NEAR EAST UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF NURSING

PREOPERATIVE AND POSTOPERATIVE FASTING DURATIONS, AND ITS ASSOCIATION WITH DISCOMFORT AMONG THE SURGICAL PATIENTS

M.Sc. THESIS

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Approval

We certify that we have read the thesis submitted by Oluwatomiwa Grace Adebowale titled **"Preoperative and postoperative fasting durations, and its association with discomfort among the surgical patients**" and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Educational Sciences.

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Declaration

I hereby declare that all information, documents, analysis and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

Oluwatomiwa Grace Adebowale

19/01/2022

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This research would not have been possible without the support of almighty God. I would like to express my appreciation to my supervisor (Prof. Dr. Nurhan Bayraktar), who showed a sincere interest in my success through unwavering patience, support and guidance. Special thanks goes to my love (Dr. Opeoluwa Adisa Oluyemi) and my family for their constant support and prayers.

Oluwatomiwa Grace Adebowale

Özet

Cerrahi Hastalarında Ameliyat Öncesi ve Ameliyat Sonrası Açlık Süreleri ve Rahatsızlıkla İlişkisi

Öğrencinin Adı: Oluwatomiwa Grace Adebowale

Danışman: Prof. Dr. Nurhan Bayraktar

Anabilim Dalı: Hemşirelik (Cerrahi Hemşireliği)

Amaç: Bu çalışmanın amacı cerrahi hastalarında ameliyat öncesi ve sonrası açlık sürelerini ve bunun rahatsızlık ile ilişkisini belirlemektir.

Gereç ve Yöntem: Bu tanımlayıcı kesitsel çalışma Amuloko Şehir Hastanesinde Ağustos-Kasım 2021 tarihleri arasında gerçekleştirildi. Bu çalışmaya toplam 64 hasta dahil edildi. Çalışmada kullanılan anket, American Society of Anesthesiology (ASA) ve Enhanced Recovery After Surgery (ERAS) perioperatif açlık süresi protokolleri kılavuzlarına dayalı olarak geliştirildi. Verilerin analizinde tanımlayıcı istatistikler, Spearman korelasyonu ve Çapraz tablolar kullanıldı.

Bulgular: Çalışmanın sonuçları, ameliyat öncesi minimum, maksimum ve ortalama açlık saatlerinin sırasıyla 8, 13 ve 10,78 olduğunu gösterdi. Postoperatif sıvı açlığı için minimum, maksimum ve ortalama açlık saatleri sırasıyla 4, 24 ve 10.88 iken, postoperatif yemek için sırasıyla 4, 24 ve 13.16 idi. Hastaların ameliyat öncesi yüksek yoğunlukta yaşadıkları başlıca rahatsızlıklar susuzluk (Hafif=%53,1, Orta=%20,3) ve açlık (Hafif=%46,9, Orta=%7,8) olarak belirlendi. Ameliyat sonrası dönemde, susuzluk (Şiddetli=%42,2, Orta=%39,1) ve açlık (Şiddetli=%40,6, Orta=43,8) şiddetinde artış vardı. Ameliyattan sonra diğer rahatsızlık türlerinde de (Baş ağrısı, bulantı ve halsizlik) belirgin bir artış oldu.

Sonuçlar: Çalışmanın sonuçlarına dayanarak, hastanın cerrahi deneyimlerini iyileştirmek için politika geliştirme ve revize edilmiş kılavuzların uygulanması önerildi.

Anahtar kelimeler: Perioperatif açlık, Ameliyat sonrası açlık, Ameliyat öncesi açlık, Ameliyat sonrası beslenme, Hasta rahatsızlığı.

Abstract

Preoperative and Postoperative Fasting Durations, and its Association with Discomfort Among the Surgical Patients

Student's Name: Oluwatomiwa Grace Adebowale

Advisor: Prof. Dr. Nurhan Bayraktar

Department: Nursing (Surgical Nursing)

Objective: The aim of this study is to determine the preoperative and postoperative fasting durations, and its association with discomfort among the surgical patients.

Materials and Methods: This descriptive cross-sectional study was conducted at Amuloko City Hospital between August and November, 2021. A total of 64 patients are included in this study. The questionnaire used in this study was developed based on the American Society of Anesthesiology (ASA) and Enhanced Recovery After Surgery (ERAS) perioperative fasting duration protocols guidelines. Descriptive statistics, Spearman correlation, Cross tabulation and fisher's exact test were used in the analysis of the data.

Results: The result of the study showed that the minimum, maximum, and mean (SD) preoperative fasting hours were 8, 13, and 10.78 (1.67) respectively. The minimum, maximum, and mean fasting hours for postoperative fluid fasting were 4, 24, and 10.88 (6.23) respectively while that of postoperative meal were 4, 24 and 13.16 (8.31) respectively. The major discomforts experienced by patients at higher intensity before surgery were thirst (Mild=53.1%, Moderate=20.3%) and hunger (Mild=46.9%, Moderate=7.8%). During postoperative phase, thirst (Severe=42.2%, Moderate=39.1%) and hunger (Severe=40.6%, Moderate=43.8) the intensity level had increased. There was a noticeable increase in other discomfort types as well (Headache, Nausea, and Weakness) after surgery.

Conclusions: Based on the results of the study, policies development and the implementation of the revised guidelines to improve the patient surgical experiences is recommended.

Key words: Perioperative fasting, Postoperative fasting, Preoperative fasting, Postoperative nutrition, Patient discomfort.

