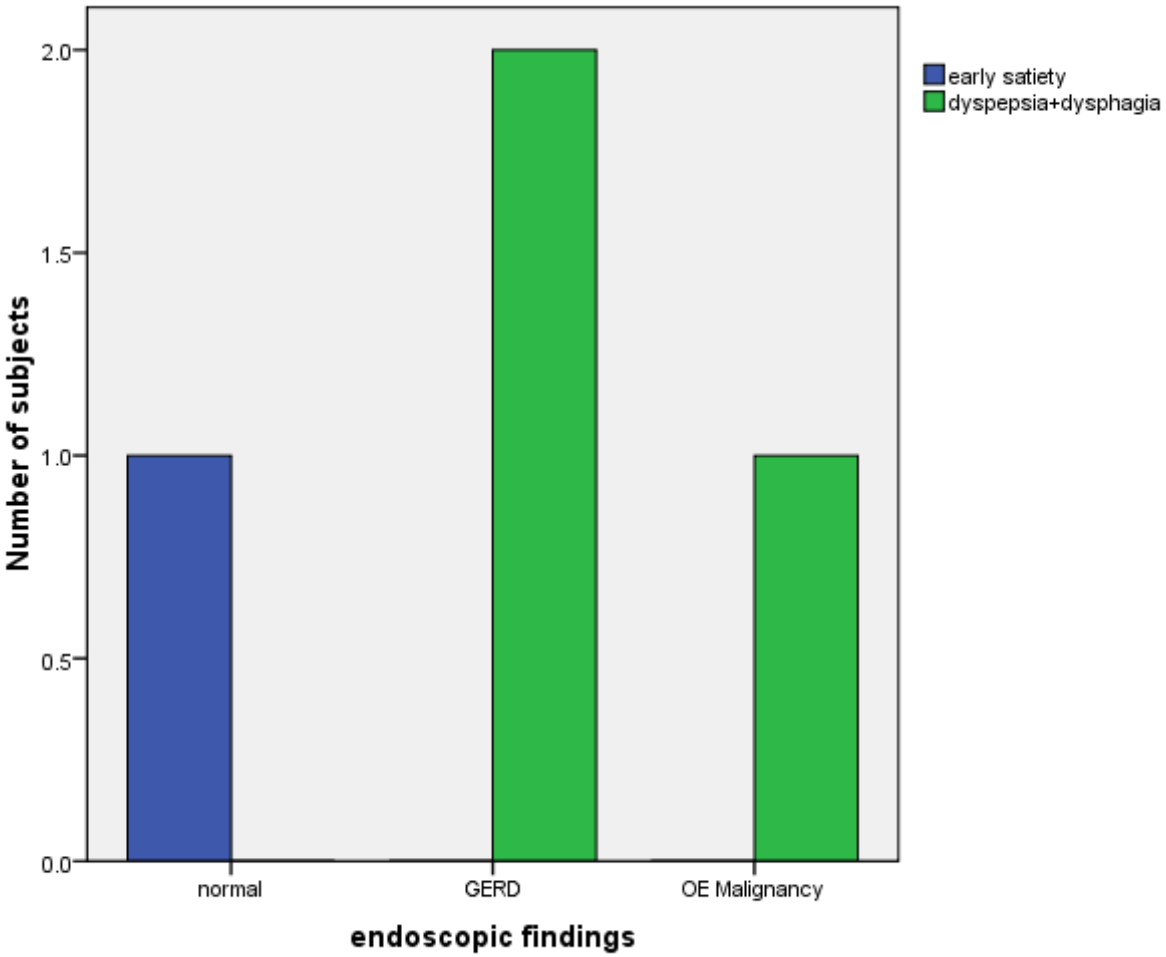
- Three of the four patients who had vomiting, dyspepsia and anemia were found to have Gastric malignancy and the other one had GU
- One patient with dysphagia who had a repeat biopsy request had a suspicious oesophageal malignancy which was eventually proven to be a malignancy.

Figure 5: Endoscopic findings of patients who presented with a combination of symptoms:



- One patient who had a combination of UGI bleeding, dysphagia and anemia was found to have a suspected malignancy of the oesophagus.
- Two out of four patients who had a combination of Dyspepsia, UGI bleeding, and anemia, had DU and one had Gastritis and the other had GU.

