PATIENTS' SATISFACTION AND ASSOCIATED FACTORS ON GASTROINTESTINAL ENDOSCOPY SERVICES AT MUHIMBILI NATIONAL HOSPITAL IN DAR ES SALAAM, TANZANIA

Kija Luhuti, MD

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By

Kija Luhuti

A Dissertation Submitted in (Partial) Fulfilment of the Requirements for the Degree of Master of Public Health of

Muhimbili University Of Health And Allied Sciences.

October, 2024

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled "Patients' satisfaction and associated factors on gastrointestinal endoscopy services at Muhimbili National Hospital in Dar es Salaam, Tanzania", in fulfillment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

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Prof. Elia John Mmbaga

(Supervisor)

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Date

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Dr. Mangi Ezekiel

(Co-supervisor)

……

Date

DECLARATION AND COPYRIGHT

I Kija Luhuti, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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DEDICATION

I dedicate this work to my dear Mother, my dearest Wife Dr. Elizabeth Fue and my three sons (Theophile, Thaddeus and Theodore) who endlessly showed me love, support and encouragement during the entire period of my studies.

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LIST OF ABBREVIATIONS

ECSQ:	Endoscopy Customer Satisfaction Questionnaire
ERCP:	Endoscopic retrograde cholangiopancreatography
GI:	Gastrointestinal
MNH:	Muhimbili National Hospital
MUHAS:	Muhimbili University of Health and Allied Sciences
PI:	Principal Investigator
SPHSS:	School of Public Health and Social Sciences
SPSS:	Statistical Package for the Social Sciences

DEFINITION OF TERMS

Endoscopy services: Refers the subset of diagnostic and therapeutic procedures that are provided to patients by using an endoscopy machine.

Emergency endoscopy: refers to the performance of an endoscopic procedure in urgent or emergent situations to diagnose or treat conditions affecting the digestive tract.

Patient satisfaction: Patient satisfaction is a measure of how well a patient's expectations are met during their interaction with healthcare system.

Satisfaction: Satisfaction is a feeling of pleasure or happiness which arises when a person believes have achieved or received what he/she wanted or need.

ABSTRACT

Background: Patient satisfaction is a crucial component for assessment of healthcare quality and providers performance which also directly influences patient outcomes. Endoscopy services play a vital role in diagnosing and treating various gastrointestinal conditions. Despite its significance, limited research has been conducted to evaluate patient satisfaction with endoscopy services in Tanzania and beyond.

Objective; To assess patient satisfaction with endoscopy services and associated factors at Muhimbili National Hospital (MNH).

Methods: An Analytical cross-sectional study involved patients aged 18 years and above who undergone endoscopy procedures at MNH between April 2024 and May 2024 was conducted. Eligible participants were recruited systematically from the endoscopy unit. A structured questionnaire was used to collect socio-demographic information and satisfaction with various aspects of endoscopy services (e.g., waiting time, communication, facilities, post-procedure care). Data was analyzed using descriptive statistics and regression analysis using Statistical package for social sciences (SPSS) Version 23 software.

Results: A total of 387 patients participated in the study with nearly a third (28.2%) aged 30-39 years and 54% were female. The overall satisfaction rate for endoscopy services was 68.2%, with majority being satisfied with staff courtesy (98.2%) and unit cleanliness (96.1%). Factors significantly associated with satisfaction included occupational status (self-employed: aPR 0.82, 95% CI 0.68-0.99, P=0.040), wealth index (lower-middle: aPR 1.35, 95% CI 1.14-1.59, P<0.001), type of endoscopy procedure (colonoscopy: aPR 1.35, 95% CI 1.19-1.53, P<0.001) and patient's health status(good: aPR 1.26, 95% CI 1.08-1.47, P=0.003),

Conclusion:Patients generally express satisfaction with GI endoscopy services at Muhimbili National Hospital-Upanga. Significant predictors of patient satisfaction include, occupational and economic status, endoscopy procedure type, and patient health status.

Recommendation: Future research should use longitudinal studies and more comprehensive satisfaction surveys to understand patient satisfaction factors.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Gastrointestinal (GI) endoscopy is an invasive medical procedure for visualizing the lumen of gastrointestinal tract and its appendages(1). It is mainly used for screening, diagnostic and therapeutic purposes of various gastrointestinal pathologies/diseases(1–3). However, the most common indications for gastrointestinal endoscopies are dyspepsia, abdominal pain, gastrointestinal bleeding and dysphagia(4,5). Gastrointestinal diseases that need endoscopy services are not limited to esophageal, gastric and colon cancers, peptic ulcers, gastric and intestinal inflammations, or variceal bleedings which are common in lower- and middle-income countries(6,7).

The common gastrointestinal endoscopy procedures performed are esophagogastroduodenoscopy, colonoscopy, flexible sigmoidoscopy and enteroscopy, while the rare ones include Endoscopic Retrograde Cholangiopancreatography (ERCP), endoscopic ultrasound and foreign-body removal(1,2,8), these procedures resulted in paradigm shift in the early diagnosis and treatment of gastrointestinal disorders like hemorrhage, Inflammations and neoplasms which in turn improved patient's survival rate and quality of life(9). Patients' satisfaction with these procedures is an essential outcome measure in gastrointestinal endoscopy, it is a useful tool in evaluating endoscopist's and related healthcare provider's performance as well as for planning the best endoscopic care delivery(10–12).

Patient satisfaction can be defined as patient's cognitive and emotional responses on various elements of their service experiences(13), it involves patients' subjective feelings on the quality of medical care provided. It is a crucial factor in evaluating the quality of health care services in hospital settings, as patients' opinions on satisfaction survey assist healthcare practitioners to identify service areas that require improvement and those services that are provided in high quality, at the same time they help decision makers to understand patients' demands which results in the development of effective strategic plans for assurance of provision of quality healthcare services(14).

Furthermore, when patients express high levels of satisfaction with GI-endoscopy services, they are likely to comply with endoscopists' recommendations for treatment options, adhere to scheduled appointment sessions and exhibit favorable behavior intention(14,15). Moreover, their positive perceptions and experiences with GI endoscopy services may turn them into influential advocates for other patients facing similar situations and in need of endoscopy services. As a result, this increased patient satisfaction is likely to foster improved health-seeking behaviors and promote more efficient utilization of endoscopy procedures, which may in turn contribute to better overall health outcomes(11,14,16). Although patients' satisfaction is a complex phenomenon in GI endoscopy, several studies are coinciding on key factors that influence patients' satisfaction on GI endoscopy services these include endoscopists technical skills and competences, personal manners of endoscopist and supporting staffs, control of pain or discomfort during and after the procedure, adequacy explanation of the performed procedure and the findings, physical environment of the endoscopy unit/suite, privacy during the procedure, and waiting time before the procedure as well as for endoscopy appointment(15,17–19).

In developed countries patients reported to be highly satisfied with endoscopy services provided particularly in the aspect of technical skills and personal manners of the endoscopy team, endoscopy unit's environment, privacy during the procedure and securing an appointment for endoscopy, However procedures' waiting time, pain or discomfort control, and bowel preparations were highlighted as areas that need improvement(13,15,19,20).

Despite for the key factors that affect patients' satisfaction on endoscopy services being known globally, not all factors have been evaluated in detail, and majority of them are not provided to the highest quality in routine practices(10,21), sadly the situation is worse in sub-Saharan Africa where there is a scarcity of endoscopy services and those available do not meet patients' expectation and satisfaction(6,22–24).

In Tanzania there is limited published research concerning patient's satisfaction on gastrointestinal procedures including endoscopy services, hence the aim of this study was to assess patients' satisfaction on GI endoscopy services at endoscopy unit of Muhimbili National Hospital (MNH) and to identify key factors that influence their satisfaction.

1.2 Problem statement

While GI endoscopy plays a crucial role in diagnosing and managing a variety of gastrointestinal disorders(1,2,25) limited research has been conducted to understand how patients perceive these services in resource-constrained environments like Tanzania, and the assessment of patients' satisfaction with gastrointestinal (GI) endoscopy services remains underexplored. This can be attributed to resource constraints, lack of emphasize on patient-centered research and inadequate health care infrastructure which impede research efforts on satisfaction with endoscopy services (24).

Also in Tanzania, the healthcare system faces systemic challenges, such as inadequate healthcare infrastructure, a shortage of trained medical experts, and minimal emphasis on patient-centered care(26–29). These issues likely extend to GI endoscopy services at MNH, where long waiting times, limited procedural explanations, and discomfort management remain significant concerns for patients. Furthermore, the assessment of patient-related factors that affect satisfaction on endoscopy services and the influence of socio-demographic characteristics on patient satisfaction with endoscopy services have not been systematically studied in the Tanzanian context(30,31). This lack of research in these areas leave a knowledge gap and hinders our comprehensive understanding of the complex dynamics at play hence impedes the development of tailored strategies to enhance patient satisfaction and optimize the delivery of endoscopy services in Tanzania.

Therefore this study aimed to evaluate patients' satisfaction with GI endoscopy services at MNH to gain valuable insights into specific areas which require improvement to enhance the quality of endoscopy services and patients outcome.

1.3 Conceptual framework

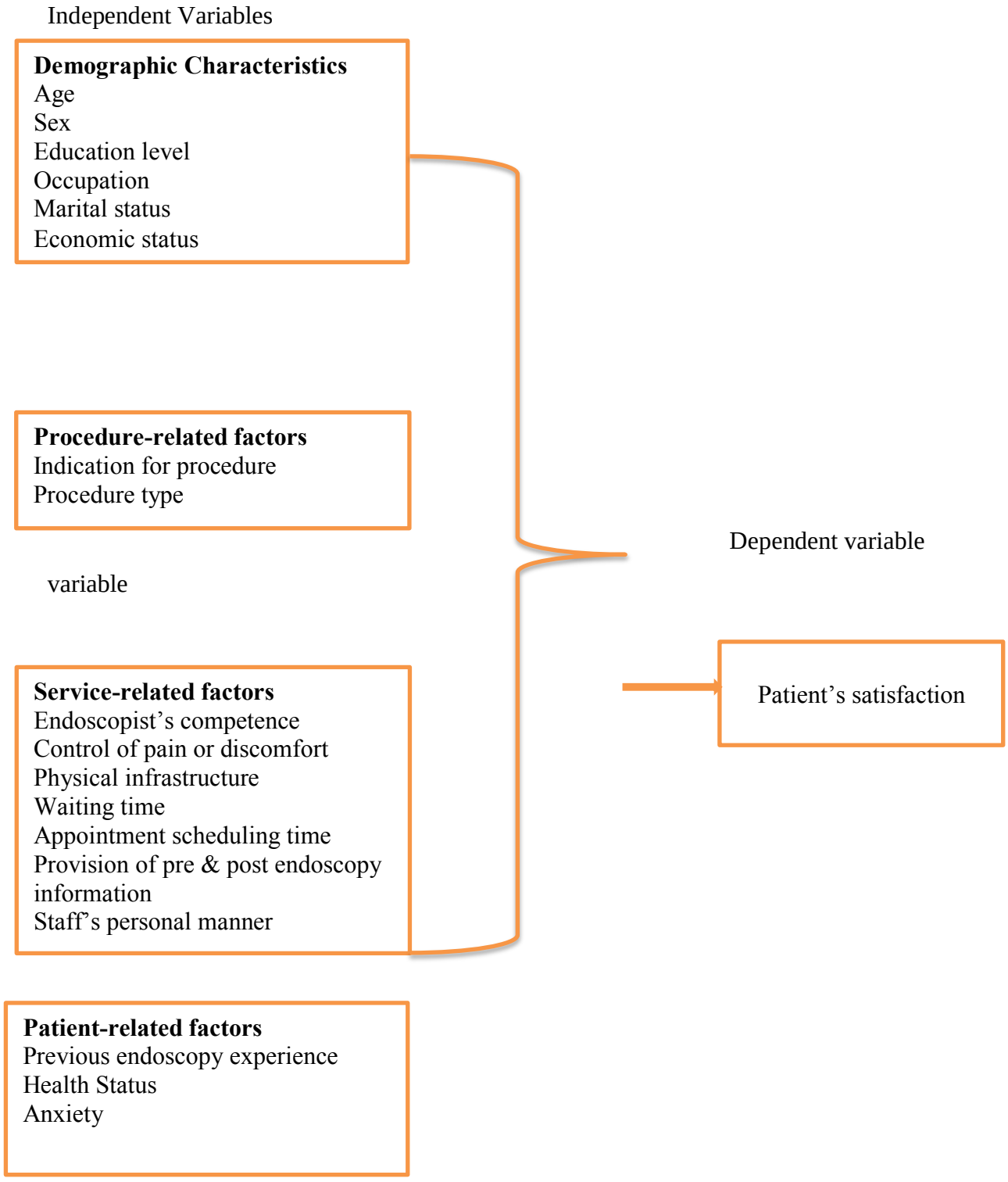


Figure 1: The conceptual framework for patients' satisfaction on GI endoscopy services at endoscopy unit of Muhimbili National Hospital

The conceptual framework presented in figure 1 was adapted from Hussain et al 2019(32) which illustrates how patients' satisfaction (dependent variable) is influenced by several factors (independent variables) ranging from demographic characteristics like age, sex and education level, occupation and economic status, as it believed older people, educated patients and those with high income are more satisfied with healthcare services. Also, patient-related factors like anxiety, health status and previous experiences are believed to affect patients' satisfaction on endoscopy services provided. Furthermore, the framework illustrate that procedure-related factors and service-related factors like indication and type of endoscopy procedure, control of pain or discomfort, endoscopist competences on the procedure, waiting time, securing an appointment, communication, physical-environment of the endoscopy unity as well as staffs' manners influence patients' satisfaction on endoscopy service.