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List of Abbreviations

ASA:	American Society of Anesthesiology
ACH:	Amuloko City Hospital
CS:	Cesarean Section
ED:	Emergency Department
ERAS:	Enhanced Recovery After Surgery
ESPEN:	European Society for Clinical Nutrition and Metabolism
GI:	Gastrointestinal
ISA:	Indian Society of Anesthesiologists
NICE:	National Institute for Health and Care Excellence
NPO:	Nil Per Os
N2O:	Nitrous Oxide
NPO:	Nulla Per Os
ONS:	Oral Nutritional Supplements
PONV:	Postoperative Nausea and Vomiting
RCN:	Royal College of Nursing
SIGN:	Scottish Intercollegiate Guidelines Network

CHAPTER I

1. Introduction

1.1. Definition of the Problem

Perioperative fasting is a professional preprocedural medical practice that is recommended before surgery to prevent intraoperative (pulmonary) aspiration (Gebremedhn & Nagaratnam, 2014). The prescription of Nulla Per Os (NPO) after midnight became well recognized in 1960s, which is derived from a Latin term meaning "nothing by mouth", this is the time patients are required to prepare for surgery without any solid foods or oral liquids (Cestonaro T et al., 2014). Nulla Per Os is recommended for surgical patients in order to help decrease the volume and also acidity of gastric contents, minimizing the risk for regurgitation or pulmonary aspiration (Tsukamoto M et al., 2017).

Nulla Per Os (NPO) after midnight is the common practice in a lot of healthcare organizations for patients elective surgery even if the surgery was to occur or be rescheduled at a later time in the day, which as a result will increase the fasting hours and might lead to several side effects and complications like hunger, thirst, discomfort, stress, dehydration, hypoglycemia, hypovolemia, mouth dryness, headache, nausea, decreased insulin levels, high glucagon and insulin resistance and also increased incidence of postoperative nausea and vomiting (PONV), postoperative hyperglycemia, muscle wasting, and a weakened immune system (Gul A & Ozkaya B, 2018). Health care professionals tend to starve their patients prior to anesthesia with the aim to reduce or avoid aspiration risk, but over the years there has been lots of evidence questioning the effect of this method towards actually preventing the scared aspiration, rather it was observed that excessive approach to surgery fasting only results to discomforts in patients and also blanket orders which will most definitely increase fasting hours to about 10 hours to 15 hours (Subrahmanyam and Venugopa, 2016). Hunger on the other hand has been linked with anxiety and post-operative complications (Hamid S, 2014). From metabolic point of view, zero protein is absorbed during patient starvation, protein metabolism will

accelerate and also nitrogen imbalance which will all result to an equivalent daily loss of 300 to 400 g of lean mass (De Assis M.C.S et al., 2014). Malnutrition in preoperative phase and postoperative insufficient feeding are known risk factors for postoperative complications including prolonged hospital stay, high rate of infections, and increase in morbidity and weakened physical recovery (Nurkkala J et al., 2021).

Aside preoperative fasting, we also need to query the common practice of starving postoperative patients, which extends for a long period of time even after the anesthesia has come to an end. This practice is not evidence based and there is no medical guidelines suggesting this practice, though it was unquestionable during the early usage of Nitrous Oxide (N2O) anesthesia and ether because of the significant post-operative nausea and vomiting (PONV) but denying a patient food for a long period of time after surgery when the intervention does not require bowel management is not justified (Subrahmanyam and Venugopa, 2016). Replacement of N2O with medical air and the simultaneous usage of intravenous paracetamol, non-steroidal anti-inflammatory drugs instead of opioids has helped with decreasing the prevalence of PONV and gastrointestinal (GI) disorder post-surgery (Subrahmanyam and Venugopa, 2016). Ultrasound and nerve simulator usage during regional anesthesia has made regional anesthesia easier and effective to administer in hospitals where it is utilized, the increase in the use of this technique and decreased usage of opioids or drugs that can affect GI function should allow patients to start eating much earlier than before which will increase patient satisfaction and drastically reduce health care costs (Subrahmanyam and Venugopa, 2016). Prolonged fasting can also cause PONV (Çakar E et al., 2017). PONV can also contribute to delay wound healing caused by weakened immune system and protein depletion (Power et al., 2012).

Today, approach to the preoperative fasting and postoperative starving has been changed. The idea that the stomach needs to be totally empty during anesthesia induction to decrease aspiration risk is now viewed as outdated (De Assis M.C.S et al., 2014). Late 1980s, pediatric anesthesiologists were the initial ones to question overnight pre-surgery fasting practice. They proved that it was safe and also easier to anaesthetize children when allowed to at least drink clear fluids 2-3 hours before their procedure because it minimizes

patient thirst discomfort before the surgery, and this theory was accepted by some countries after more studies carried out approved of this theory (Ljungqvist O, 2004). Also, it was brought to notice that even though NPO after midnight has been the norm for more than one century; a fasted, probably stressed body may not be the ideal metabolic state to perform a surgery (Ljungqvist O, 2004).

The American Society of Anesthesiology (ASA) took the step to liberalize preoperative fasting instructions, advocating for patients to drink clear liquids prior to anesthesia, stating that the implementation of the new preoperative fasting guidelines has not resulted in increased pulmonary aspiration, death rate or even morbidity. Contradictory, it reduced patient's anxiety, thirst, hunger and irritability throughout the perioperative phase (Subrahmanyam and Venugopa, 2016). Several medical institutions already changed their NPO guidelines to fit the reviewed ASA 2017 recommendations since it does not support prolonged fasting, ASA recommendation is the intake of clear liquids (meaning water, carbonated beverages, black coffee, clear tea or juice without pulp) until 2 hours prior the induction of anesthesia, light solid food meal up to 6 hours and heavy/solid food up to 8 hours, but many hospitals still choose to comply with the after midnight fasting, a guideline that was actually written by ASA in early 1960s before it was reviewed later and updated with the liberalized guidelines (Hamid S, 2014). The Royal College of Nursing (RCN) guidelines also states a minimum fasting period of six hours for solid food and two hours for clear fluids, prior to elective anesthesia or sedation in healthy patients (Hamid S, 2014). All these reviewed guidelines also applied to patients with obesity, gastro-esophageal reflux, children, diabetic patients and pregnant women not in labour (Smith I, 2011). The NPO after midnight practice made patients fast for long periods with no regard to the patient's health, condition, work schedules, transport etc. and some hospitals maintained the traditional practice regardless of the reviewed guidelines (Njoroge G et al., 2017).