Figure 6: Endoscopic findings of patients who presented with early satiety alone or dyspepsia and dysphagia



- Two out of three patients with dyspepsia and dysphagia combined, had a suspected GERD and one had suspected oesophageal malignancy
- One patient who had presented with early satiety had normal endoscopic findings.

Table 3.Comparison of Endoscopic findings to age groups of patients studied.

Age groups (yrs)		<31	31-50	>50	Total	Percent
endoscopic findings	GU	3	7	3	13	8.2
	Barret's esophag.+gastritis	0	1	0	1	0.6
	Esph. candidiasis	2	5	2	9	5.7
	Gastric hemangioma	0	0	1	1	0.6
	Polyp	1	0	0	1	0.6
	Gast. malignancy	0	1	3	4	2.5
	DU	4	2	1	7	4.4
	Normal	4	3	5	12	7.5
	Oesophagitis	0	5	2	7	4.4
	OE Malignancy	0	7	22	29	18.2
	Oesoph. stricture	0	0	1	1	0.6
	Varices	3	5	2	10	6.3
	Achalasia	1	1	0	2	1.3
	Gastritis	19	29	14	62	39.0
Total		37	66	56	159	100.0

- 10 out of 13 patients with gastric ulcers and 6 (85%) out of 7 with duodenal ulcers were aged 50 yrs and below.
- Seven cases of oesophageal malignancies occurred in patients below 50yrs and 14 below 60 yrs.
- 39% of all the cases had gastritis.
- 91.9% of gastritis occurred in patients with ages of 60yrs and below and 46.8% in those with ages of 40 yrs and below.
- Only five (8.1%) of patients with ages above 60yrs had gastritis.

Table 4: comparison of endoscopic findings and gender.

endoscopic findings	sex of patient		Total
	male	female	
GU	7	6	13
Barret's esophag.+gastritis	1	0	1
Esph. Candidiasis	4	5	9
Gastric hemangioma	1	0	1
Gastric polyp	0	1	1
Gastric malignancy	2	2	4
DU	4	3	7
Normal	7	5	12
Oesophagitis	2	5	7
Oesophageal Malignancy	21	8	29
Oesophageal stricture	1	0	1
Varices	6	4	10
Achalasia	0	2	2
Gastritis	38	24	62
Total	94	65	159

- Male had more GU, DU, Oesophageal Malignancy, Gastritis and Varices by 53.8%, 57.1%, 72.4%, 61.3% and 60% respectively compared to females.
- Two out of four patients with Gastric malignancy were females.

CHAPTER FOUR

Discussion.

From this study, a total of 159 Oesophago-gastroduodenoscopies were performed during the study period of ten months. The mean age of the study patients was 45.3 yrs as compared to 47.7yrs found by Dambauchi et al[21] in Zaria, Nigeria and 39.3yrs found by Samaila et al in Katsina, Nigeria. In our study, most patients were in their 5th decade (41 – 50yrs) of life comparable to that of Zaria in Nigeria by Danbauchi etal[21]and Ilorin by Olokoba et al.[37] From our study, proportionally more male patients underwent Upper GI endoscopy in the period of the study, with a male to female ratio of 1.44:1. This finding is similar to that found by Dambauch et al[21]who had male to female ratio of 1.5:1. It's however different from that found by Khurram et al[62] and Olokoba et al[37] who both found amongst their patients that the male to female ratio was 1:1.4. It is not clear whether these differences are due to cultural practices that a particular society ascribes to a given gender or due to health seeking behavior; a fact that was not the scope of this study.

Majority of endoscopies were done on patients who came from Dar es Salaam city which comprised 54.1% of the study population. Kilimanjaro, Dodoma and Tanga contributed 10.7%, 5.0% and 4.4% respectively. The other 17 regions contributed 25.8% of the study population. These patients were received on an open basis, i.e endoscopisits were not primary physicians for these patients and therefore the indications for the upper GI endoscopy were decided by the other doctors such that, the endoscopisits had to perform the procedure according to the request indicated in the form. These indications were either isolated/simple symptoms or complicated/composite.