1.4 Rationale

Understanding the extent of patients' satisfaction with GI endoscopy services and identifying factors that influence patients' satisfaction at Muhimbili National Hospital will help inform service improvement and enhance quality of care, which will increase patients' compliance with accessing endoscopy services and adherence to post-endoscopy instructions, ultimately, it will contribute to improved early diagnosis and treatment outcomes.

This study also provided baseline information of patients' satisfaction on GI endoscopy services in Tanzania and highlighted future needs for multicentered study involving all GI endoscopy centers in Tanzania.

1.5 Research questions

1.5.1 Main research question

I. What is the extent of and factors influencing patients' satisfaction with endoscopy services at Gastrointestinal (GI) endoscopy unit of the Muhimbili National Hospital?

1.5.2 Specific research questions

I. What is the extent of patient's satisfaction with endoscopy services at Gastrointestinal (GI) endoscopy unit of the Muhimbili National Hospital?

II. What is the association between demographic characteristics and patients' satisfaction with endoscopy services at GI endoscopy unit of the Muhimbili National Hospital?

III. What are the endoscopy procedure-related factors influencing patients' satisfaction with endoscopy services at GI endoscopy unit of the Muhimbili National Hospital?

IV. What are the patient-related factors influencing patients' satisfaction with endoscopy services at GI endoscopy unit of the Muhimbili National Hospital?

1.6 Research objectives

1.6.1 Broad objective:

I. To determine the level of and factors influencing patient's satisfaction with endoscopy services at GI endoscopy unit of the Muhimbili National Hospital

1.6.2 Specific objectives

I. To determine the level of patient's satisfaction with endoscopy services at GI endoscopy unit of the Muhimbili National Hospital

II. To determine the association between demographic characteristics and patient's satisfaction on endoscopy services at GI endoscopy unit of the Muhimbili National Hospital

III. To assess the endoscopy procedure-related factors influencing patient's satisfaction on endoscopy services at GI endoscopy unit of the Muhimbili National Hospital

IV. To assess patient-related factors influencing patient's satisfaction on endoscopy services at GI endoscopy unit of the Muhimbili National Hospital

CHAPTER TWO
2.0 LITERATURE REVIEW

2.1 Patients' satisfaction on GI endoscopy services

Patients' satisfaction is a key criterion in determining quality of health services provided as it offers a comprehensive assessment of a hospital's efforts to meet and exceed patient expectations(33).Worldwide endoscopy units use patients' satisfaction survey as a means of quality control check, these surveys help the endoscopy unit in identifying deficiencies, area of concerns and system failure within their services(16). It also enables them to understand patients' needs more effectively, creating a platform for analysis and problem-solving, by addressing the identified deficiencies the endoscopy unit can significantly enhance the overall quality of the services provided(14,34).

Measuring patients' satisfaction with endoscopy services is a crucial way to assess the quality of GI endoscopy, it helps set performance standards and promotes accountability among endoscopists and the supporting staff, ultimately leading to enhanced quality of care(9,35). Moreover, high levels of patient satisfaction are associated with better adherence to endoscopy procedures and post-procedural guidelines (10,15). Also satisfied patients often act as advocates through sharing their positive experiences with others in need of similar services. As a result, this fosters a greater utilization of endoscopy services, facilitating the timely identification and treatment of various gastrointestinal disorders.

Numerous studies in developed countries have explored patients' satisfaction levels regarding endoscopy services, and the findings consistently indicated that overall patient satisfaction level is over 85%, Particularly, research conducted in Europe and Canada(8,10,15). This high satisfaction levels can be attributed to factors such as a well-functioning healthcare system, advanced technology utilization, the presence of comprehensive endoscopy guidelines and resources, regular quality control assessments, and the adherence of professionalism by healthcare providers(36–38).

Research on patients' satisfaction levels regarding endoscopy services in Africa is relatively limited compared to studies conducted in other regions(39). However, a study conducted in

three west African Countries i.e. Burkina Faso, Benin and Niger reported that 95% of patients who received endoscopy services in those countries were satisfied especially with the time taken to secure an appointment(40). Also literature has demonstrated that, there is scarcity of endoscopy services in Sub-Saharan Africa due to limited technology, shortage of manpower and lack of resources(6,23,24). Thus additional research is required to gain a comprehensive understanding of patients' satisfaction levels on endoscopy services in resource constraint setting like Africa.

In Tanzania, numerous studies were done to evaluate patients' satisfaction with health services, aiming to gauge their levels of satisfaction and identify areas in need of improvement. The findings from these studies indicated, over 87% of patients expressed satisfactions with the services provided in hospitals. However, these findings vary across different regions and healthcare facilities and type of health services within the country(41–45). But the available literature on patients' satisfaction with endoscopy services in Tanzania is very limited, conducting comprehensive studies on patients' satisfaction with endoscopy services in Tanzania would provide valuable information for enhancement the quality of care and addressing patient needs in the context of endoscopy services.

2.2 Factors associated with patients' satisfaction on GI endoscopy services

Understanding factors associated with patients' satisfaction is one step ahead in meeting patients' needs and expectations in the context of endoscopy services and overall healthcare services, these factors help health practitioners and health policy makers to develop effective health policies and tailor their endoscopy services per patients' needs(38,46).

Several studies in Europe and Northern America have identified key factors which influence patients' satisfaction on endoscopy services which may be categorized as procedure-related factors like type of endoscopy procedure and indication for endosopy,. Service-related factors which encompass control of pain or discomfort, endoscopist technical skills, physical environment of the endoscopy suite, waiting times for procedure or appointments, communication aspects and staffs' personal manners. Last category is patient related factors which include patient's expectations, anxiety, personality, health status and social demographic features(47–50).

In Africa the existing literature explaining several factors that affect patients' satisfaction with health services provided, the commonest highlighted factors are limited healthcare accessibility, financial burdens, technological limitations, lack of resources,waiting times, communication skills as well as healthcare providers' competence and professionalism(51–53). These factors might extend to endoscopy services as well but the information in the context of endoscopy services is very limited(39,54). This knowledge gap emphasizes the urgent need for further research to investigate factors which are associating with patient satisfaction regarding endoscopy services in Africa.

To date, no published articles in Tanzania have specifically addressed the factors affecting patient satisfaction with endoscopy services. But several studies conducted in Tanzania on patient satisfaction with health services have shed light on key determinants. These studies have highlighted that factor such as waiting time for services, healthcare providers' manners, doctors' technical competence, communication skills, and the accessibility of healthcare services significantly influence patients' satisfaction with the healthcare they received(43,44,55,56). While these findings pertain to general health services, it is important to explore whether similar or distinct factors impact patient satisfaction within the context of endoscopy services as well.

2.2.1 Procedure related factors

Indications of endoscopy procedures

There are several indications for gastrointestinal(GI) endoscopy procedures ranging from diagnostic to therapeutics ones(5,49). In America and other developed countries the commonest indications for GI endoscopy-procedures includes dyspepsia (55%), upper and lower GI bleeding(42%), epigastric pain and dysphagia(34%). Less common indications are foreign body removal, persistent nausea or vomiting, globus sensation, retrosternal pain and surveillance for malignancies(53,57,58). In Saudi Arabia A.M. Alijebreen et al found that dyspepsia is the commonest indications for GI endoscopy procedures by 79% followed by vomiting (19%) and upper GI bleeding by 8%(59). The findings are almost similar in many African countries where dyspepsia is the leading indication for GI endoscopy procedure by 76%, followed by upper and lower GI bleeding (19%), dysphagia(10%) and vomiting by

9%(40,60,61). However, L. Wolf et al 2012 in Malawi found that dysphagia is the leading indication of upper GI endoscopy procedures by 37% followed by vomiting blood (21%) and epigastric pain 16%(4).

In Tanzania several studies have identified indications for GI endoscopic procedures in various hospitals and settings, the common indications identified are dyspepsia(57%), gastrointestinal bleeding (23%) and dysphagia(20%)(1,7,62), despite of being known and well-studied, the association between endoscopy indication and patients' satisfaction remain unexplained. Further research and data collection are needed to keep the understanding of endoscopy indications up to date, to guide policy development and resource allocation in the country.

Type of procedure

Colonoscopies and esophagogastroduodenoscopies are the most performed GI endoscopy procedures in United states of America, 53% and 37% respectively(63), these procedures themselves had been found to impact patients satisfaction with endoscopy services, as it was reported that 57% of patients who underwent colonoscopy in endoscopy center expressed lower satisfaction level with the services, this could be attributed to several factors like bowel preparation procedures, technique used during the procedure, the level of sedation provided and the duration of the procedure(10). Conversely, patients who underwent esophagogastroduodenoscopy tended to report higher satisfaction scores(10,64,65). However, it is worth noting that a study by Lin et al in 2007 found that the type of endoscopy procedure did not significantly impact patients' satisfaction with endoscopy services(18). Further research is required to explore and clarify these observations in greater detail.

2.3.2 Service-related factors

Control of pain/discomfort

The experience of pain or discomfort during an endoscopy procedure is considered a significant parameter in measuring patient satisfaction with the service(46,66). Studies have shown that patients who experienced higher levels of pain or discomfort-during or after the procedure are less likely to be satisfied with the endoscopy services they receive(34,37,66). For instance, a study performed in Italy by Minincilo et al, in 2022 demonstrated that 70%

of patients who were satisfied with pain control during and after the procedure reported higher overall satisfaction scores with the endoscopy services(33). Similarly, in the United States of America, it has been reported-that the presence of pain or discomfort during the procedure significantly lowers patient satisfaction with endoscopy services(67). Consequently, proper management and control of pain and discomfort during and after the procedure have been positively associated with higher-degrees of patient satisfaction with endoscopy services(36,68).

Technical skills of the endoscopist

Patients' satisfaction with endoscopy services is also influenced by the technical skills of the endoscopists, highly experienced and skilled endoscopists tend to demonstrate precision and efficiency, completing the procedure in a shorter time, consequently, patients perceive endoscopists with strong technical skills as providing high-quality care, which positively impacts their satisfaction with the procedure(64,69), 80% of patients who perceived their endoscopists to possessed advanced technical skills tend to report higher levels of satisfaction with the endoscopy services they have received(11,36). However, it's crucial to note that patients may face challenges in accurately evaluating the technical skills of healthcare practitioners due to their limited knowledge in the field. Additionally, patients' perception of the endoscopist's friendliness and interpersonal skills may overshadow their ability to assess technical expertise(36). Interestingly, a study conducted by Jin Young Yoon in Korea in 2018 found no significant association between endoscopists' technical skills and patients' satisfaction(70). More research is needed in this area in order to comprehend the complex relationship of endoscopists' technical skills and patient satisfaction.

Physical environment

The physical environment of the endoscopy-unit significantly contributes to patients' satisfaction with services rendered. A clean and well-maintained endoscopy unit, accompanied by a comfortable waiting area and provisions for privacy during the procedure, positively influences patients' overall satisfaction(37,38). Studies have shown that 95% of patients who express satisfaction with the comfort and privacy experienced in areas such as recovery room, procedure room, and waiting area also satisfied with the services(33,38).

Furthermore, factors such as appropriate temperature control, general cleanliness of the environment, and the arrangement of equipment impact patients' satisfaction with endoscopy services. It has been observed that patients who are happy with the general physical environment of the unit are also more propable to express satisfaction with the services offered within the facility(33,41,71).