Enhanced Recovery After Surgery (ERAS) protocols also reviewed their perioperative care protocols and reached a consensus which was documented by Fearon K.C.H et al., 2005, the consensus for preoperative fasting stated that patients should only

be fasted for liquids for 2 h and solids for 6 h preoperatively. ERAS protocols is a fast track and also a multimodal perioperative guidelines developed through evidence based practices to promote quick and quality recovery for patients surgical procedures (Marquini G.V et al., 2020). The consensus for ERAS postoperative fasting stated that antiemetic must be administered selectively and professionally in order to lessen PONV and achieve patients early postoperative feeding, encouraging patients to commence oral feeding 4 hours after surgery is also important. Also, in addition to normal food intake, patients post-surgery nutrition care should include oral nutritional supplements (ONS) starting from the day of operation and malnourished patients are expected to continue with ONS at home (Weimann, A et al, 2021).

The safety of all patients is the first priority of high quality care, but making patients fast for a long period of time for their safety can as well place them at high risk of severe medical complications and longer hospital stays (King C et al, 2016). Nurses' worldwide duty of enforcing fasting rules is done to improve patients' quality care outcomes, safety, comfort, experience and satisfaction (Whiteing, N & Hunter, J. 2008). Team work is required between medical practitioners (surgeons, nurses, anesthesiologists) in order to improve, maintain perioperative protocols and also create more awareness about perioperative fasting and feeding guidelines. It is important for health care workers to get acquainted with the updated perioperative fasting protocols using evidence-based approach (Alison L, 2007).

Determining the gap between recommended and current practices of preoperative and postoperative fasting, preoperative and postoperative fasting durations, and its association with discomfort among the surgical patients in the medical organizations would improve evidences and increase awareness on perioperative fasting protocols. A study on the topic was not found in Nigeria. Therefore, the result of this study will help to shed light on the discomforts associated with perioperative fasting durations in surgical patients in Nigeria.

1.2. Aim of the Study

The aim of this study is to assess preoperative and postoperative fasting durations, and its association with discomfort among the surgical patients.

Study questions are as followings:

- What are the preoperative and postoperative fasting durations among the surgical patients?
- What are the preoperative and postoperative discomfort associated with fasting durations among the surgical patients?

CHAPTER II

2. Background

The traditional method of nil by mouth from 12 am and avoiding oral nutrition completely after surgery has been consistently proven to be excessive and unnecessary by several studies over recent decades.

According to one of the clinical audit done (King, 2009), consisting of one hundred surgical patients from 3 separate clinics, the results showed that perioperative fasting in these hospitals ranges from 6-23 hours for solid food and 2-17 hours for fluids while some patient's surgery was rescheduled, they had to fast for a second night indicating that at this period in time the updated fasting hours was totally ignored. A more recent study conducted by Pimenta & De (2014) shows that absence of fluids for an extended period of time prior to surgical procedures is unfavorable to the patients, and can lead to serious adverse effects in vulnerable people like youngsters and older adults. They put forward that lesser fasting time reduces insulin resistance and the acute phase response experienced after a trauma, inflammation or infection. Additionally, their research indicates that carbohydrate-rich beverages have the possibility to lessen the displeasure felt during and after surgery, and lower the length of hospital stay postoperatively. Concurrently, a research was done by Francisco S.C et al. (2015) to investigate the fasting time in the perioperative period and also record hunger and thirst reports, the result not surprisingly shows that patients fasted hours was higher than the recommended time, patients were allowed to have food only after there is a clinical sign of peristalsis which as a result increases discomfort like stress, hunger and thirst in patients. if overnight fasting is changed to carbohydrate fed state in hospitals, patients will benefit in a lot of ways because patients that are treated with sufficient amount (12.5%) of carbohydrates in their body prior to surgery will experience less discomfort and less postoperative metabolic disturbance (Olle Ljungqvist, 2004). Although more studies are required to establish the claims of Awad S et al. (2013) that carbohydrate drinks enriched with a protein like

glutamine or whey protein are effective in treating surgical patients early. De Assis M.C.S et al. (2014), carried out a cohort research study, to review the correlation between postoperative fasting durations and surgery complications like infection and prolonged hospital stay. They analyzed 521 patients, some patients fasted for ≥ 1 day, some fasted for ≥ 3 days and some for < 5 days, the results revealed that the first group risk for infection increased by 2.04 times, second group infection risk increased by 2.81 times and the last group risk for infection increased by 2.88 times. The risk for long hospitalization was increased by 2.4 times for the first group, 4.44 for the second group and 4.43 for the last group. This result revealed that independently, prolonged post-surgery fasting is a risk factor and can contribute to post surgery complications and emphasize on the benefits of the reviewed protocols that supports short postoperative fasting based on the patient surgery type and nutritional status. Preoperative shortened fasting of liquid intake 2 hours prior anesthesia does not increase perioperative pulmonary complications (Ravanini G A, 2015). Intake of water or clear fluids (tea, coffee, soda water, apple and pulp-free orange juice) up to 2 h before induction of anesthesia does not increase gastric fluid volume or acidity, instead it has good benefits like reduced infection risk, reduced surgery complications, reduces thirst and hunger sensation, diminish PONV, preserve muscle strength, quick hospital discharge, quick recovering of bowel function and also aid positive response to trauma ((Francisco S.C et al., 2015). Patients with any GI obstruction or upper GI tract cancer should be suspected for delayed gastric emptying and patients that has been diagnosed with hiatus hernia are at higher risk of regurgitation, so therefore the medical team must handle them as ‘at risk of regurgitation’ when caring for them and choosing their anesthetic technique. Nevertheless, there is no clear evidence of slower gastric emptying or greater residual gastric volumes in these patients (Søreide E et al., 2007). Eating or drinking before cesarean section (CS) surgery has previously been discouraged. Oral intake of liquid or solid foods were forbidden for 12-24 hours post-surgery, fluids are introduced slowly and food is allowed after flatus is passed or bowel sounds heard. Although, early intake of solid food may cause nausea but there is no evidence justifying oral feeding restriction for uncomplicated CS, recent researches have