The most common indication for OGD was isolated or simple dyspepsia that constituted 44.7% (72/159) of the patients studied. These findings compare well with those of Danbouchi et al and Maleu et al in Zaria, Nigeria[21, 22]. Overall, dyspepsia being common in the general population may lead to increased workload in the endoscopy suites in a given population such as seen in this study where patients had to be scheduled for booking in an average time of up to two to three weeks. This calls for checks and balance mechanism that will take care of such cases where

clinical diagnosis needs to be confirmed by OGD in diagnosing the underlying cause of dyspepsia.[8] Guidelines for appropriate use of Upper GI endoscopy may result in a more rational selection of patients. The other option is the use of pre-defined questionnaire, but this is time consuming and difficult to perform in a day to day practice. The Guidelines are therefore essential to be set so that appropriateness of an indication may be checked and in order to enhance quality of health care, reduce cost and avoid unnecessary workload. In this study for instance, more than 67% of patients (48/71) with simple dyspepsia had benign gastritis, of which 56% were below 40yrs of age. These patients would have been initially treated empirically save the booking place for those with complicated dyspepsia, or those above 40 yrs. This approach would have probably reduced the booking and waiting time to less than one and a half week.

In this study, dyspepsia was complicated by other symptoms including the so called alarm symptoms in 15.7% of the study population, more so among patients above 60yrs. These alarm symptoms have been suggested as indicators for high risk for a serious disease, when they occur at any age. They occurred, in this study, as either isolated dysphagia in 26.4%, upper GI bleeding in 9.43% or as complicated dyspepsia. Nevertheless, there was only one patient who came with an isolated complaint of undefined cause of anaemia and none with weight loss, a fact that needs further exploration in a larger prospective study.

Age is an important criterion while screening patients with dyspepsia for cancer. Among the Western population, the incidence of oesophageal and gastric cancer is very low for patients below the age of 45 years, and the Western recommendations do not justify the use of endoscopy in these patients to detect early cancer.[29]According to the American Society for Gastrointestinal Endoscopy report, only 1% of all dyspeptic patients will have an oesophageal or gastric cancer, and only six per 10,000 patients will have “early” gastric cancer at endoscopy.[11] These figures did hold true in the current study but with a discrepancy in terms of cut off age, where in our study population with an overall average age of 45.3 yrs, only 1.4% of those who presented with isolated dyspepsia had gastric malignancy. These 25% of the Gastric cancer cases were in their 40 to 50 yrs of age, thus more than 25% of the Upper GI cancers would have been missed if the western guidelines were

to be followed. This emphasizes the importance of establishing our own local guidelines.

Dyspepsia as an isolated symptom should therefore not be an only indication for OGD in the first instance, rather be accompanied by other factors such as age of more than 40yrs, duration of symptoms exceeding six weeks unresponsive to treatment, or recurrence after therapy, or be complicated by the so called alarm symptoms at any age. Literature has recommended empirical treatment for four to six weeks with antacids and H2 receptor antagonists for those patients below the age of 40yrs provided that they have no alarm symptoms and an endoscopy can be performed after six weeks of registration. According to a series of studies, it has been shown that serious complications seldom occur during the observation period[36], and that there is no evidence when a delay of 6weeks in diagnosis would adversely affect the natural course or the surgical care rate of either gastric or oesophageal malignancy.[26] In the developing countries like Tanzania, this period may be warranted considering the economic constraints of these endoscopies, however an evidence for this supposition needs be sought through a prospective study.

There is evidence that most studies recorded normal Upper GI endoscopies varying from 30% to 40%.[63] In the current study it is also noted that high rates of normal endoscopic findings (8.5%) were recorded among patients who presented with dyspepsia, which in other words may be stated that, in every 11 dyspeptic patients there will be one case with a normal endoscopic findings at MNH. This figure looks small but in a developing country like Tanzania, every effort should be sought to maximize the output. On the other hand, insignificant number of normal endoscopic findings were recorded when other features/symptoms complicated the dyspepsia.