Waiting time

Waiting time is a critical component of the overall patient experience, patients' satisfaction is influenced not only by the quality of healthcare but also by their experience throughout the entire process, including waiting. Lengthy waiting times can overshadow positive aspects of the endoscopy service, impacting overall patient satisfaction(72). Waiting for an extended period can erode patients' trust in their healthcare provider and the healthcare system as a whole. Patients may question the provider's ability to deliver timely and efficient care, leading to decreased satisfaction and confidence in the services provided(72,73).

Lengthy waiting times can negatively influence patients' perception of the quality of service offered. Patients may associate excessive wait times with inadequate organization, poor management, or lack of attention to their needs, resulting in decreased satisfaction(72), In Malaysia it was found that the patient can wait for more than four weeks to secure an appointment for endoscopy-procedure while on the actual day of procedure patients wait for an hour or more to get services, this leads to unfavorable response satisfaction score(34). Surprisingly a study carried out by Ko et al, in 2009 in Canada found waiting time on the actual day of the procedure was not associated with the overall patients' satisfaction(10). In south Africa a study highlighted that patients had to wait for over 40 days to get gastroscopy and 53% of them considered the waiting time is appropriate with their conditions(74).

Communication

Effective communication plays a crucial role in shaping patients' satisfaction with health services provided including endoscopies, clear and concise communication helps patients understand the endoscopy procedure, its purpose, and what to expect, this makes patients more informed, have realistic expectations, and feel more comfortable during the procedure(14,37).

This understanding contributes to higher levels of patients' satisfaction, also studies showed that about 83% of patients who informed well about the endoscopy procedures and what to expect during and after procedures are satisfied with the endoscopy services(65,75,76). Compassionate and empathetic communication from healthcare providers can significantly impact patient satisfaction, when providers actively listen, show empathy, and address patients' concerns, it fosters a sense of trust and emotional support, patients who feel understood and supported are more likely to report higher satisfaction levels(14,36). Effective communication ensures that patients receive pertinent details regarding the endoscopy procedure such as pre-procedure instructions, risks, and potential complications, this information allowing them to actively participate in their care which can positively influence their satisfaction(36). Also, clear and detailed communication regarding post-procedure care and instructions is vital for patient satisfaction(17,33). Patients who receive thorough instructions on post procedure findings, self-care, medication, and follow-up appointments are better equipped to manage their recovery effectively, leading to increased satisfaction level with the services(33,76).

Staffs' personal manners

Patients' satisfaction with endoscopy services is profoundly affected by the manners and behavior of endoscopists and the supporting staffs. Studies have indicated that a significant majority of patients, exceeding 95%, expressed satisfaction with the kindness and demeanor of the staffs in the endoscopy unit(33,36). The good personal manners and friendly approach demonstrated by endoscopists and nurses in the endoscopy unit have been reported to have a positive impact on patients' overall satisfaction with the endoscopy services they received(34,36).

2.2.3 Patient related factors

Studies suggest that older adults generally report higher levels of satisfaction with endoscopy services compared to younger individuals(14,68). This may be attributed to factors such as increased healthcare experience, lower expectations, and a greater appreciation for the benefits of the procedure(14). Younger adults, particularly those below forty years, tend to have higher expectations regarding service delivery and may be more critical in evaluating

their healthcare experiences, as a result, they may exhibit slightly lower levels of satisfaction compared to older age groups(14,36,67). However other studies highlighted that age of the patients doesn't affect or influence their satisfaction on endoscopy services(10,34,70). More research is needed to explore and clarify these observations in greater detail especially in Tanzanian context.

Overall, studies have not consistently found significant differences in patient satisfaction based on sex. Both male and female patients tend to report similar levels of satisfaction with endoscopy services(10,33,34), though other research suggests that there are minimal differences in patient satisfaction between males and females when it comes to endoscopy services and female tends to be less satisfied.(66,68,70). Therefore, the findings are not consistent across all studies.

Patients with higher education levels generally have higher health literacy, they may possess a better understanding of medical terminology, procedures, and health-related information(37,77).This higher health literacy can contribute to decreased satisfaction as educated patients may have high expectations on endoscopy services hence become less satisfied with the services. However, several studies found that level of education does not influence patient's satisfaction with endoscopy services(36,70).

Income level can impact a patient's ability to access healthcare services, including endoscopy. Patients with higher incomes may have greater access to healthcare facilities and resources, leading to a potentially higher satisfaction level due to better availability and choice of services, hence financial considerations play a role in patient satisfaction(78). Higher- income patients may be more likely to afford the costs associated with endoscopy procedures, such as co-pays, deductibles, and out-of-pocket expenses, this financial security can contribute to higher satisfaction as they experience fewer financial barriers to care(14). However Patients with higher incomes may have different expectations regarding quality of care they are receiving, they might expect a higher level of service, personalized attention, and a more comfortable healthcare environment, if these expectations are not met can negatively impact their satisfaction levels(37). But a study conducted in Korea found that economic status of patients does not influence their satisfaction with endoscopy services(70).

Anxiety is a common emotion experienced by patients before undergoing any medical procedure including endoscopy. The fear of the unknown, concerns about discomfort or pain, and the anticipation of receiving potentially distressing results can contribute to heightened anxiety levels. Additionally, factors such as previous negative experiences, fear of sedation or anesthesia, and the invasiveness of the procedure can further exacerbate patients' anxiety. Thus, this higher level of pre-procedure anxiety tend to lower patient's satisfaction with the services as most patients who were anxious before endoscopy procedure were dissatisfied with the service(79). However Hin Ko et al in 2009 found that pre-procedure anxiety were not associated with patient's satisfaction in the context of endoscopy services(10). Further research should be done to clarify this inconsistence.

Patient's health status also plays a role on satisfaction with health services, as individuals with more severe or chronic conditions may have different needs and expectations compared to those with minor ailments hence tend to be less satisfied with provided health services(14,80). Moreover, patients' attitude and expectations greatly influence their satisfaction on endoscopy services provided, as they form the basis for evaluating the quality of care received. Patients' expectations can vary based on their previous experiences, socio-cultural background, geographical location, ethnic and individual preferences(10). when patient expectations are met during receiving healthcare, they tend to more compliant with the procedure and report high level of satisfaction(43). To understand the influence of these factors on patient's satisfaction with endoscopy-services in our local context is highly needed.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Area

This research was conducted in the endoscopy unit of the Muhimbili National Hospital-Upanga campus. Muhimbili National Hospital is a tertiary level hospital located at Upanga west in Dar es salaam with a bed capacity of 1500.

Muhimbili National hospital offers super specialized medical care and interventions to patients from various regions in the country as it accept referred patients from every party of the country and self-referrals as well.

The endoscopy unit of Muhimbili National Hospital-Upanga has three equipped endoscopy rooms, one sluice room, a recovery room, an ultrasound room, a Storage room, doctor's consultation room, Nurses' office, Biomedical engineer office, Reception area, patients' waiting area and conference room together with library, kitchen, staff and patient's latrines. The center operates five days in a week from Monday to friday and provide services for approximately 800 patients in a month. It serves both insured and non-insured patients who are either in-patients or out-patients. All the GI endoscopy procedures including emergency endoscopies are performed at the endoscopy unit by surgical or medical gastroenterologists and master of science in gastroenterogy fellows under supervision. However emergency endoscopies are very rare in our settings and if the need arised, they don't follow routine pathway of booking for slot of endoscopy procedure in the unity, the patient will directly brought to the endoscopy room after the consultation with endoscopist-nurse-incharge, nurse-anaethetist, attending-doctor and the endoscopist on duty.

3.2 Study design

This study utilized an analytical cross-sectional design that aimed to evaluate the level of endoscopy service satisfaction and assess factors influencing satisfaction. The design offered a real time assessment of patients' satisfactions and provided a room of getting broad overview of patients's satisfactions through surveyed a disserve group of patients who received GI endoscopy services at endoscopy unit of Muhimbili National hospital.

3.3 Study population

All patients(in-patient and out-patient) who were scheduled for endoscopy procedures at the endoscopy unit of the Muhimbili National Hospital – Upanga were eligible for this study.

3.3.1 Inclusion criteria

i. All patients aged 18 years and above received endoscopy services at endoscopy unit of the Muhimbili National hospital -Upanga campus

3.3.2 Exclusion criteria

i. Critical ill patients which includes unconscious and respiro-haemodynamic unstable patients; Due to their illness, these patients will be unable to fill out the questionnaire.
ii. Patients with mental illness: these patients will not respond properly to questions due to their mental status

3.4 Sample size and Sampling method

3.4.1 Sample size

The sample size was determined using a formula for a single proportion based on the following assumptions: $n=Z^2P(100-P)/E^2$ where:

n. represented the minimum necessary sample size

Z. is the standard normal deviation at 95% confidence level (1.96)

P. represent an estimated proportion of patients' satisfied with endoscopy services is 50%. This assumption was made from previous study that assessed satisfaction on laparoscopy services in cameroon(81)

E. stand for acceptable margin of error of P (which is set at 5%)

Using this formula, the calculated sample size was 384. To account for a 10% non-response rate, the adjusted sample size was increased to 422 participants. However a total of 420 patients were sampled and invited to participate in this study. Of these, 24 patients explicitly refused to participate, and 9 patients failed to complete more than 70% of the survey, classifying them as non-respondents. Hence, 387 patients who received GI endoscopy services at Muhimbili National Hospital participated in the GI endoscopy satisfaction survey.

3.4.2 Sampling Method

A systematic sampling technique was utilized to select study participants. The sampling frame consisted of patients scheduled for endoscopy procedures at the MNH endoscopy unit over a two months period. The sampling interval was calculated by dividing the total number of scheduled endoscopy patients by the required sample size (Sampling interval = N/n). Where N is the total number of patients scheduled for endoscopy, and n is the required sample size. After determined the sampling interval, the first participant was randomly selected using Excel's random number generator, ensured a systematic and representative sample for the survey.

3.5 Variables

3.5.1 Dependent variable

Service satisfaction status was used as the dependent variable. This was assessed using a 5-point Likert scale, as it was adapted from several similar studies done in endoscopy centers(33,76,82). The scale was categorized into poor, average, good, very good and excellent depended on the nature of independent variable. Poor and average responses were regarded as dissatisfaction while good, very good and excellent were regarded as satisfaction. The scale captured the extent of feelings of clients who seek service at endoscopy unit of Muhimbili National Hospital. Respondents were asked to rate their degree of satisfaction across several parameters.

3.5.2 Independent variables

Demographic characteristics

- Age:Age of the study participants was measured in years
- Sex: Observation metheds divided participants into two distinct categories -male and female.
- Occupation: The study participants was asked to name their main occupation
- Marital status: The study participants was asked to disclose their current marital status
- Educational level: Participants in the study was asked if they attended school and what was their highest degree of education.

Economic status

The economic status was calculated using a Weighted Wealth Index which took into account household assets ownership, housing characteristics and access to basic services like electricity and clean water. The Dichotomous variables were created and factor analysis using principal component analysis (PCA) was used. The wealth index of every household was calculated by adding item weight based on the factor loading. Total weighted wealth-Index score was divided into quintiles denoted lowest to the highest quintiles of Economic status

Procedure-related factors

- Indication for endoscopy: Patient was asked to name the indication of their endoscopy procedure.
- Type of the procedure: The type of GI endoscopy procedure the patient undergone was noted

Service-related factors

- Endoscopist Technical skills: patients were asked to score the level of satisfaction with the endoscopist skills on a five-point Likert scale.
- Control of pain and discomfort: the patients were asked to rate their satisfaction on control of pain/discomfort during and after the procedure on five-point Likert scale
- Privacy for patient: Patients were asked to score their degree of satisfaction with privacy in the recovery and procedure rooms using a five-point Likert scale..
- Cleanliness of the environment: Patients were asked to score their satisfaction level with the cleanliness of the endoscopy unity using a five-point Likert scale
- Waiting time for service: This is the duration a patient waited to receive service from registration to the procedure, patients were asked regarding the waiting time and rate their satisfaction on five-point Likert scale
- Timelines for securing an appointment: this was the time taken for a patient to get an appointment for endoscopy procedure, the patients were asked to rate their satisfaction on a five-point Likert scale.

- Communication: patients were asked to score their satisfaction level with the mode of communication used by care provider and pre-procedure and post procedure information they received.
- Staffs' personal manners: patients were asked to score their satisfaction level with endoscopy staffs' personal manners on five-point Likert scale

Patient related factors

- Previous endoscopy experience: patient were asked if they had done endoscopy before. And the answer was Yes, No
- Patient's health status: patients were asked to name their health status in five-point Likert scale
- Anxiety; Patients were asked to rate their level of pre-procedure anxiety in five-point likert scale.