proven that intake of clear fluids 30 minutes up to 2 hours after CS does not have any negative effect, instead it makes women require lesser intravenous fluids, it promotes early ambulation and early breast feeding. As a result of this, current evidence promotes early oral fluids after CS because women's body tolerates it very well after their surgery, solid foods needs to be allowed with more cautious (Smith I, 2011).

2.1. Gastric Emptying

It is important to understand the physiology behind gastric emptying, because it has resulted to a substantial increase in the improvement of preoperative fasting practice. Evidence has shown that liquids follow 1st kinectic order while that of solids follow zero kinectics order, which is influenced by the density, volume, pH and osmolality of the gastric fluid and the pressure gradient located in between the stomach and duodenum (Toms A. S & Rai E., 2019).

2.2. Traditional Guideline

The importance of perioperative fasting, especially preoperatively was emphasized by Mendelson's report in 1946, where a study was conducted on 66 cases of pulmonary aspiration, which shows that administration of general anesthesia among 44, 016 pregnant women could lead to danger of increased pulmonary aspiration resulting from the increase in gastric volumes and the decreased pH of stomach contents, this was evident in a paper published by Vaughan and his colleagues as well about obese patients (Crenshaw & Winslow, 2008). Five women aspirate during the study (two died), which was associated with airway obstruction caused by undigested solid food causing Mendelson to suggest that avoidance of oral feeding in the process of getting a surgery done is necessary, as well as emptying stomachs before anesthesia procedures (Salik I & Doherty T.M, 2021). Despite their given prove though, gastric contents differences between lean surgical and obese patients that was cited by Mendelson (1946) and

Vaughan, Bauer & Wise (1975) were not confirmed by following studies and one of the habitual types of failure this nil per oral guidelines is the unnecessary extended fasting periods.

2.3. Traditional Guidelines Limitations

Prolonged preoperative fasting is stated as any unpleasant occurrence possessing the capacity to lead to severe medical complication. The study conducted by Hamid (2014) in Moorfields South PAU showed that clients experienced discomforts and dehydration caused by inappropriate way of overextended fasting time. Therefore, the traditional guidelines have almost been rendered ineffective since various studies have not found link between their application and the pre- and post-operative safety: "Evidence to support ASA initial guidelines for fasting prior to general anesthesia, which have been extrapolated for use in emergency sedation, has minimal scientific support. Indeed, several randomized trials have failed to show any link between non-fasted patients and pulmonary aspiration. Therefore, there is no reason to recommend fasting to patients prior to procedural sedation in the ED" (Thorpe & Benger, 2010, p. 260).

2.4. New Guidelines for Perioperative Fasting Duration

There are revised guidelines such as American Society of Anesthesiology (ASA) and Enhanced Recovery After Surgery (ERAS) perioperative fasting duration protocols that has been recommended by health practitioners to prevent respiration in patients & effectively manage perioperative discomfort due to fasting (ASA, 2017; ERAS – Parks L et al., 2018).

2.4.1. Preoperative Fasting Duration New Guidelines

The revised preoperative recommendation stated that patients should be in a fasted state for 6 to 8 hours while clear fluid consumption could be taken up to 2 hours before the surgery (Aguilar-Nascimento et al., 2014). The RCN perioperative fasting guideline

recommendations stated that drinking of water, clear fluid such as coffee excluding milk and clear tea 2 hours before the induction of anesthesia is safe for healthy patients scheduled for elective surgery and it also enhances their overall well-being, while coffee or tea containing milk should only be allowed 6 hours prior anesthesia induction. In addition, compared to total fasting, the amount of fluids taken does not show any impact on gastric pH or residual volume, proving that patients could consume unlimited volume of recommended fluids up until two hours before surgery. In cases of situations when there was unavoidable delay in an elective operation, in order to reduce dehydration and thirst, it is advisable that patient be given water to drink. ESPEN conducted a study about parenteral nutrition which concluded that with the exception of some patients, others should be allowed to drink fluids based on the revised guidelines, indicating that tested carbohydrate drinks are safe for patients. Additionally, it reduce insulin resistance, protein loss, hyperglycemia post-surgery, anxiety and PONV, lean body mass and muscle function, as well as cardiac protection in cardiac surgery. Patients who are not able to eat or drink for a reason before surgery could be administered a glucose infusion (5mg/kg per min), as it will produce same effects (Braga et al. 2009). ERAS liberalized protocols reported that patients should not be in a fasted state when preparing for theatre, intake of a clear carbohydrate-rich beverage (12.6%) at a dose of 800 ml before midnight and 400 ml 2–3 h before surgery reduces preoperative thirst, hunger and anxiety and significantly reduces postoperative insulin resistance (Fearon K.C.H et al., 2005). Evidence based studies have proven that NPO after midnight will increase patient discomfort, insulin resistance and will also reduce intravascular volume (Parks L et al., 2018).