The mode of presentation of early gastric cancer is indistinguishable from a benign condition.[63]In the current study it's noted that presence of the so called alarm symptoms may signify the presence of an advanced inoperable lesion especially in patients above 50yrs. Breslin et al, in their study suggested that, only 7% of cancers in patients above 55yrs of age presented without alarm features.[64] This fact is even more significant in the current study where none of the gastric cancers above 55yrs of age had isolated dyspepsia and furthermore, only 8% of the patients with gastritis

were above 60yrs. Therefore, the suppositions that the endoscopic yield of cancer in simple dyspepsia is very low and only a small portion of those identified are resectable. In this current study, only 25% of the patients who had gastric malignancy had isolated dyspepsia and these were in their 5th decade of life as indicated by Olokaba et al and Samaila et al in Ilorin and Katsina, Nigeria respectively.[37, 38]

Peptic ulcer disease is the other leading indication for upper GI endoscopy[37, 38]contrary to what our study found, in which dyspepsia was the leading indication for OGD, constituting 44.7% of the study population. These ulcers by definition, are focal defects in the gastric or duodenal mucosa which may extend into the sub mucosa or deeper. They may be acute or chronic, and ultimately are caused by an imbalance between the action of peptic acid and mucosal defenses. Some studies have indicated that peptic ulcer remains a common outpatient diagnosis, but the number of physician visits, hospital admissions, and elective operations for peptic ulcer disease has decreased steadily and dramatically over the past three decades.[32] However, the incidence of emergency surgery and the death rate associated with peptic ulcers are fairly stable.[34] These epidemiologic trends probably represent the net effect of several factors, including decreasing prevalence of *H. pylori* infection, better medical therapy, increases in outpatient management, and the use of NSAIDs and aspirin (with and without ulcer prophylaxis).[34] In the current study, patients who were found to have an active peptic ulcer disease constituted 12.6% of all the cases, with a preponderance of men over females by 1.2:1 ratio. The trend towards anatomical location of GU: DU (2:1) ratio is noted to be reversing in this study, contrary to the universally known ratio of more duodenal than gastric ulcer by several studies such as the ratio of duodenal ulcer to gastric ulcer of 4:1 given by Mansi et al.[30]

It is difficult to establish the true prevalence of peptic ulcer, because no one has done endoscopy on a large, representative sample of the population with and without dyspeptic symptoms. In some African countries there is high local prevalence due to specific dietary habits, and migration to the towns in many developing countries has been accompanied by an increase, or increased diagnosis, of peptic ulceration.[35]This holds true for the city like Dar es Salaam, which provided a 54.1% of the study

population in the current study. Indeed, it's true that infrastructure network and socioeconomic factors may have played part in affecting the easy with which subjects were to come to MNH for the procedure.

Olokaba et al[37] in their study involving 49 patients who underwent upper GI endoscopy in Nigeria found that, the commonest indication for the procedure was peptic ulcer disease (59%); Similar to the findings shown in studies by Samaila et al in Katsina in which they found that the commonest indication for the procedure was peptic ulcer disease.[38]This is contrary to what we found in our study, where dyspepsia was found to be a leading indication for OGD. They also differ from the dyspepsia found to be the commonest indication for referral for Upper GI endoscopy i.e. 42% found in Pakistan in the work of Khurram et al.[62]The differences might be because of the obvious differences in sample size, the average age of patients studied, the geographical locations and period of time under review, and the fact that most Peptic ulcer disease patients present with dyspeptic symptoms. The difference might also be due to the differences in follow up protocols of patients who are being diagnosed with peptic ulcer in a given centre. In our study there was only one case known to have Peptic ulcer that was referred for follow up of a Gastric ulcer. Given this ratio of more GU than DU (i.e. 2:1), one would expect a significant number of peptic Gastric ulcer patients being referred for follow up because of the known increased risk of malignancy in GU patients. Nevertheless, it might be due to the fact that, the study period was too short to follow up all these patients.