3.6 Data collection, tools and technique

Data collection for this study took place between 15th April 2024 to 31st May 2024. The principal investigator and a trained research-assistant collected all data required during endoscopy procedures' services days (Monday to Friday).

A well-structured questionnaire was used to collect the required information. The questionnaire was adapted from Endoscopy Customer Satisfaction Questionnaire (ECSQ) which was used to measure patient satisfaction on digestive endoscopy in several studies(33,76).

The ECSQ questionnaire contains 18 items organized into 4 main sections: Before the procedure, during the procedure, after the procedure, and general assessment section.

Before the procedure the tool contain five questions ("Clarity of information received in preparation for the exam, Clarity of information about the risks of the procedure the reasons why it was recommended to you, Time spent in the waiting room before performing the exam, Comfort of the waiting room, of the endoscopy service, Dressing room, cloakroom and lockers (safety and comfort)Courtesy and behavior at the reception") and the responses were categorized into five-point Likert scale (poor, average, good, very good, excellent).

During the procedure the tool contain four questions (“Staff attitude in answering your questions and concerns before taking the exam, Completeness of the information provided on what you might experience during the examination (sensations, discomfort, etc.), Efficiency of the methods used to increase comfort and reduce pain during the examination, Courtesy and behaviour of the staff in the endoscopy room*”*).

After the procedure the tool contains also five questions (“Comfort and privacy of the recovery room, Pain control in the recovery room was, Courtesy and behaviour of the staff in the recovery room, Information on the outcome of the exam (timing, clarity), Completeness of the information provided after the procedure regarding how you might feel once at home and what you may need to do if there is an emergency (telephone contact to call in case of emergency).”) and the responses were categorized into five-point Likert scale (poor, average, good, very good, excellent).

A general assessment section-has three questions (“I was satisfied with the treatment (attention, care, services, etc.) received by the endoscopy staff, there was a problem on the day of the exam (confusion about my identity or documentation, allergic reaction to drugs or materials used, trauma, etc.), if in the future I had to do an endoscopy again, I would do it in this facility”.) and the responses in this section were grouped into YES/NO. Additional questions were included to collect all essential information/data per research objectives.

The questionnaire was administered in two formats: self-administered for eligible patients who were able to read and write, and face-to-face interviews for those who were not. A conducive environment was provided to encourage honest feedback, with professionalism maintained throughout the process. For patients who were sedated during the endoscopy procedure, participation in the study was only sought after they had fully recovered from sedation and were discharged from the recovery room. This was done in consultation with the nurse anesthetist, who confirmed when the patient was able to respond. A brief explanation of the study objectives was provided, and written consent was obtained prior to participation.

To ensure privacy, the questionnaire or interviews were conducted in a quiet room with closed doors and windows. If privacy was compromised at any point, the process was paused and only resumed once privacy was restored.

3.7 Pretesting of Data Collection tool

The Questionnaire was pre-tested to ten patients who undergone GI endoscopy procedure at Muhimbili National Hospital, and any confused question or unsuitable language was modified accordingly.

3.8 Reliability and validity test

The Cronbach Alpha coefficient for the questionnaire was 0.84 indicating a good reliability of the tool. Validity was ensured through conducting thorough literature review and experts were consulted to confirm that the questionnaire cover all relevant aspects of the study. A panel of two experts reviewed the questions and provided feedbacks which was incoroporated into the final version of the questionnaire.

3.9 Data analysis plan

Data was entered and analysed using the Statistical Package for Social Sciences (SPSS) version 23 computer-software, data were checked for accuracy and completeness (data cleaning). The cleaning was mainly done through running individual variable frequencies.

Continuous variable like age, the median was calculated, and range of ages was also determined to understand the central tendency and variability in this variable.

Descriptive statistics were computed to summarize the socio-demographic characteristics of the participants, the type of endoscopy procedures performed, and patient-related variables where frequency distributions and percentages were calculated.

For the first objective: Overall satisfaction for endoscopy services was computed from several independent variables by using a composite scoring method. Each of these variables was rated by the participants on a satisfaction scale. The scores for each of these variables were aggregated to form a composite satisfaction score for each participant by summing the

individual scores. The median value of the composite satisfaction scores was calculated and chosen as the cut-off point because it is a robust measure of central tendency that is less influenced by outliers and skewed data compared to the mean. Participants whose composite satisfaction score was at or above the median value were classified as "satisfied." Participants whose composite satisfaction score was below the median value were classified as "not satisfied. This method ensured a clear and objective classification of overall satisfaction based on multiple dimensions of the service quality, provided a comprehensive measure that was used in subsequent analyses.

For the second objective: Bivariate analysis was conducted in which cross-tabulations were performed to explore the relationships between patient satisfaction and various socio-demographic variables. The Chi-square test or fisher's exact test was used to assess the significance of these associations as deemed appropriate, a P-value of 0.05 was considered statistically significant.

For the third and fourth objective: Bivariate analysis and Multivariate analysis was conducted consecutively, where in multivariate analysis a Modified Poisson Regression Analysis was conducted to identify independent predictors of patient satisfaction with GI endoscopy services, this method was chosen due to its robustness in handling binary outcome especially when the outcome is common. Variables with $p < 0.2$ from initial univariate analysis were included in the model, hence the final model included age, occupational status, wealth index, health insurance ownership, type of endoscopy procedure, indication for endoscopy procedure, health status, and patient anxiety level. Variables such as marital status, education level, and previous endoscopy experience were excluded due to their low contribution to overall satisfaction ($p > 0.2$). The Adjusted Prevalence Ratio (aPR) with corresponding 95% confidence intervals (C.I.) were reported for each variable. Significance level was set at 5% and analysis was two tailed.

Explanation for Exclusion of Certain Variables in Bivariate and Multivariate Analysis: In the analysis, several service-quality-related independent variables were not included in the bivariate or multivariate analysis. These variables include waiting times, time used to schedule an appointment for endoscopy services, behavior and attitude of staffs, control of pain during endoscopy, comfort, privacy and cleanliness of the endoscopy unit as well as pre

and post procedure information/instructions. The primary reason for this exclusion is that, these variables were used to compute the overall satisfaction score. Including them as independent variables in the analysis would lead to statistical redundancy and potentially biased results due to multicollinearity.

3.8 Ethical consideration

Ethical approval for this study was obtained from the Research Ethics Committee of Muhimbili University of Health and Allied Sciences (MUHAS) (Ref. No. DA.282/298/01.C/2137). Also data collection permit was obtained from Muhimbili National Hospital's administration prior the commencement of data collection.

Written informed consent was obtained from every study participant prior to conduct any interview after clearly described the purpose of the research, the nature of the questions, and how their responses will be used. Participation was voluntary and participants had the right to withdraw from the interview at any time without consequence. During questionnaire administration or interviews, a professional and respectful demeanor was maintained to ensure that participants felt comfortable and supported throughout the process. If any sensitive topics arose during the interview, they were handled with care and sensitivity, prioritizing the well-being of the participant.

A quiet, private room was used for administering questionnaires or interviews, with pauses taken if privacy was compromised. Participation or refusal did not affect routine endoscopy care. Confidentiality was emphasized, with participants assured their responses would remain anonymous and used solely for research purposes, without any personally identifiable information linked to their data. Any dissemination of research findings was done in aggregate form to prevent individual participants from being identified. Also the filled questionnaires were securely stored in a locked filing cabinet, with access restricted only to the principal investigator.

CHAPTER FOUR

4.0 RESULTS

4.1 Social demographic characteristics of study participants

Out of 387 patients studied 54% were female. The median age of the study population was 48 years, ranging from 20 to 84 years, and the largest propotion of the respondents were in age group of 30-39 years which accounted for 28.2% of all study participant, while more than a third of the participants have post-secondary school education (37.7%), 40.6% of the study participant were employed and over three-quarter of study participants were married (77.8%).(Table 1)

Table 1: . Social demographic characteristics of the study participants n=387

Variable	Frequency	Percent (%)
Age group (years)		
20 – 29	42	10.9
30 – 39	**109**	**28.2**
40 – 49	61	15.8
50 – 59	84	21.7
≥ 60	91	23.5
Sex		
Male	178	46.0
Female	**209**	**54.0**
Highest education level attained		
Not attended school	19	4.9
Primary education	**136**	**35.1**
Secondary education	86	22.2
Post-secondary education	**146**	**37.7**
Occupational status		
Employed	**157**	**40.6**
Self-employed	116	30.0
Unemployed	68	17.6
Retired	46	11.9
Marital status		
Married	**301**	**77.8**
Divorced	8	2.1
widowed	16	4.1
Single	62	16.0
Wealth Index		
Low	97	25.1
Lower-middle	97	25.1
Upper-middle	97	25.1
High	96	24.7
Health Insurance ownership		
Yes	200	51.7
No	187	48.3

More than two-third of the study participants (70.5%) reported to never had undergone endoscopy procedure before, and gastroscopy (Esophagogastroduodenoscopy) is the most common GI endoscopy procedure performed (72.4%). The study also found that abdominal pain is the commonest indication for endoscopy procedure (32.6%) at Muhimbili National Hospital. In addition, the survey found that over half of the study participants (56.8%) self-reported to have good health status on the day of interview as summarized in Table 2.

Table 2: Endoscopy procedure and patient-related variables

Variable	Frequency	Percent (%)
Endoscopy procedure performed		
Gastroscopy (EGD)	**280**	**72.4**
Colonoscopy	75	19.4
Therapeutic endoscopies	32	8.2
Previous endoscopy procedure experience		
Yes	114	29.5
No	**273**	**70.5**
Indication for endoscopy procedure		
Abdominal pain	**126**	**32.6**
Dysphagia	57	14.7
GI bleeding	88	22.7
Dyspepsia	116	30.0
Perceived Health status of the patient		
Bad	167	43.2
Good	**220**	**56.8**
Perceived patient level of anxiety		
No Anxiety	**133**	**34.4**
Low	87	22.5
Moderate	115	29.7
High	52	13.4

4.2. The level of patients' satisfaction with GI endoscopy services

The overall patient's satisfaction with GI endoscopy services at endoscopy unit of Muhimbili National Hospital was found to be 68.2 %. Patients reported high levels of satisfaction in courtesy and caring behavior of staff in the procedure room (98.2%), comfort and privacy for patient in the recovery room (96.9%), and the overall cleanliness of the endoscopy unit (96.1%). Additionally, the courtesy and behavior of staffs at reception (96.4%), the comfort and safety of the waiting area (94.8%) and the technical skills of the endoscopist (93.5%) also received high satisfaction scores.

Moreover, patients reported good satisfaction levels with aspect of clarity of information about the risks and reasons for the procedure (81.4%), scheduling of appointments (82.2%) and the completeness of information about what to expect during the examination (79.8%). The satisfaction levels were relatively low with regards to provision of information on the outcome of the exam/procedure (51.7%) and the completeness of post-procedure information (41.9%). Similary, efficiency of methods to increase comfort and reduce pain during the examination (66.1%) and the time spent in the waiting area before performing the exam(61.5%) had relatively low satisfaction rate (Table 3).

Table 3: Reported Satisfaction percentages of various service-related variables

Variable	Satisfaction percentage
Clarity of information you received in preparation for the test/procedure	**85.5%**
Clarity of information about the risks of the procedure e the reasons why it was recommended to you	81.4%
Time spent in the waiting area before performing the exam	**61.5%**
The time it took for you to schedule an appointment for your endoscopy procedure	**82.2%**
Comfort and safety of the waiting area of the endoscopy service	94.8%
Courtesy and behaviour of staffs at the reception	96.4%
Staff attitude in answering your questions and concerns before taking the exam	90.4%
Completeness of the information provided on what you might experience during the examination (sensations, discomfort, etc.)	**79.8%**
Technical skills of the endoscopist who performed endoscopy procedure	93.5%
Efficiency of the methods used to increase comfort and reduce pain during the examination	**66.1%**
Privacy for patient in the procedure room	**95.6%**
Courtesy and behaviour of the staff in the endoscopy procedure room	**98.2%**
Comfort and privacy of the recovery room	**96.9%**
Information on the outcome of the exam (timing, clarity	**51.7%**
Completeness of the information provided after the procedure regarding how you might feel once at home and what you may need to do if there is an emergency (telephone contact to call in case of emergency)	**41.9%**
The cleanliness of endoscopy unit	**96.1%**

4.3. Factors associated with satisfaction of GI endoscopy services

Table 4 shows the results of the association between socio-demographic characteristics of the respondents and overall satisfaction with GI endoscopy services. The results show that there was no statistical significant association between overall satisfaction with endoscopy services and education level of the participants (P=0.201) as well as marital status of the client (P=0.434). In addition, the results shows that at 95% level of confidence, there were associations between age group(P=0.001), sex(P=0.039), occupational status(P=0.002) and wealth index(P<0.001) of the participants and overall satisfaction with the GI endoscopy services at Muhimbili National Hospital.