2.4.2. Postoperative Fasting Duration New Guidelines

It is a common practice by doctors or surgeons to instruct their patients to completely avoid oral food intake after surgery, until their bowel function has returned, especially in abdominal surgery but this could lead to high intensity of discomforts in patients. Indian Society of Anesthesiologists (ISA) revised research on post-surgery fasting recommended that pregnant women that undergo caesarean section under the use

of regional or general anesthesia should be allowed clear liquids orally 8 hours after surgery, while in pediatric section, consumption of oral liquid (clear liquids) should start as should as possible when there are no surgical and medical contraindications (Dongare P.A et al., 2020). However, NICE (2021) guideline on caesarean section recommended that women who are feeling well and have no complications can drink or eat as normal.

Royal College of Nursing (RCN) recommendation for healthy patients undergoing routine, uncomplicated surgery stated that patients should be allowed to drink after surgery when they are ready to do so, as long as there are absence of surgical or medical nursing contraindications. In addition, RCN stated that oral consumption post abdominal or gastrointestinal surgery were not reviewed because they consider it to be the surgical team responsibility while they quoted SIGN guideline No 77 that "oral intake should be commenced as soon as possible after surgery" (Westby M et al., 2005).

2.4.3. Problems Regarding Revised Guidelines

One of the most obvious difficulties associated with the new guidelines is its implementation owing to the fact that most medical practitioners find it easier to prescribe the “nil per os" after midnight because it is simple and requires less time for both patients and workers education compared to the new guidelines (Pimenta & De, 2014). The failure to implement these guidelines is also associated with ignorance on the side of anesthetists. Despite the fact that anesthetists are fully aware of newly set preoperative guidelines, they are still following the strict preoperative NPO beginning from midnight (Salman, Asida & Ali, 2013). They indicate that the national published guidelines are essential for the promotion of shorter durations which are more effective than the previous ones.

2.5. Nurses’ Roles in Perioperative Fasting and Nutrition

The Enhanced Recovery After Surgery (ERAS) protocol provides guidelines that is aiming to improve the management of surgical patients, as well as their satisfaction

level (Horosz B et al. 2016). Surgeons and nurses are oftentimes unwilling to address the management of their surgical patients fasting time, especially when NPO time has been prescribed owing to one of the facts that delays often happen on the day of surgery, or even canceled at times. Consequently, questioning health care provider's commitment to their patient's comforts (Chon T et al. 2017). According to research performed by different studies about the attitudes and knowledge of health care workers about fasting hours, it was discovered that lengthy fasting hours is as a result of the staffs being too cautious (Alison L, 2007). Chon T et al, (2017) explain that the roles of medical practitioner providing direct care to surgical patients, which include nurses are:

- Ensuring better and effective communication between health professionals.
- Setting realistic time for patients to avoid delays which will lead to improved patient experience.

According to ERAS protocol for the management of fasting in patients, nurses must;

- Counsel patients effectively about surgery fasting durations and anesthesia procedure.
- Inform patients about lifestyle habit to cease or minimize.
- Implement the pre surgery new guidelines to reduce hunger and thirst, by allowing patients to drink clear promote the intake of liquid or recommended (400 ml) amount of carbohydrate-rich drinks, at least 2h before surgery.
- Prevent postoperative nausea and vomiting in patients with a high or moderate risk through the use of document like Apfel risk score.
- Help their patients with the stimulation of bowel motor activity.
- Maintain fluid balance postoperatively.
- Introduce oral fluid as early as 2 h after surgery (Horosz B et al. 2016).

CHAPTER III

3. Materials and Methods

3.1. Study Design

The study was conducted with a descriptive and cross-sectional design.

3.2. Study Setting

This research was conducted at Amuloko City Hospital (ACH) which is located in Ibadan, the capital of Oyo State, Nigeria. The hospital is private owned, serves as one of the main referral hospitals in this region, with 1 theatre, 8 wards holding about 25 beds in total. ACH is one of the main referral hospital in its district due to its strategic location and affordability to low income households. It also provides consultant / general services in various clinical disciplines: including Obstetrics & Gynecology, Pediatrics, Laboratory, General Medicine, General Surgery, Physiotherapy and Pharmacy. The study was carried out at the operating theatre, female & male surgical ward and the maternity unit.

3.3. Sample

The study was performed on patients who undergoes elective surgery procedures operated under general, local and spinal anesthesia, both male and female (adults) in surgical ward and surgical outpatient department. A total of 73 patients were operated on during this study in these departments. All voluntary patients were included in the sample of the study. The exclusion criteria included 3 surgeries done on young patients under 18 years old, 1 diabetic patients and 5 cases of emergencies. In the final sample for this study, it consisted 64 data, with an access rate of 87.7%. This low sample is as a result of limited varieties of surgical procedures performed during this period, as well as the number of excluded patients within the exclusion criteria.

3.4. Study Tools

The data was collected through the use of a questionnaire developed by the researchers based on the guidelines of the American Society of Anesthesiology (ASA) and Enhanced Recovery After Surgery (ERAS) perioperative fasting duration protocols (ASA, 2017; ERAS – Parks L et al., 2018). The questionnaire consists of four sections. The first section is regarding the demographic characteristics of patients constitute 6 questions. The second section includes 14 open ended questions about patients' fasting experiences; the third section include 12 questions (6 each for pre- and post-operative) on assessing patients discomfort level with the following options criteria; no discomfort (0), Slight (1-2), Mild (3), Moderate (4-6) and Severe (7-10) respectively. With no discomfort representing the absence of the symptoms and severe as the highest intensity of these symptoms and the fourth section is asking about anesthesia technique and time of blade on skin and it must filled by one of the patient surgical team.