Upper gastrointestinal bleeding was one of the major indications for upper GI endoscopy in this study. Whether bleeding stems from oesophageal varices, Mallory–Weiss tears, or peptic ulcer, endoscopy is preferred given its ability to both diagnose and possibly manage the bleeding source in one sitting. In our study we found that Upper GI bleeding was the second most common indication for OGD as an isolated symptom in 9.4% of the cases. It was complicated with other symptoms such as dyspepsia and the alarm symptom in 11.9%.The commonest cause of Upper GI bleeding found at endoscopy during this study was oesophageal varices that occurred in 6.3% of the cases. The non variceal bleeding causes included two cases from each GU and gastritis; and one from gastric haemangioma. These results are in comparison to the findings in a study done at KCMC, Kilimanjaro, Tanzania, in 2010

by Mwanahawa et al.[65] However, the leading non variceal bleeding was duodenal ulcer in 50% of their study population, erosive gastritis in 25% and others. 47% of their patients were offered conservative medical treatment only, and the endoscopic treatment was offered in 46.9% of patients. This included endoscopic injection of sclerosant to oesophageal varices with polidocanol and peri-lesional injection of epinephrine (1: 10,000) to bleeding ulcers. 2.5% of them were subjected to surgical interventions. Overall 80% improved clinically after treatment and 20% of them died.

Despite new developments in endoscopic therapy, the mortality from upper gastrointestinal haemorrhage has changed little in the past 30 years and the mortality rate remains around 10%.[66]The primary predictor of morbidity remains the magnitude of blood loss before the initial assessment. Endoscopy is critical in the initial evaluation and treatment of bleeding and should be performed soon after the patient has stabilized.[47]Hemodynamic instability associated with hematemesis or hematochezia clearly mandate endoscopic evaluation after stabilizing the patient. Upper gastrointestinal endoscopy accurately identifies the bleeding site and source in about 90 per cent of cases and may also reduce health care cost by accurately triaging patients' care on initial presentation. At the same time, successful treatment can ordinarily be achieved in most settings using a variety of techniques.[48]In the current study, Upper GI bleeding was the third most common indication (9.4%) for Upper GI endoscopy and only second to dyspepsia. With this knowledge, it’s very unfortunate that, there were no available therapeutic interventions done at the MNH endoscopy suite during the study period. Patients found to have gastric or oesophageal varices received conservative medical treatment of tablets of propranolol and isosorbide mononitrate routinely and were politely referred to a private Hospital where such endoscopic treatment is available; the reason for such referrals being lack of necessary accessories for variceal banding or sclerotherapy. No surgical intervention was done during this period.

In our study, the commonest endoscopy finding was diffuse gastritis (39%), probably due to the fact that patients who are referred for gastroscopy have been started on acid-inhibitory drugs several weeks before. If no ulcer is seen, it is often impossible to know whether there was an acute ulcer that has healed, or whether the diagnosis

was not peptic ulceration. In these circumstances, it is best to stop the treatment and arrange for endoscopy of the patient as soon as the pain recurs. Ideally, patients should not be put on powerful acid-reducing drugs, which heal ulcers rapidly, before a diagnosis is made, [30] otherwise they may be condemned to long periods of drug therapy or to *Helicobacter* elimination for the wrong reasons. In our study, there were only 8% of patients with gastritis who were in their 7th decade of life as compared to the Japanese study where they found that the prevalence of atrophic gastritis is higher in older age groups. However, in areas where there is high incidence of gastric cancer the condition is common in young people as well.[67]The reason as to this low proportion of Gastritis in the elderly group observed in our study is nevertheless difficult to explain. This portion of 39% gastritis in our study included all the types of gastritis such as Atrophic gastritis, Erosive/chemical (NSAIDS related) and autoimmune related gastritis. The increased risk of Gastric cancer in Atrophic gastritis is well established in literature; for example in the above mentioned Japanese study, it is noted that 95% of patients with early gastric cancer had atrophic gastritis. It's likely that H.pylori is involved in the pathogenesis of atrophic gastritis. Here remains some questions as to the causes of such high proportion of Gastritis in our population especially the coastal regions of the country.

The second most common endoscopic finding was oesophageal malignancy constituting 18.2% of the cases. These were seen most in patients with isolated dysphagia. A combination of other symptoms together with dysphagia had a higher likelihood of finding significant pathology such as oesophageal malignancy, gastric malignancy of the cardia and GERD. Since most of the oesophageal tumors are cancerous, oesophageal obstructive symptoms mandate oesphagoscopy for potential inspection, biopsy, and occasionally treatment of the underlying pathology. There is currently no available therapeutic service of the kind in MNH endoscopy unit. Besides dysphagia, odynophagia, upper abdominal pain, and unexplained vomiting may all be related to anatomic oesophageal lesion which can be readily visualized endoscopically.