Table 4: Association between socio-demographic characterisitcs and overall satisfaction of GI endoscopy services.

Variable	Total n	Satisfied n (%)	Not satisfied n (%)	P value
Age group(years)				
20 – 29	42	27 (64.3)	15 (35.7)	0.001**
30 – 39	109	**83 (76.1)**	26 (24.9)	
40 – 49	61	46 (75.4)	15 (24.6)	
50 – 59	84	42 (50.0)	42 (50.0)	
60+	91	66 (68.2)	25 (31.8)	
Sex				
Female	209	**152 (72.7)**	57 (27.3)	0.039**
Male	178	112 (62.9)	66 (37.1)	
Education level				
Not attended school	19	9 (47.4)	10 (52.6)	0.201
Primary education	136	97 (71.3)	39 (28.7)	
Secondary education	86	57(66.3)	29 (33.7)	
Post-secondary	146	101(69.2)	45(30.8)	
Occupational status				
Employed	157	115(73.2)	42(26.8)	0.002**
Self-employed	116	63(54.3)	53(45.7)	
Unemployed	68	**52(76.5)**	16(23.5)	
Retired	46	34(73.9)	12(26.1)	
Marital status				
Married	301	**209(69.4)**	92(30.6)	0.434
Divorced	8	4(50.0)	4(50.0)	
Widowed	16	9(56.3)	7(43.7)	
Single	62	42(67.7)	20(32.3)	
Wealth index				
Low	97	61(62.9)	36(37.1)	< 0.001**
Lower-middle	97	**83(85.6)**	14(14.4)	
Upper-middle	97	65(67.0)	32(33.0)	
High	96	55(57.3)	41(42.7)	
Health Insurance ownership				
Yes	200	**149(74.5)**	51(25.5)	0.006**
No	187	115(61.5)	72(38.5)	

Significant value p<0.2 =**

Table 5 below show results of the association between endoscopy procedure plus patient related factors with overall satisfaction of GI endoscopy services, where There was no statistically significant association between previous endoscopy experience (P=0.950) and overall satisfaction of GI endoscopy services. However, the study shows an association between type of endoscopy procedure (P<0.001), indication for endoscopy procedure (P<0.001), health status of the patient (P<0.001) and overall satisfaction of GI endoscopy services at Muhimbili National hospital.

Table 5: Association between procedure and patient related factors and overall satisfaction of GI endoscopy services

Variable	Total n	Satisfied n (%)	Not satisfied n (%)	P value
Endoscopy procedure				
Gastroscopy (OGD)	280	170 (60.7)	110 (39.3)	< 0.001**
Colonoscopy	75	**70 (93.3)**	5 (6.7)	
Therapeutic endoscopies	32	24 (75.0)	8 (25.0)	
Previous endoscopy procedure experience				
Yes	114	78 (68.4)	36 (31.6)	0.950
No	273	186 (68.1)	87 (31.9)	
Indication for endoscopy procedure				
Abdominal pain	126	76(60.3)	50(39.7)	< 0.001**
Dysphagia	57	30 (52.6)	27 (47.4)	
GI bleeding	88	**72 (81.8)**	16 (18.2)	
Dyspepsia	116	86 (74.1)	30 (25.9)	
Perceived Health Status of the patient				
Bad	167	92 (55.1)	75 (44.9)	< 0.001**
Good	220	**172 (78.2)**	48 (21.8)	
Patient's anxiety level				
No anxiety	133	85 (63.9)	48 (36.1)	0.018**
Low	87	65 (74.7)	22 (25.3)	
Moderate	115	**86 (74.8)**	29 (25.2)	
High	52	28 (53.8)	24 (46.2)	

Significant values p<0.2=**

Table 6: Multivariate regression analysis of independent factors associated with overall patient satisfaction with GI endoscopy services

Variable	aPR	95% C. I		P- value
		Lower	Upper	
Age group (years)				
20-29	1	1	1	
30-39	1.164	0.888	1.527	0.272
40-49	1.176	0.877	1.577	0.279
50-59	0.899	0.667	1.210	0.482
60+	1.322	0.947	1.844	0.100
Sex				
Female	1	1	1	
Male	0.926	0.806	1.063	0.276
Occupational status				
Employed	1	1	1	
Self employed	0.821	0.680	0.991	0.040**
Unemployed	1.105	0.905	1.350	0.327
Retired	0.824	0.615	1.104	0.194
Wealth index				
Low	1	1	1	
lower-middle	1.349	1.144	1.592	< 0.001**
Upper-middle	1.110	0.910	1.353	0.305
High	0.889	0.717	1.102	0.282
Health insurance ownership				
Yes	1	1	1	
No	0.966	0.824	1.132	0.666
Type of endoscopy procedure				
Gastroscopy (EGD)	1	1	1	
Colonoscopy	1.351	1.190	1.534	< 0.001**
Therapeutic endoscopies	1.245	0.969	1.600	0.087
Indication for endoscopy procedure				
Abdominal pain	1	1	1	
Dysphagia	0.870	0.644	1.175	0.364
GI bleeding	1.134	0.945	1.359	0.176
Dyspepsia	1.078	0.908	1.280	0.390
Health status				
Bad	1	1	1	
Good	1.259	1.082	1.466	0.003**
Anxiety level				
No anxiety	1	1	1	
Low	1.046	0.870	1.258	0.632
Moderate	1.029	0.873	1.211	0.735
High	0.812	0.623	1.057	0.122

**Significant values p<0.05

Table 6 above summarized a Modified Poisson regression analysis results which was done to identify independent predictors of patient's satisfaction with GI endoscopy services at endoscopy unity of Muhimbili national hospital

Factors which showed significant relationship with endoscopy service satisfaction were occupational status, economic status, type of endoscopy procedure and health status of the patient, this entails that when all other factors are equally the same. Overall endoscopy service satisfaction was not related to age, sex and anxiety level of patient as well as health insurance ownership and indication for endoscopy procedure.

Compared to patients who were employed, patients who were self-employed were less likely to be satisfied with endoscopy services (adjusted Prevalance ratio (aPR 0.82, 95% C.I: 0.68-0.99, P=0.040). Higher economic status was associated with increased satisfaction, as individuals who are in lower-middle economic status were 35% more likely to be satisfied with endoscopy services compared to those with low economic status (aPR 1.35, 95% C.I: 1.14-1.59, P<0.001).

Compared to patients who were in bad health status, those patients who reported to have good health status were 26% more likely to be satisfied with endoscopy services (aPR 1.26, 95% C.I:1.08-1.46, P=0.003). Patients who undergone colonoscopy procedure were 35% more likely to be satisfied with endoscopy services compared to those who undergone gastroscopy (EGD) procedure (aPR 1.35, 95% C.I 1.19-1.53, P<0.001)

CHAPTER FIVE

5.0 DISCUSSION

5.1 Patients' satisfaction with GI endoscopy services

The results from this study indicated that patients were moderate satisfied with GI endoscopy services at Muhimbili National Hospitals which is an indicative of a positive patient experience as far as endoscopy care is concerned. This finding is in contrary with other GI endoscopy services satisfaction surveys especially those conducted in developed countries where patients reported to be highly satisfied with received endoscopy care(8,15,31). The observed difference can be explained by several factors in our settings like limited endoscopy resources and staffing's level, lack of comprehensive guidelines for endoscopy care and lack of regular quality control assessment. Also, higher patient volumes at Muhimbili National Hospital might lead to longer waiting times and less personalized care which affecting overall satisfaction of endoscopy services.

This study also found that, most patients who received endoscopy care at MNH were highly satisfied in the aspect of courtesy, behavior and attitude of the staffs, technical skills of the endoscopists, cleanliness of the endoscopy unity, privacy and comfort of the endoscopy suite which are critical components in influencing service satiafaction. These findings are in line with several studies in literature that emphasized the significance of professionalism, proper staff-patient interactions and facility conditions in shaping overall patients' satisfactions with services provided(15,16,33,71,83–85). However, limited satisfaction was noted in the clarity of information about the procedure's risks and reasons, the time taken to schedule an appointment, and the completeness of pre-examination information. The findings highlight gaps in patient satisfaction which might lead to confusion, frustration, and reduced trust in the healthcare process. Improving these areas is crucial for enhancing overall patient satisfaction. The findings from this study are in contrary with previous endoscopy satisfaction surveys conducted in Europe, Canada and United States of America where patients were highly satisfied with pre-procedure information and instructions(17,18,33,82,86). These aspects are crucial for patient preparedness and reducing anxiety, as highlighted by Anni King et al (2013), who found that clear communication and timely appointment scheduling were pivotal in patient satisfaction(87).The moderate scores

in these areas suggest that while the hospital performs well, there is a need for enhanced communication strategies to ensure patients are fully informed and comfortable.

The study also found that the lowest satisfaction scores were related to the completeness of post-procedure information, particularly regarding the outcome of the test or procedure and discharge instructions. This suggests inadequate follow-up and a lack of comprehensive discharge information, both of which are crucial for patient recovery and peace of mind. Additionally, waiting times for the procedure and pain control during the procedure were also areas of low satisfaction. These findings align with previous research, which identified prolonged waiting times and inadequate pain management as significant sources of patient dissatisfaction(14,19,88,89). Improving pain control and reducing waiting times through better scheduling and process optimization could enhance the overall patient experience.

5.2 Social demographic factors associated with patients' satisfaction

Regarding social-demographic factors influencing patient' satisfaction with endoscopy services at MNH, the study found no association between age, sex, marital status, or education level and patient satisfaction with endoscopy services. This finding is consistent with results from other previous endoscopy satisfaction surveys in the literature (82,90,91). However, the study done by Otto L in 2009 on patients' satisfaction on colonoscopy services reported that age, sex and education level affect satisfaction score as female patients and younger patients provided lower satisfaction scores compared to male and old individuals(18,67). These differences suggest that the impact of social demographic factors on patient satisfaction may vary across different healthcare settings and populations, highlighting the importance of considering contextual factors when interpreting research findings and developing interventions to enhance patient satisfaction. This study also revealed that occupational status significantly influences patient satisfaction with endoscopy services, as self-employed patients reported lower satisfaction compared to employed patients possibly due to differences in job security and income stability. This finding aligns with research conducted by Xiang Feng at el (2022) in China, which found that employment status affects satisfaction of GI cancer screening services(11). Similarly, a study by Owaidh et al. (2018) in Saudi Arabia reported lower satisfaction among self-employed individuals, attributing it to the variability in income and possibly higher stress levels(78).

In this study, economic status found to played a significant role in determining satisfaction levels in endoscopy services where patients with higher economic status reported higher satisfaction score with endoscopy services compared to those with low economic status. This is consistent with findings by Otto L (2009) in Canada which indicated that higher economic status correlates with better satisfaction due to better access to healthcare resources and services(18). In Africa, similar trends were observed in a study by Omorogbe (2018) in Nigeria, highlighted the impact of socio-economic factors on healthcare satisfaction(92).

Health insurance ownership did not significantly affect patients satisfaction levels in this study which was contrary to findings by Shure et al. (2023) in Ethiopia, where insured patients reported higher satisfaction due to perceived financial security and better access to services(93). The non-significance in this study could be due to differences in insurance coverage and healthcare system structure in Tanzania.

5.3 Endoscopy procedure related factors associated with satisfaction

The study also found that, the type of endoscopy procedure affect satisfaction levels as patients undergoing colonoscopy were more likely to be satisfied compared to those undergoing esophagogastroduodenoscopy (EGD).This may be due to differences in the perceived invasiveness and discomfort associated with these procedures and better-preparedness in colonoscopy patients in our setting. However, these findings are in contrary with a study by Hin ko et al (2009) in Canada where lower satisfaction reported for colonoscopy procedures(10). This discrepancy may be due to differences in patient expectations, healthcare practices, or cultural factors between the two settings.

Lastly, the study found that indication for the endoscopy procedure did not significantly influence satisfaction. This finding aligns with a study by Russell Loftus et al (2013) in Canada, which found that the reason for undergoing endoscopy did not significantly impact patient satisfaction(17). This suggest that the underlying motivation for the endoscopy, whether driven by symptoms, treatment needs, or routine check-ups, does not play a significant role in how patients rate their overall satisfaction with the service. This consistency across different studies underscores the idea that satisfaction is more universally

influenced by aspects inherent to the procedure itself and its immediate environment rather than the specific medical indication.