3.5. Data Collection

Data was collected using a questionnaire between August and November, 2021. The questionnaires were administered on patients in their wards with face to face, self-completion method, pre- and post-surgery. Patients were also helped by nurses on duty to read or fill the questionnaires when necessary. The survey took approximately 10 minutes to complete before and after surgery.

3.6. Ethical Consideration

Ethical approval was obtained from Institutional Reviews Board (IRB) of Near East University and Medical Director of Amuloko City Hospital (ACH) before conducting the study. All patients were given adequate information about the research, its aim and objective, consent was obtained to ensure the willingness to voluntarily participate in the study.

3.7. Data Analysis

Analyses were performed using IBM SPSS software version 28.0. The categorical variables were analyzed using descriptive statistics to calculate frequency and percentages. Patients discomfort level before and after surgery were assessed using a Likert scale with the following options criteria; no discomfort (0), Slight (1-2), Mild (3), Moderate (4-6) and Severe (7-10) respectively. Spearman correlation was used to determine the association between fasting impacts and fasting durations of the patients preoperatively and postoperatively. Comparison were made using preoperative thirst, preoperative hunger, postoperative thirst and postoperative hunger with gender, age group, surgical procedure and anesthetic induction technique. Cross tabulation was used to find the interaction between the variables while fisher's exact test was used to calculate the p-values.

CHAPTER IV

4. Results

Table 4.1.
Socio-Demographic Characteristics of the Patients (N=64)

Descriptive Characteristics	N	**%**
Gender		
Male	35	54.7
Female	29	45.3
Age Group		
≤24	17	26.6
25-44	31	48.4
45-59	13	20.3
60+	3	4.7
Educational Level		
Primary School	4	6.3
High School	29	45.3
Bachelor Degree Or Equivalent	31	48.4
Employment Status		
Unemployed	27	42.2
Employed	37	57.8
Marital Status		
Married	44	68.8
Not Married	20	31.3

In this descriptive and cross-sectional study conducted with aim of analyzing preoperative and postoperative fasting durations, and its association with discomfort among the surgical patients, among patients, 45.3% were female and 54.7% were male. The majority of the patients are between the age 25-44, accounting for 48.4% of the participants, followed by those in the age group of 18-24, 45-59 and 60+ at 26.6%, 20.3% and 4.7% respectively. A 48.4% of the participants hold a Bachelor Degree or its equivalent while 45.3% of them only graduated from High School. Furthermore, 57.8% of them are employed, which means exactly 42.2% of them are not employed. A large percentage of patients (68.8%) stated that they are married, equivalent to more than one-third (Table 4.1).

Table 4.2.
Medical and surgical characteristics of the patients (N=64)

Characteristics	**N**	**%**
Known Illness		
None	58	90.6
Hepatitis B	6	9.4
Medication Allergy		
None	58	90.6
Amplicox	2	3.1
Chloroquine	4	6.3
Surgical Procedure		
Herniorrhaphy	19	29.7
Appendectomy	17	26.6
Hydrocelectomy	9	14.1
Elective Caesarean Section	17	26.6
Marsupialization (Bartholin's Cyst)	2	3.1

Surgery Schedule Time (AM)		
7	6	9.4
8	28	43.8
9	22	34.4
10	7	10.9
11	1	1.6
Anesthetic Induction Technique		
General Anesthesia	43	67.2
Local Anesthesia	16	25.0
Spinal Anesthesia	5	7.8
Admission Length (number of days)		
1	27	42.2
2	3	4.7
3	6	9.4
4	16	25.0
5	12	18.8

Table 4.2 shows the medical and surgical characteristics of the patients. Of the participants, 9.4% of them recorded that they have Hepatitis B while others do not state any known illness. Amplicox and Chloroquine were the common medications that few of the participants were allergic to accounting for 3.1% and 6.3% respectively.

With regards to the types of surgery performed, 29.7% of the patients undergo Herniorrhaphy, Appendectomy and Elective Caesarean Section recorded 26.6% each whereas Hydrocelectomy and Marsupialization (Bartholin's Cyst) patients were 14.1% and 3.1% respectively. Among the patients, 43 (67.2%) were operated on under general anesthesia, 16 (25%) received local anesthesia and just 5 (7.8%) received spinal anesthesia. The admission length varied between 1-5 days.

Table 4.3.
Pre-operative and postoperative feeding characteristics of the patients (N=64)

Characteristics	**N**	**%**
Last meal before surgery		
Liquid diet	6	9.4
Solid diet	58	90.6
Last drink before surgery		
Tea	9	14.1
Pap	16	25.0
Water	33	51.6
Soda	6	9.4
Fasting duration before surgery, including water (Hours) (Mean= 10.78, SD= 1.67)		
8 hours	9	14.1
9 hours	9	14.1
10 hours	8	12.5
11 hours	6	9.4
12 hours	25	39.1
13 hours	7	10.9
Instructions about fasting hours and post-surgery oral nutrition		
Doctor/surgeon	35	54.7
Surgeon & nurse	29	45.3
First meal after surgery		
Liquid diet	57	89.1
Solid diet	7	10.9
Time of first liquid after surgery (Hours) (Mean= 10.88, SD= 6.23)		
4 hours later	9	14.1
6 hours later	19	29.7
8 hours later	2	3.1

10 hours later	4	6.3
12 hours later	5	7.8
14 hours later	17	26.6
24 hours later	8	12.5
Time of first meal after surgery (Hours) (Mean= 13.16, SD= 8.31)		
4 hours later	7	10.9
6 hours later	21	32.8
8 hours later	2	3.1
10 hours later	4	6.3
12 hours later	4	6.3
14 hours later	4	6.3
24 hours later	22	34.4
Toleration of the first meal by the patient		
Yes	60	93.8
No	4	6.3

Table 4.3 provides information about the patients' perioperative feeding characteristics. A large percentage of the patients (90.6%) ate solid food as their last meal prior to surgery and 9.4% of them took liquid meal. The type of last drink varied for patients, namely; tea, pap, water or soda.