Gastric ulcer ranked the third most common cause of patients coming for OGD at MNH. It doubled the occurrence of duodenal ulcer in a ratio of approximately 2:1. Most of these patients were in their 30-50yrs age group, of which males constituted

53.8%. Of the 13 gastric ulcer patients, 6(46%) patients presented with isolated dyspepsia.

There was only one patient who had features of Barrett's oesophagus in this study. This is the condition in which columnar epithelium replaces the squamous epithelium that normally lines the distal oesophagus. The condition develops when gastroesophageal reflux disease damages the squamous oesophageal mucosa and the injury heals through a metaplastic process in which columnar cells replace squamous ones. The columnar epithelium that characterises Barrett's esophagus is an incomplete form of intestinal metaplasia (called specialized intestinal metaplasia) that predisposes patients to adenocarcinoma. Oesophageal adenocarcinoma develops in approximately 0.5 percent of patients with Barrett's esophagus per year.[39]This is a tumor found predominantly in Caucasians, among whom the frequency of oesophageal adenocarcinoma has inexplicably quadrupled over the past few decades.[40]Although gastroesophageal reflux disease is the main recognised risk factor for this cancer[41]presumably because it causes Barrett's oesophagus, it is not clear whether the rising incidence of the tumor is due to an increasing frequency of gastroesophageal reflux disease alone in the general population. It's also noted that, 7 cases out of 159 (4%) had features which were suspicious Reflux Oesophagitis (GERD). The true prevalence of the lesion needs evaluation by including a larger sample. The American College of Gastroenterology recommends that endoscopic surveillance be performed every two to three years in patients with Barrett's oesophagus without dysplasia, on the basis of an estimated incidence of cancer in such patients of one to two percent per year. Recent studies suggest that the true incidence of cancer is approximately 0.5 percent per year. Therefore, less frequent surveillance done every three to five years seems appropriate in patients without dysplasia.[44]In our population we recommend, basing on this study proportion of 0.6% cases of Barrett's oesophagus, that a lesser frequent surveillance may be a better choice, though another prospective study with a larger representative sample is recommended to validate this fact.

Another condition that merits active surveillance is the gastric stump cancer. Gastric stump cancer has been reported in five to six per cent of patients who have previously undergone gastric resection for benign disease. The incidence is related to

the development of dysplasia. Because of the 2- to 4-fold increased risk of cancer development, selected surveillance of symptomatic patients has been recommended beginning 15 years after the original operation.[45]Nevertheless, there was no one case referred for surveillance and follow up due to previous gastric resection. This may be explained with various reasons including the short study period, and probably few gastric resection procedures done at MNH and lack of awareness of our patients over the importance of this surveillance.

Again in this study, no case was referred for an isolated anemia of unknown cause, except for the single case that came with a combination of alarm symptoms of dyspepsia, weight loss and anemia. This category of patients also needs active surveillance and evaluation by OGD. Upper gastrointestinal endoscopy is recommended in iron-deficiency anaemia and/or iron deficiency, after any non-gastrointestinal origin has been eliminated: i) As first choice when the clinical context suggests a problem in the upper Gastrointestinal tract and in a patient whose general state of health is poor (very old, concomitant disease); ii) in all other cases, after inconclusive colonoscopy and, if possible, during the same anaesthesia session.[46]

CHAPTER FIVE

Conclusion.

Upper GI endoscopy plays a pivotal role in the diagnosis of upper GI diseases. At MNH endoscopy suite, the service is being utilized most by people who mainly come from Dar es Salaam and the coastal areas followed by Kilimanjaro and Dodoma. Most of these patients are in the young age group and males predominate is sex distribution. The Most common indication for OGD at MNH is simple isolated dyspepsia which is mainly due to benign gastritis. This Gastritis affects a large percentage of young people in these areas that would otherwise have been treated empirically save the OGD for persisting/non resolving symptoms; this would have reduced a significant number of attendances to the endoscopy unit and hence decreased cost and workload. Nevertheless, a significant proportion of upper GI malignancy is in the younger generation of 40 to 50yrs, raising an attention that may be the pattern of upper GI malignancy is changing towards younger people, a fact that needs further studies that will involve large sample size and adequate review time. Overall, the study results shades light on the importance of establishing local guidelines for appropriate indications of endoscopy at MNH.