5.4 Patients related factors associated with satisfaction

Health status of the patient was found to be associated with endoscopy service satisfaction as patients in good health status reporting higher satisfaction with endoscopy services compared to those in bad health status likely due to experiencing fewer complications or discomfort during the procedure. This finding is supported by a study by Schoenfelder et al. (2011) in Germany, which found that patients in better health tend to have higher satisfaction due to a more positive outlook and fewer complications during procedures(13). Previous endoscopy experience and anxiety level of patients were found not to be associated with satisfaction to endoscopy services in this study. The findings aligns with those by Hin Ko et al (2009) in Canada where no significant correlation was found between previous endoscopy experienceor anxiety levels and patient satisfaction(10). The lack of a significant relationship between anxiety and satisfaction in both studies highlights the complexity of patient perceptions and indicates that addressing anxiety alone may not be sufficient to improve overall satisfaction levels which underscores the need for a comprehensive approach that considers various aspects of patient care and experience.

5.5 Strength

This is the first study to assess GI-related endoscopy services satisfaction in our setting utilizing a sufficient sample of randomly recruited participants. Also, conducted at the largest healthcare facility in Tanzania, which offer endoscopic services to a larger number of patients, the study's findings have the potential for broad representation and applicability to similar settings. Additionally, the study employed a comprehensive assessment of service variables to evaluate overall satisfaction with endoscopy services. Furthermore, while contributing to the body of knowledge on patients' satisfaction with endoscopy care, findings from this study enhance our understanding of patient satisfaction and provide a foundation for future research and quality improvement initiatives across healthcare facilities

5.6 Study limitations and mitigations

This study had several limitations and methodological constraints. The cross-sectional nature of the design limits the ability to draw conclusions about causation for the identified factors. Also the reliance on self-reported data introduces risks of recall bias, social desirability bias, and inaccurate reporting as participants may misremember details or adjust their responses to align with perceived expectations or social norms, however to mitigate these concerns, patients were encouraged to provide honest responses, assured of the anonymity of their feedback, and informed that participation would not impact their care. Additionally, administering the survey immediately after recovering from the procedure may have influenced responses, as perceptions of satisfaction can evolve over time, influenced by recovery process and subsequent interactions with healthcare providers, to mitigate this patients were provided with sufficient recovery time and clear instructions to reflect on their entire experience. Finally, the survey's limited scope may have overlooked important factors such as health literacy, cultural beliefs, comprehensive medical history, and other satisfaction domains which could offer deeper insights into satisfaction levels.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study provides valuable insights into patient satisfaction with GI endoscopy services at Muhimbili National Hospital, as patients are generally satisfied with the provision of endoscopy services. Notably occupational and economic status emerged as the only social-demographic factors influencing patients' satisfaction, while the type of endoscopy procedure was identified as a critical procedure-related predictor of satisfaction. Additionally patients' health status was found to significantly impact their satisfaction with the gastrointestinal endoscopy services. These findings highlight the important role that patient's characteristics and procedure-related factors play in determining satisfaction outcomes. Hence addressing these factors is essential for improving the quality of endoscopy services and enhancing overall patient experiences.

6.2 Recommendations

1. The endoscopy unit should maintain its high standard of care to uphold patient satisfaction with endoscopy services.
2. The endoscopy unit should develop standardized communication protocol, providing clear pre-procedure guides and detailed post-procedure instructions for patients.
3. Future research should use longitudinal studies to track changes in patient satisfaction over time and understand the long-term impact of endoscopy services on patient outcomes..
4. Future research should develop comprehensive surveys including variables like health literacy, cultural beliefs, medical history, psychological well-being, and post-procedure recovery to better understand patient satisfaction factors.

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APPENDICES

Appendix I:Informed consent form - English

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES.

DIRECTORATE OF RESEARCH AND PUBLICATIONS.

INFORMED-CONSENT FORM

IDENTIFICATION NUMBER _____

Salutation.

My name is _____ working for the school of public health and social sciences at Muhimbili University of Health and Allied Sciences in Dar Es Salaam.

The Aim of the research/study:Dear responder, its my pleasure to notify you, this is the research study with a title "Patients' satisfaction and associated factors on Gastrointestinal endoscopy services at Muhimbili National Hospital Dar es salaam - Tanzania."

This study aims to evaluate patients' satisfaction on gastrointestinal endoscopy services provided at GI endoscopy unit of Muhimbili National Hospital. Please be truthfuly and honest for the good findings which would bring best interventions and constractive recommendations on services improvement.

The confidentiality:To the best of our abilities, we will keep and handle every detail you provide with extreme discretion. We won't be including your name within the questionnaire or other records/materials which may allow someone to recognize you. Your personal information are not going to be linked with the study data at all.

Investigator will be incharge of collecting information. But the final outcome of research will be disseminated to relevant stakeholders and publications.

Rights and withdrawal options; Your involvement in the study is entirely voluntary, regardless of wheather you have consented for involvement in this research endeavour you can withdraw your permission at any time. Wheather you choose to participate or not will have no impact your entlement to receive treatments at the institution. And your unwillingness to engage in this research will not result to any loss.

Benefits;This study will seek to help hospital administration identify potential for improving endoscopy unit services. Envisioned chances for improvement will result in safeguarding and corrective measures.

The study's findings will aid in evaluating patients' satisfaction with services given at the endoscopy unit, as well as identifying major constraints in service delivery to advise improvement initiatives.

The obtained results will be communicated with the administration of the hospital as well as appropriate stakeholders, fulfilling an ongoing obligation of continous enhancement approach.

Risks;No risk of taking part in the study. However, if you become uncomfortable throughout the discussion, you may withdraw as a respondent at any point.

Contact Person: Whenever you're having querries concerning this research project, reach out to the principal investigator,(Kija Luhuti Mobile#: 0658210854) of Muhas-Dar es salaam

When you're having concern regarding your participating rights, kindly contact supervisors, Prof. Elia Mmbaga via Mob#: 0785900101 or Dr. Mangi Ezekiel Via Mob#: 0713788811 of Muhas-Dar es salaam.

Declaration:

I read or have been explained by the investigator and have comprehended all the documented information, and all of my querries were responded accordingly.

☐ Agreed to participate ☐ Denied to participate

The preceeding texts describes advantages, hazards and processes for the study named "Patients' satisfaction and associated factors on Gastrointestinal endoscopy-services at Muhimbili National Hospital Dar es salaam- Tanzania." I declare that I was informed of the nature and the aim of this study as well as pontential advantages and risks involved with my participation

Signature of respondent _____ Date _____

Signature of researcher _____ Date _____

Appendix II:Informed consent form - Swahili

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

SHULE YA AFYA YA UMMA NA SAYANSI ZA JAMII

IDARA YA TAFITI NA MACHAPISHO

FOMU YA RIDHAA

NAMBA YA UTAMBULIHO: ……

Salamu,

Kwa jina ni ……ninafanyakazi katika shule ya afya ya umma na sayansi za kijamii iliyopo Chuo kikuu cha afya na sayansi shirikishi Muhimbili – Dar es salaam

Lengo la tafiti:Mpendwa mhojiwa nafurahi kukufahamisha kwamba huu ni utafiti unaoitwa "Kuridhika kwa Wagonjwa na Mambo yanayohusiana na Huduma za Endoscopy za mfumo wa chakula katika Hospitali ya Taifa Muhimbili iliyopo Dar es salaam, Tanzania."

Huu utafiti umedhamiria kutathmini kuridhika kwa wagonjwa na huduma zinazotolewa na kitengo cha endoscopy katika Hospitali ya taifa ya Muhimbili. Tafadhali kuwa mwaminifu na mkweli kwa matokeo mazuri ambayo yanaweza kupelekea mapendekezo na kuboresha huduma kwa siku zijazo.

Ulinzi wa faragha Tutalinda na kushughulikia habari utakazotoa kwa usiri mkubwa kulingana na maarifa yetu yote. Hatutaandika jina la kwako katika dodoso ama kwenye nyaraka iwayo yote itakayopelekea kugundulika kwa ushiriki wako katika utfiti huu. Jina lako halitahusishwa na habari ya utafiti huu kwa njia yoyote.

Mtafiti atachukua hatua stahiki kuhakikisha usalama wa habari zitakazokusanywa. Lakini matokeo ya jumla ya utafiti yatasambazwa kwa wadau wanaohusika na kwenye machapisho ya kitaaluma.

Haki Pamoja na kujiondoa: Kushiriki kwako ni hiari kabisa. Una uhuru wa kukataa kushiriki wakati wowote ule haijarishi ulikubali kushiriki hapo awali. Uchaguzi wako wa kushiriki au laa haukuondolei haki yako ya msingi ya kupata matibabu katika taasisi. Na hautapatwa na hasara ya iwayo yote kwa kutoshiriki katika tafiti hii.

Manufaa: Utafiti huu utajaribu kuwezesha uongozi wa hospitali kutambua fursa za kuboresha huduma zinazotolewa katika kitengo cha endoscopy. Fursa zilizotarajiwa za kuboresha huduma zitapelekea hatua za ziada kuchukuliwa kwa lengo la kurekebisha na kuboresha zaidi

Matokeo ya utafiti yatasaidia kuelewa kuridhika kwa wagonjwa na huduma zinazotolewa katika kitengo cha endoscopy pamoja na kutambua vizuizi vikubwa katika utoaji wa huduma ili kuwezesha mikakati ya kuboresha.

Matokeo yaliyopatikana yatawekwa wazi kwa uongozi wa hospitali na wadau husika ambao wataidhinisha ahadi za muda mrefu kwa mchakato wa kuboresha ulioendelevu.

Madhara: Hautadhurika kwa namna yoyote ile kwa ushiriki wako katiki huu utafiti. Pia una uhuru kamili wa kutoendelea na mahojiano muda wowote ule wakati wa mazungumzo ikiwa utajisikia kutofurahishwa

Mawasiliano: Endapo unalolote la kuuliza kuhusiana na utafiti huu wasiliana na mtafiti mkuu, (Kija Luhuti Simu: 0658210854) wa MUHAS, Dar es Salaam.

Endapo utakuwa na jambo lolote la kuulizia kuhusiana na hazi zako wakati wa kushiriki wasiliana na wasimamizi wafuatao;Prof. Elia Mmbaga kupitia Simu: 0785900101 au Dkt. Mangi Ezekiel kupitia simu : 0713788811 wa MUHAS, Dar Es Salaam.

Tamko: Nimeisoma au nimesomewa na mtafiti na kuelewa maudhui ya fomu hii. Maswali yangu yote yamejibiwa.

☐ Amekubali kushiriki ☐ Amekataa kushiriki

Andiko hili linayoelezea faida, athari, na taratibu za utafiti unaoitwa "Kuridhika kwa Wagonjwa na Mambo yanayohusiana na Huduma za Endoscopy Hospitali ya Taifa ya Muhimbili Dar es Salaam, Tanzania." Ninathibitisha kwamba lengo, faida, na athari zinazohusiana na ushiriki kwenye huu utafiti zimenielezwa.

Saini ya mshiriki _____ Tarehe _____

Saini ya Mtafiti _____ Tarehe _____

Appendix III: Questionnaire_English version

PATIENTS' SATISFACTION AND ASSOCIATED FACTORS ON GASTROINTESTINAL ENDOSCOPY SERVICES AT MUHIMBILI NATIONAL HOSPITAL IN DAR ES SALAAM, TANZANIA.

Please take a few moments to complete the patient satisfaction survey. Your responses will help to improve endoscopy services at Muhimbili National Hospital.
Please know that this questionnaire is not meant to test you, but to get an indication of performance of the endoscopy unit from your perspective.

SECTION 1. SOCIO-DEMOGRAPHIC CHARACTERISTICS		
Date _____/_____/_____		
01	Sex	Male ☐ Female ☐
02	What is your date of birth?	☐☐ ☐☐ ☐☐☐☐ Day Month Year
03	What is the highest level of education you have completed?	None ☐ Incomplete primary ☐ Primary ☐ Secondary ☐ Technical college/University ☐
04	What is your current occupation?	Employed ☐ Self-employed ☐ Unemployed ☐ Retired ☐ Others (specify)……..
05	What is your current Marital status?	Married/cohabiting ☐ Divorced/Separated ☐ Widowed. ☐ Single/Never married ☐
06	Provide details of your permanent residence.	Region …… District …….. Village/street……..