For fasting duration before surgery, it ranged between 8-13 hours (mean ± SD= 10.78 ± 1.67). Instructions about fasting hours and post-surgery oral nutrition was given both by surgeons and nurses but it should be noted that none of the patients received instructions from just the nurses alone. Instead, they were instructed either by surgeon\doctor (54.7%) alone or by both surgeon and nurses. Post-surgery meal consumed by most patients were liquid diets with fasting duration of meal and liquid ranging from 4 hours to 24 hours after surgery and the mean value and standard deviation for liquid and solid were (mean ± SD= 10.88 ± 6.23) and (mean ± SD= 13.16 ± 8.31) respectively. The

most frequent hours fasted after surgery for liquid was 6 hours, followed by 14 hours (29.7% and 26.6% respectively) whereas that of meal saw 34.4% of the participants fasting for 24 hours (26.6% of them are cesarean section patients) and 32.8 of them fasted for 6 hours. Furthermore, 93.8 percent of the studied patients tolerated the post-surgery meal well while 4% which are pregnant women experienced PONV.

Table 4.4.

Patients' discomfort levels regarding pre-operative fasting and postoperative starving (N=64)

Discomfort Levels	**No discomfort**		**Slight**		**Mild**		**Moderate**		**Severe**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Intensity of preoperative discomfort										
Thirst	2	3.1	15	23.4	34	53.1	13	20.3	0	0.0
Hunger	5	7.8	24	37.5	30	46.9	5	7.8	0	0.0
Headache	41	64.1	23	35.9	0	0.0	0	0.0	0	0.0
Nausea/dizziness	42	65.6	17	26.6	5	7.8	0	0.0	0	0.0
Weakness/tiredness	29	45.3	21	32.8	14	21.9	0	0.0	0	0.0
Intensity of postoperative discomfort										
Thirst	0	0.0	0	0.0	12	18.8	25	39.1	27	42.2
Hunger	0	0.0	0	0.0	10	15.6	28	43.8	26	40.6
Headache	7	10.9	23	35.9	26	40.6	8	12.5	0	0.0
Nausea/dizziness	0	0.0	26	40.6	20	31.3	18	28.1	0	0.0
Weakness/tiredness	0	0.0	22	34.4	19	29.7	18	28.1	5	7.8

According to the intensity of preoperative discomforts experienced by patients, it can be seen that a high percentage of participants (53.1%) experienced mild thirst level while exactly 23.4% saw slight level of thirst, followed by closely by moderate (20.3%). In terms of preoperative hunger, the intensity level with the highest number of patients was also mild (46.9%), followed by slight at 37.5%. Other discomfort types had a larger amount of patients with no discomforts.

In terms of postoperative discomforts, there was a noticeable dramatic increase in patients total discomfort level compared to prior to surgery, as 42.2% and 39.1% experienced severe and moderate thirst respectively. Exactly 43.8% had a moderate level of hunger, followed by 40.6% of those suffering from severe hunger.

Table 4.5.
Association between fasting discomfort and pre-operative fasting durations of the patients

Preoperative Fasting Discomfort	**Fasting Duration (Including liquid)**	
	r	**p**
Thirst	0.261	0.038
Hunger	0.415	<0.001
Headache	-0.490	<0.001
Nausea/dizziness	-0.652	<0.001
Weakness/tiredness	-0.497	<0.001
**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).		

The Spearman correlation test result showed a positive correlation and a statistically significant relationship between preoperative thirst and fasting duration before surgery r_s (64)= .261, p=.038. There was a positive correlation between hunger and the fasting duration prior to surgery, which are statistically significant r_s (64)= .415, p<0.001.

The results also proved that the association between headache and preoperative fasting duration indicate that they were statistically significant with negative correlation r_s (64)= -.490, p<.001. There was also a significant negative correlation in terms of nausea\dizziness r_s (64)= -.652, p<.001. Lastly, with regards to weakness\tiredness, there was a significant negative correlation r_s (64)= -.497, p<.001.

Table 4.6.
Association between fasting discomfort and post-operative starving durations of the patients

Postoperative Starving Discomfort	**Solid Fasting Duration**		**Liquid Fasting Duration**	
	r	p	r	p
Thirst	0.648	<0.001	0.618	<0.001
Hunger	0.507	<0.001	0.575	<0.001
Headache	0.523	<0.001	0.517	<0.001
Nausea/Dizziness	0.368	0.003	0.343	0.006
Weakness/Tiredness	0.543	<0.001	0.536	<0.001
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).				

Looking at table 4.6 in more details, it is obvious that the association between postoperative fasting impacts and solid\liquid fasting duration were all statistically significant, positive correlated with p≤.006.