Recommendations

- Given the demographic characteristics, indications of OGD and endoscopic findings, the magnitude of the Upper GI problems that need Upper GI endoscopy, and the socioeconomic constraints, national guidelines need to be established at MNH. These guidelines are essential in order to enhance the quality of healthcare, reduce cost and avoid unnecessary workload.

- The results of this study need be validated in different regions within and outside the country with its economic and social implications in terms of number of lives saved and cost factors by decreasing the cut off age of endoscopy to 40yrs in patients with isolated/simple dyspepsia. When alarm symptoms are present alone or in combination to dyspepsia, endoscopy should be done regardless of age or duration of symptoms.

- The demand for therapeutic/interventional endoscopy at MNH is high. It's shown in this study that, more than 6% out of 159 subjects had oesophageal varices, which needed either endoscopic banding or sclerotherapy but they didn't get the treatment. There were a score of patients who had high risky duodenal ulcers for bleeding but no intervention was performed on them because of lack of accessories for coagulation haemostasis. Therefore, the Hospital should acquire these accessories for these services, in order to improve quality of health care at the MNH endoscopy unit.

- Patients with simple dysphagia especially those below 40yrs may be initially treated empirically. Nevertheless those with the alarm symptoms need to be scoped immediately without being booked in a long waiting list.

Study Limitations.

1. For the purpose of this study, endoscopic findings in this study were taken as the final diagnosis of these patients. However there is a need for histological diagnosis of some of the malignant lesions from which biopsy specimens were taken, to be sure of the malignancy status. It was difficult to trace these results since these subjects came from different hospitals to which the biopsy sample was taken.

2. The present study was carried out at a teaching hospital to obtain basic information on the demographic, causes, endoscopic outcomes and try to find out the extent of the available endoscopic interventions for the patients presenting with the Upper GI problems with intent to shine light on the importance of clear guidelines for the appropriate indications of the Upper GI endoscopy. Comparison of these results with other previous studies done in other cities or countries may be confounded by variations in methodology, definitions and entry criteria used as well as the heterogeneity of the different study populations used.

3. There was an observer bias, because the OGD findings were dependent mostly on the endoscope operator who was on call on a particular day. Therefore an obvious heterogeneity of the results is expected, but this effect gets lesser and lesser as time goes by given the learning curve effect.

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APPENDICES

Appendix 1: Data collection tool.

Serial No…

A. 1. Age…….. 2. Sex F/M 3. Residence……

B. 4. OGD requesting for i) diagnostic and/ii) therapeutic

C. Duration (in days) since the day of 1st booking……

5. If ii which therapy (cycle appropriate). May be multiple responses……

a)Variceal hemostasis

b)non variceal hemostasis

c) Stricture dilatation

d)foreign body retrieval

e) Stenting

f) others……..(mention)

6. What is the immediate outcome?

7. What is the late outcome?

8. If i) what are the indications for the OGD….

a) Dyspepsia

b) Peptic ulcer disease

c) Upper GI bleeding

d) Chronic anemia and/iron deficiency

e) dysphagia and/odynophagia

f) upper GI biopsy

g) screening

h) others ……..mention

9. Endoscopic findings……

a) Peptic ulcer disease

b) GERD

c) Malignancy

d) Stricture

e) varices

f) Achalasia

g) Barrett's esophagus

h) others……..mention.

Appendix 2: Consent form (English version).

ID No……

Consent to participate in the study on "A **study of indications and endoscopic findings of patients undergoing Upper Gastrointestinal Endoscopy at Muhimbili National Hosopital.**

Greetings! My name is Dr.Ramadhani H Khamisi. I am a postgraduate student at Muhimbili University of Health and Allied Sciences, investigating the profile of all people attending the Muhimbili National Hospital endoscopy unit.