SECTION 2.ECONOMIC STATUS		
07	What is the main source of drinking water in your household?	Piped water ☐ Water from open well ☐ Covered well ☐ Bore hole ☐ Surface water ☐ Rain water ☐ Tanker truck. ☐ Bottled water. ☐
08	What type of toilet facility does your household have?	Flush toilet ☐ Improved pit toilet/latrine with slab ☐ Open pit ☐ Bush/field. ☐ Bucket ☐ No toilet. ☐
09	Does your household have/own?	Yes No Electricity ☐ ☐ Paraffin lamp ☐ ☐ A television ☐ ☐ A radio ☐ ☐ Mobile phone ☐ ☐ An iron ☐ ☐ Refrigerator ☐ ☐ Bicycle ☐ ☐ Motor cycle ☐ ☐ Car (motorcar)☐ ☐ A farm ☐ ☐
10	What type of fuel does your household mainly use for cooking?	Electricity ☐ Gas ☐ Kerosene ☐ Charcoal ☐ Firewood ☐ Animal dung ☐
11	What are the total number of sleeping rooms within your household?	0 to 1 sleeping room ☐ Two sleeping rooms. ☐ Three or more sleeping rooms ☐
12	Do you have a health insurance that cover for your medical treatment?	Yes ☐ Specify …… No ☐

SECTION 3: PERCEPTION ON THE QUALITY OF SERVICES AND PATIENTS' SATISFACTION

13	Which type of GI endoscopy procedure did you undergo?	Esophagogastroduodenoscopy (EGD) ☐ Colonoscopy ☐ Sigmoidoscopy ☐ Esophageal Banding ☐ Esophageal dilatation. ☐ Polypectomy. ☐ Foreign body removal ☐ Others (specify) ……...
14	What was the indication of endoscopy procedure you have undergone?	
15	Have you undergone an endoscopy procedure before.?	Yes ☐ No. ☐
SECTION 3A: BEFORE THE PROCEDURE **In this section you have to choose one answer according to your perception in the service you have received, the answer can be: poor, average, good, very good or Excellent.**		
16	On a scale from poor to excellent how do you perceive the clarity of information you received in preparation for the test/procedure?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
17	On a scale from poor to excellent, how clear was the information you received about the risks of the procedure and why it was recommended to you?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
18	On a scale from poor to excellent, how would you rate the waiting time for your endoscopy procedure? (Please consider the time you spent in the waiting area before the exam.	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
19	On a scale from poor to excellent, how would you rate the time it took for you to schedule	Poor ☐

	an appointment for your endoscopy procedure? *(This refers to the duration from when your doctor prescribed the test to when you were able to secure the appointment.)*	Average ☐ Good ☐ Very Good ☐ Excellent ☐
20	On a scale from poor to excellent, how do you perceive the comfortability of the waiting area/place?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
.21	On a scale from poor to excellent How would you rate the courtesy and behavior of the staffs at the reception?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
22	On a scale from poor to excellent How do you perceive your health status at the moment.?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
SECTION3B: DURING THE PROCEDURE **In this section you have to choose one answer according to your perception in the service you have received, the answer can be: poor, average, good, very good or Excellent.**		
23	On a scale from poor to excellent, how would you rate the attitude of the endoscopy staff in addressing your questions and concerns before the procedure?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
24	On a scale from poor to excellent, how would you rate the completeness of the information provided to you, on what you might experience during the examination (*like sensations, discomfort, pain etc.*)?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
25	On a scale from poor to excellent, how would you rate the technical skills of the endoscopist who performed your endoscopy procedure?	Poor ☐ Average ☐ Good ☐

		Very Good ☐ Excellent ☐
26	On a scale from poor to excellent, how would you rate the efficiency of the methods used to increase comfort and reduce pain during the examination?	Poor ☐ Excellent ☐ Average ☐ Good ☐ Very Good ☐
27	On a scale from poor to excellent, how do you rate the level of privacy for patient in the procedure room?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
28	On a scale from poor to excellent, how do you perceive the courtesy and behavior *(friendliness, professionalism, and helpfulness)* of the staffs in the endoscopy procedure room?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
SECTION3C: AFTER THE PROCEDURE **In this section you have to choose one answer according to your perception in the service you have received, the answer can be: poor, average, good, very good or Excellent.**		
29	On a scale from poor to excellent, how would you rate the comfort and privacy for patients in the recovery room after their procedure?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
30	On a scale from poor to excellent, how would you rate the timing and clarity of the Information on the outcome of the test/procedure?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
31	On a scale from poor to excellent, how do you perceive the Completeness of the information provided after the procedure regarding how you might feel once at home and what you may need to do if there is an	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐

	emergency *(telephone contact to call in case of emergency)*?	
32	On a scale from poor to excellent, how do you view the cleanliness of endoscopy unit *(waiting area, procedure room and recovery room)* in general?	Poor ☐ Average ☐ Good ☐ Very Good ☐ Excellent ☐
33	Reflecting on the time before undergoing your endoscopy procedure, how would you rate your overall level of anxiety?	No anxiety ☐ Low ☐ Moderate ☐ High ☐ Very High ☐
SECTION 4: GENERAL ASSESSMENT **In this section you have to choose one answer according to your general perception in the service you have received, the answer can be: Yes or No**		
34	I was satisfied with the endoscopy services (**attention, care, services**) provided by the endoscopy unit staffs	Yes ☐ NO ☐
35	If in the future I had to do an endoscopy again, I would do it in this facility.	Yes ☐ NO ☐

Thank you for your participation.

Appendix IV: Swahili Questionnaire

MAONI YA WAGONJWA KUHUSU HUDUMA ZA UPIMAJI WA MFUMO WA CHAKULA KWA KUTUMIA KAMERA (GASTROINTESTINAL ENDOSCOPY) KATIKA HOSPITALI YA TAIFA YA MUHIMBILI, DAR ES SALAAM, TANZANIA.

Tafadhali tumia dakika chache kujaza dodoso hili la kuridhika kwa mgonjwa na huduma. Majibu yako yatasaidia kuboresha huduma za upimaji wa mfumo wa chakula kwa kutumia kamera katika Hospitali ya Taifa ya Muhimbili. Tafadhali tambua kuwa hii njia ya kukupima wewe, bali ni kupata maoni yako kuhusu utendaji wa kitengo cha upimaji wa mfumo wa chakula kwa njia ya kamera.

SEHEMU YA 1. **TAARIFA ZA KIJAMII-DEMOGRAFIA**		
Tarehe _____/_____/_____		
01	Jinsi	Mwanaume ☐ Mwanamke ☐
02	Tarehe yako ya kuzaliwa ni lini?	☐☐ ☐☐ ☐☐☐☐ siku Mwezi Mwaka
03	Kiwango kipi cha elimu ulichofikia?	Sikusoma ☐ Sikumaliza elimu ya msingi ☐ Elimu ya msingi ☐ Elimu ya Sekondari ☐ Chuo cha kati/Ufundi ☐. Chuo kikuu ☐ Nyingine: (Taja)……
04	Je ni shughuri unayofanya kwasasa kukuingizia kipato? ***(kama wewe ni mkulima chagua nimejiajiri)***	Nimeajiriwa ☐ Nimejiajiri ☐ Sijaajiriwa/sijajiajiri ☐ Nimestaafu ☐ Nyingine: (Taja) ……
05	Hali yako ya ndoa ya sasa ni ipi?	Oa/Olewa/Ishi Pamoja ☐ Talaka/Achana ☐ Mjane. ☐ Sijawahi olewa/Oa/Ishi pamoja ☐
06	Toa maelezo ya makazi yako ya kudumu.	Mkoa …… Wilaya …….. Kijiji/Mtaa……..

SEHEMU YA 2. TAARIFA ZA KIUCHUMI		
07	Ni nini chanzo kikuu cha maji ya kunywa katika kaya yako?	Maji ya bomba ☐ Maji ya kisima cha wazi ☐ Maji ya kisima kilichofunikwa ☐ Shimo la kuchimba ☐ Maji ya juu ya ardhi ☐ Maji ya mvua ☐ Maji ya tanki la gari ☐ Maji ya chupa ☐
08	Mnatumia choo cha aina gani nyumbani?	Choo cha ndani cha kusukuma na maji ☐ Choo cha nje cha kusukuma na maji☐ Choo cha shimo ☐ Porini. ☐ Ndoo ☐ Hakuna choo. ☐
09	Nyumbani mnavyo vifaa vifuatavyo.?	Ndio Hapana Umeme ☐ ☐ Taa ya mafuta ☐ ☐ Runinga ☐ ☐ Redio ☐ ☐ Simu ☐ ☐ Pasi ☐ ☐ Friji ☐ ☐ Basikeli ☐ ☐ pikipiki ☐ ☐ Gari ☐ ☐ Shamba ☐ ☐
10	Mnatumia nishati gani kupikia nyumbani?	Umeme ☐ Gesi ☐ Mafuta ya taa ☐ Mkaa ☐ Kuni ☐ Kinyesi cha Wanyama ☐
11	Kuna vyumba vingapi vya kulala katika kaya yako?	0 mpaka 1 ☐ Viwili ☐ Vitatu au zaidi ☐
12	Una bima ya afya kwa ajili ya kulipia matibabu yako?	Ndio ☐ Taja …… Hapana ☐

SEHEMU YA 3: MTAZAMO JUU YA UBORA WA HUDUMA NA KURIDHIKA KWA WAGONJWA

Sehemu hii ina maswali yaliyolenga kutathmini kuridhika kwa wagonjwa na huduma zinazotolewa katika kitengo cha upimaji wa mfumo wa chakula kwa kutumia kamera (endoscopy), ikijumuisha vipengele vya kabla ya kipimo, wakati wa kipimo, na baada ya kipimo. Jisikie huru kutoa maoni yako kulingana na huduma ulizopokea.

13	Ni kipimo gani cha endoscopy ulichofanyiwa	Upimaji wa umio, tumbo, na duodenumu (OGD) ☐ Upimaji wa utumbo mpana(colonoscopy) ☐ Upimaji wa Sigmoid ☐ Esophageal Banding ☐ Kutanuliwa umio.(Dilatation) ☐ Polypectomy. ☐ Kuondoa kitu kigeni ☐ Nyingine (taja) ……...
14	Ni dalili gani ulizokuwanazo zilizosababisha ufanyiwe kipimo cha endoscopy	
15	Je, umewahi kufanyiwa kipimo cha endoscopy hapo awali? ***(yaani kabla ya siku ya leo?)***	Ndio ☐ Hapana ☐
SEHEMU YA 3A: KABLA YA KIPIMO **Katika sehemu hii unatakiwa kuchagua jibu moja kulingana na mtazamo wako katika huduma uliyopatiwa au kupokea, jibu linaweza kuwa: mbaya, wastani, nzuri, nzuri sana au bora sana.**		
16	Kwa kiwango cha kutoka **mbaya** hadi **bora sana**, Je, unaonaje uwazi wa maelezo uliyopokea kuhusu maandalizi ya kipimo?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
17	Kwa kiwango cha kutoka **mbaya** hadi **bora sana**, Je unaonaje uwazi wa maelezo uliyopokea kuhusu (hatari) athari za kipimo na sababu za kwanini kilipendekezwa kwako?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
18	Kwa kiwango cha kutoka **mbaya** hadi **bora sana**, Kwa jinsi gani ungeelezea muda wa kusubiria kipimo cha endoscopy? (***Tafadhali chukulia muda uliotumia kukaa katika eneo la kusubiria kipimo kabla ya kipimo kufanyika. Kama ulisubiri kwa muda mrefu sana waweza chagua Mbaya na kama urisubiri kwa muda mfupi sana waweza chagua Bora sana, chagua moja kati ya hayo majibu matano*).**	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐

19	Kwa kiwango cha kutoka **mbaya** hadi **bora sana**, kwa jinsi gani ungeelezea muda uliotumia kupata miadi ya kipimo cha endoscopy ***(Hii inahusu muda tangu daktari wako alipotoa maagizo ya kipimo hadi wakati ulipoweza kupangiwa tarehe ya kuja kufanyiwa kipimo.)***	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
20	Kwa kiwango cha kutoka **mbaya** hadi **bora sana** Je, unaonaje ubora na utulivu wa eneo/mahali pa kusubiria huduma?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
21	Kwa kiwango cha kutoka **mbaya** hadi **bora sana** Je, unaonaje adabu na tabia ya wafanyakazi wa mapokezi?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
22	Kwa kiwango cha kutoka **mbaya** hadi **bora sana**, Je, unaionaje hali ya afya yako kwa sasa.?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
SEHEMU YA 3B: WAKATI WA KIPIMO **Katika sehemu hii unatakiwa kuchagua jibu moja kulingana na mtazamo wako katika huduma uliyopatiwa au kupokea, jibu linaweza kuwa: mbaya, wastani, nzuri, nzuri sana au bora sana**		
23	Kwa kiwango cha kutoka **mbaya** hadi **bora sana**, Je, unaonaje mtazamo wa wafanyikazi wa endoscopy katika kujibu maswali yako na kushughurika na wasiwasi wako kabla ya kufanyiwa kipimo	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐

24	Kwa kiwango cha kutoka mbaya hadi bora sana, Je, unaonaje utimilifu wa maelezo yaliyotolewa kuhusu kile unachoweza kupata au kukupitia wakati wa uchunguzi/kipimo (kama vile hisia mbaya, usumbufu, maumivu n.k.)? ***(kama hukupatiwa maelezo yoyote chagua Mbaya)***	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
25	Kwa kuchagua kutoka **mbaya** hadi **bora sana**, unawezaje kuelezea ujuzi wa kiufundi wa daktari(endoscopist) aliyekufanyia kipimo wakati wa kipimo?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
26	Kwa kuchagua kati ya **mbaya** hadi **bora sana** Unaweza kuelezeaje ufanisi wa njia zinazotumika kuongeza faraja na kupunguza maumivu wakati wa uchunguzi/kipimo?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐

27	Kwa kuchagua kati ya **mbaya** hadi **bora sana**, Unaweza kuelezeaje hali ya faragha kwa mgonjwa katika chumba cha kufanyia kipimo/uchunguzi?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐

28	Kwa kuchagua kati ya **mbaya** hadi **bora sana**, Je, unaonaje adabu na tabia ya wafanyakazi kwa wagonjwa katika chumba cha uchunguzi/kipimo?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
SEHEMU YA 3C: BAADA YA KIPIMO **Katika sehemu hii unatakiwa kuchagua jibu moja kulingana na mtazamo wako katika huduma uliyopatiwa au kupokea, jibu linaweza kuwa: mbaya, wastani, nzuri, nzuri sana au bora sana.**		
29	Kwa kuchagua kati ya **mbaya** hadi **bora sana** unaweza kuelezeaje hali ya faraja na ufaragha kwa mgonjwa katika chumba cha mapumziko baada ya kufanyiwa kipimo?	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
30	Kwa kuchagua kati ya **mbaya** hadi **bora sana**, Unaweza kuelezeaje hali ya kupewa majibu yako kwa wakati na uwazi wa taarifa kuhusu matokeo ya uchunguzi/kipimo ulichofanya?***(kama hujapewa majibu yako au umechelewa sana kupewa majibu yako baada ya kipimo, na haujaeleweshwa vizuri waweza kuchagua Mbaya, ikiwa umepewa majibu mara tu baada ya kumaliza kipimo na umeeleweshwa vizuri waweza chagua Bora sana)***	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐

31	Kwa kiwango cha kutoka **mbaya** hadi **bora sana**, Je, unaonaje utimilifu wa maelezo uliyopatiwa baada ya kipimo kuhusu jinsi unavyoweza kujisikia ukiwa nyumbani na kile unachoweza kuhitaji kufanya ikiwa umepata dharura-kama vile mawasiliano ya simu ukipata dharura? ***(Ikiwa hujapewa maelezo yoyote ya ziada baada ya kipimo waweza chagua Mbaya, ila ukiwa umepewa maelezo yaliyojitosheleza na namba ya simu kuwasiliana wakati ukipata dharura ya kiafya waweza chagua Bora sana)***	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐

32	Kwa kuchagua kati ya **mbaya** hadi **bora sana** Unaweza kuelezeaje hali ya usafi kwa ujumla katika kitengo cha endoscopy? ***(Hii inajumuisha sehemu ya kusubiri huduma, chumba cha kufanyia kipimo, chumba cha mapumziko baada ya kipimo Pamoja na vyoo)***	Mbaya ☐ Wastani ☐ Nzuri ☐ Nzuri sana ☐ Bora sana ☐
33	Ukitafakari juu ya muda kabla ya kufanyiwa kipimo cha endoscopy,	Sikuwa na wasiwasi ☐ Wasiwasi kidogo sana ☐

	kadiria kiwango chako cha jumla cha wasiwasi ulichokuwanacho? (***kati ya sikuwa na wasiwasi hadi wasiwasi-zaidi/kupitiliza***)	Wasiwasi wa kawaida ☐ Wasiwasi sana ☐ Wasiwasi Zaidi/kupitiliza ☐
SEHEMU YA 4: TATHMINI YA JUMLA **Katika sehemu hii unatakiwa kuchagua jibu moja kulingana na mtazamo wako wa jumla kuhusu huduma uliyopatiwa au kupokea katika kitengo cha endoscopy jibu linaweza kuwa Ndio au Hapana.**		
34	Nimeridhika na huduma za endoscopy *(umakini, huduma ,mazingira)* zilizotolewa na wafanyakazi wa kitengo cha endoscopy	Ndio ☐ Hapana ☐
35	Endapo katika siku zijazo nitalazimika kufanya endoscopy tena, nitafanya hivyo katika kituo hiki	Ndio ☐ Hapana ☐

ASANTE KWA USHIRIKI WAKO

Appendix V:Ethical Clearance

UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATION

Ref. No.DA.282/298/01.C/2137 Date: 08/04/2024

MUHAS-REC-04-2024-2137
Kija Luhuti
School of Public Health and Social Sciences
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: PATIENTS' SATISFACTION AND ASSOCIATED FACTORS ON GASTROINTESTINAL ENDOSCOPY SERVICES AT MUHIMBILI NATIONAL HOSPITAL IN DAR ES SALAAM, TANZANIA

Reference is made to the above heading,

I am pleased to inform you that the Chairman has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 02/04/2024
EXPIRATION DATE OF APPROVAL: 02/04/2025

STUDY DESCRIPTION:
Purpose:

The purpose of this cross-sectional study is to determine the level of and factors influencing patient's satisfaction with endoscopy services at GI endoscopy unit of the Muhimbili National Hospital

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2015363.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain Data Transfer Agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain Material Transfer Agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country.
8. Apply for and obtain permission to publish the results from National Institute for Medical Research. The application should be before submitting to a publisher and not concurrently through the email publications@nimr.or.tz.
9. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.

8th April 2024

Dr. Kasusu Nyamuryekung'e.

Chairperson, MUHAS Research and Ethics Committee



Appendix VI: Introduction Letter

UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR – POSTGRADUATE STUDIES

In reply quote;
Ref. No. HD/MUH/T.753/2022 08th April, 2024

The Executive Director,
Muhimbili National Hospital,
P.O. Box 65000,
DAR ES SALAAM

Re: INTRODUCTION LETTER

We would like to inform you that the bearer of this letter is **Kija Luhuti** with Reg. No. **HD/MUH/T.753/2022** is a student at Muhimbili University of Health and Allied Sciences (MUHAS) "pursuing MPH-Executive Track.

As part of his studies, he will be doing an elective research titled: **"Patients' Satisfaction and Associated Factors on Gastrointestinal Endoscopy Services at Muhimbili National Hospital in Dar es Salaam, Tanzania."** he is being supervised by Dr. Elia J. Mmbaga from MUHAS and Dr. Yona Ringo from MNH.

The research has been approved by the Chairman of University Senate.

Kindly provide him the necessary assistance to facilitate the conduct of his research.

We thank you for your cooperation.

Mr. Sebe Mohamed
For: DIRECTOR, POSTGRADUATE STUDIES

c.c **Kija Luhuti**

9 United Nations Road; Upanga West; P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1015; Direct Line:+255-22-2151378;Telefax:+255-22-2150465;E-mail:dpgs@muhas.ac.tz;Web:https://www.muhas.ac.tz

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Appendix VII: Permission Letter

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH

MUHIMBILI NATIONAL HOSPITAL

In reply please quote;

Ref. No.: MNH/CRTCU/Perm/2024/167 Date: 15th April, 2024

Head of Department,
Internal Medicine
Muhimbili National Hospital

RE: PERMISSION TO COLLECT DATA AT MNH

Name Student	**Kija Luhuti**	
Title	**"Patient satisfaction and Associated Factors on Gastrointestinal Endoscopy Service at Muhimbili National Hospital in Dar es salaam Tanzania".**	
Institution	Muhimbili University of Health and Allied Sciences	
Supervisor	Pof. Elia John Mmbaga (MUHAS)	
Co – supervisor	Dr. Yona Ringo (MNH) Dr. Mangi J. Ezekiel	
Period	15th April, 2024 to 30th June, 2024	

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. Yona Ringo** (MNH) supervisor.

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

Sincerely,

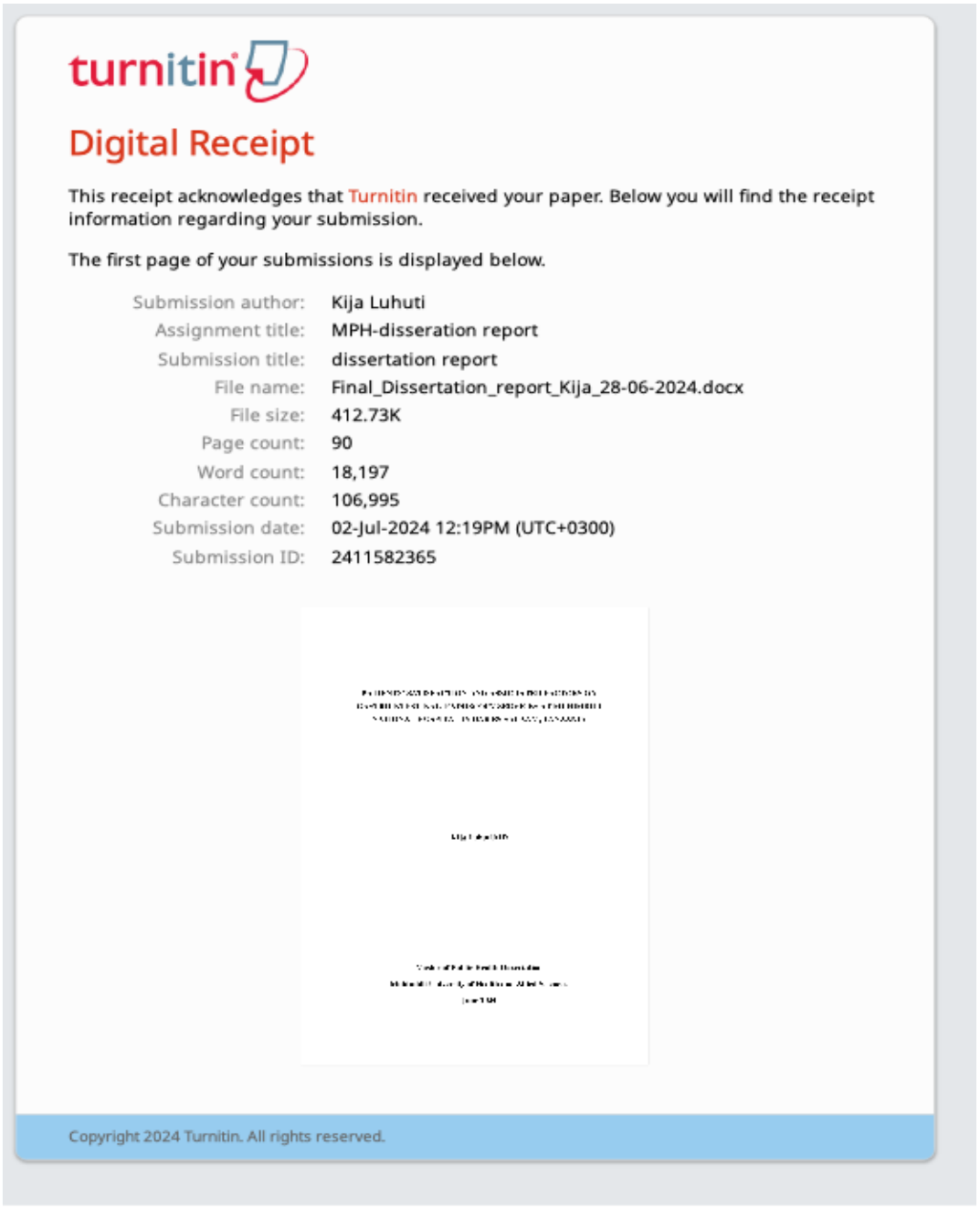
Dr. Charles K. Hallangya
For: Head of Clinical research, Training and Consultancy Unit

c.c DMS,
c.c Dr. Yona Ringo
c.c **Kija Luhuti**

Upanga West, Kalenga Street, Plot No. 10480/3, P.O. BOX 65000, Dar es Salaam, Tanzania.
Telephone: +255-22-2151367-9, Telephone: +255-22-2151351-2
Email: info@mnh.or.tz, Website: www.mnh.or.tz

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Appendix VIII: Turnitin Digital receipt



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Digital Receipt

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Appendix IX: Similarities report