The purpose of the investigation is to establish the profile, including the indications and the endoscopic findings of all subjects undergoing the Upper Gastrointestinal endoscopy at Muhimbili National Hospital.

What participation involves

If you agree to participate in this study, you will be interviewed, and a detailed clinical history regarding your illness will be requested.

Confidentiality and Risks.

All information obtained from you will be handled with great secrecy, by using identification numbers without using your name; furthermore, access to this information will be granted only to the investigator and authorized bodies.

There are no risks associated with your participation in this study.

Right to withdraw

Participation in this study is completely voluntary choice. You are free to withdraw your participation anytime. If you choose not to participate you will continue to receive all the services that you would normally get from this hospital.

Benefits. Results of this study will help in establishing clear Tanzanian guidelines for indications of upper gastrointestinal endoscopy and hence improve quality of our services and probably reduce the booking lists.

Who to contact.

If you have any question about this study, you may contact me, Dr Ramadhani H Khamis on my mobile phone, 0784-657-037.

If you have questions about your rights as a participant you may contact Prof.M.M.Aboud, Chairman of the Muhimbili University of Health and Allied Sciences Research and publications committee P.O.Box 65001 Dar es Salaam, Tel No. 2150302 – 6.

Signature.

Do you agree to participate: Yes (…) No. (…)

Participant agrees. 'I ……..have read the content of the consent form. My questions have been answered'.

Signature. 1. Participant…….

Date…….

2. Witness ……

Date…….

3.investigator/assistant……..

Date…….

Appendix 3 : Fomu ya Ridhaa (Swahili Version)

Utafiti kuhusu matatizo ya mfumo wa chakula na magonjwa yasababishayo haya matatizo kwa wagonjwa wanaofanyiwa kipimo cha OGD.

Nambari ya usaili …….

Salaaam! Mimi naitwa Dr. Ramadhani HK. Na ni mwanafunzi wa uzamili Chuo Kikuu cha Sayansi za Afya Muhimbili. Nafanya utafiti wa kuchunguza dalili na matatizo ya tumbo zinazosababisha kuchunguzwa kwa kutumia kifaa cha endoscopy katika hospitali ya Taifa Muhimbili.

Madhumuni ya utafiti

Kuchunguza dalili zinazoelekeza kufanyiwa "endoscopy", na matokeo ya uchunguzi wake. Tunatarajia kusajili wagonjwa wasiopungua 154

Jinsi ya kushiriki

Kama utakubali kushiriki , nita kuhoji maswali machache kuhusu ugonjwa wako.

Utunzaji wa siri

Taarifa zitatunzwa kwa siri kwa kutumia herufi au nambari bila majina ya mgonjwa

Madhara /Athari

Hakuna athari au madhara yoyote yanayotegemewa yatokanayo na utafiti huu.

Uhuru wa kushiriki ;

Kushiriki kwenye utafiti ni hiari yako. Unaweza kujitoa wakati wowote.

Kama utachagua kutoshiriki,utaendelea kupata huduma kama hapo awali.

Faida ya utafiti

Ukishiriki kwenye utafiti huu, utaelewa kama /utachunguzwa kama una tatizo katika tumbo lako; utashauriwa na pia utatibiwa**.** Kuna kamati ya kusimamia udhibiti wa Utafiti.

Utafiti huu utasaidia uwezekano wa kuanzishwa kwa mfumo maalum wa kuwatambua mapema wanaohitaji huduma hii ya OGD na pengine kupunguza foleni ya booking isiyokuwa ya lazima.

Taarifa

Endapo unahitaji kupata maelezo kuhusu haki zako au taarifa wasiliana na Dr Ramadhani

0784657037, au Prof M.M.Aboud ,Mwenyekiti wa Kamati ya Utafiti S.L.P 651001, Dar es salaam., Simu2150302-6.

Je unakubali kushiriki kwenye utafiti? (weka alama vema): ndiyo..... hapana.....

Mimi ....., nimeelezwa/nimesoma maelezo haya. Maswali yangu yamejibiwa. Nimekubali kushiriki kwenye utafiti huu

Sahihi ya mgonjwa .....

Sahihi ya ndugu/shahidi .....

Sahihi ya Mtafiti ..... .

Tarehe……