Table 4.7.
Comparison of preoperative thirst discomfort with selected demographic and surgical characteristics of the patients

Demographic and Surgical Characteristics	**Preoperative thirst**								**P value**
	No discomfort		**Slight**		**Mild**		**Moderate**		
	N	%	N	%	N	%	N	%	
Gender									0.680
Male	2	3.1	9	14.1	17	26.6	7	10.9	
Female	0	0.0	6	9.4	17	26.6	6	9.4	
Age groups									
≤ 24	1	1.6	2	3.1	10	15.6	4	6.3	0.716
25-44	1	1.6	9	14.1	15	23.4	6	9.4	
45-59	0	0.0	2	3.1	8	12.5	3	4.7	
60+	0	0.0	2	3.1	1	1.6	0	0.0	
Surgical procedure									
Herniorrhaphy	0	0.0	4	6.3	11	17.2	4	6.3	0.023
Appendectomy	0	0.0	1	1.6	9	14.1	7	10.9	
Hydrocelectomy	2	3.1	4	6.3	2	3.1	1	1.6	
Elective Caesarean Section	0	0.0	6	9.4	10	15.6	1	1.6	
Marsupialization (Bartholin's Cyst)	0	0.0	0	0.0	2	3.1	0	0.0	
Anesthetic induction technique									
General Anesthesia	2	3.1	11	17.2	22	34.4	8	12.5	0.988

Local Anesthesia	0	0.0	3	4.7	9	14.1	4	6.3	
Spinal Anesthesia	0	0.0	1	1.6	3	4.7	1	1.6	

Cross tabulation was used to find the interaction between the variables while fisher's exact test was used to calculate the p-values.

Table 4.7 gives information about the p-value of the comparison of patients' preoperative thirst intensity level and gender, age groups and anesthetic induction technique as greater than 0.05 significant level, proving that there is no significant relationship between them. However, there was a clear statistically significant association of 0.023 (< 0.05) in between preoperative thirst level and surgical procedure. Herniorrhaphy and Elective Caesarean Section patients experienced more discomfort during this phase.

Table 4.8.
Comparison of preoperative hunger discomfort with selected demographic and surgical characteristics of the patients

Demographic and Surgical Characteristics	**Preoperative Hunger**								**P Value**
	No Discomfort		**Slight**		**Mild**		**Moderate**		
	N	%	N	%	N	%	N	%	
Gender									
Male	3	4.7	11	17.2	17	26.6	4	6.3	0.579
Female	2	3.1	13	20.3	13	20.3	1	1.6	
Age group									
≤ 24	2	3.1	3	4.7	10	15.6	2	3.1	0.270
25-44	1	1.6	15	23.4	13	20.3	2	3.1	
45-59	1	1.6	6	9.4	5	7.8	1	1.6	
60+	1	1.6	0	0.0	2	3.1	0	0.0	
Surgical procedure									

Herniorrhaphy	4	6.3	4	6.3	8	12.5	3	4.7	<0.001
Appendectomy	0	0.0	2	3.1	14	21.9	1	1.6	
Hydrocelectomy	0	0.0	7	10.9	2	3.1	0	0.0	
Elective Caesarean Section	0	0.0	11	17.2	6	9.4	0	0.0	
Marsupialization (Bartholin's Cyst)	1	1.6	0	0.0	0	0.0	1	1.6	
Anesthetic induction technique									
General Anesthesia	2	3.1	20	31.3	19	29.7	2	3.1	0.039
Local Anesthesia	3	4.7	4	6.3	6	9.4	3	4.7	
Spinal Anesthesia	0	0.0	0	0.0	5	7.8	0	0.0	

Cross tabulation was used to find the interaction between the variables while fisher's exact test was used to calculate the p-values.

Table 4.8 shows the p-value of patients' preoperative hunger intensity level and gender and age group as greater than 0.05 significant level, proving that there is no significant relationship between them. However, there was a clear statistically significant association in between preoperative thirst level and surgical procedure (<0.001) and anesthetic induction technique (0.039). Appendectomy patients had higher level of hunger compared to others, while large numbers were operated on under general anesthesia.

Table 4.9.
Comparison of postoperative thirst discomfort with selected demographic and surgical characteristics of the patients

Demographic and Surgical Characteristics	**Postoperative Thirst**						**P value**
	Mild		**Moderate**		**Severe**		
	N	**%**	**N**	**%**	**N**	**%**	
Gender							
Male	12	18.8	16	25	7	10.9	<0.001

Female	0	0.0	9	14.1	20	31.3	
Age groups							
≤ 24	3	4.7	9	14.1	5	7.8	0.207
25-44	4	6.3	9	14.1	18	28.1	
45-59	4	6.3	6	9.4	3	4.7	
60+	1	1.6	1	1.6	1	1.6	
Surgical procedure							
Herniorrhaphy	5	7.8	12	18.8	2	3.1	<0.001
Appendectomy	0	0.0	7	10.9	10	15.6	
Hydrocelectomy	7	10.9	2	3.1	0	0.0	
Elective Caesarean Section	0	0.0	2	3.1	15	23.4	
Marsupialization (Bartholin's Cyst)	0	0.0	2	3.1	0	0.0	
Anesthetic induction technique							
General Anesthesia	9	14.1	14	21.9	20	31.3	0.004
Local Anesthesia	3	4.7	11	17.2	2	3.1	
Spinal Anesthesia	0	0	0	0	5	7.8	

Cross tabulation was used to find the interaction between the variables while fisher's exact test was used to calculate the p-values.

Table 4.9 gives information about the comparison of patients' postoperative thirst intensity level and selected demographic and surgical characteristics of the patients. The results showed that postoperative thirst association with gender, surgical procedure and anesthesia induction technique were statistically significant ($p<0.05$), females had more figures (20) for severe thirst. Furthermore, most patients that underwent CS and appendectomy experienced severe thirst the most compared to other surgery types and high number of those operated on under general anesthesia had higher thirst intensity. On

the other hand, this result was unable to determine a relationship between age groups and postoperative thirst as p-value was higher than 0.05.

Table 4.10.
Comparison of postoperative hunger discomfort with selected demographic and surgical characteristics of the patients.

Demographic and Surgical Characteristics	**Postoperative Hunger**						**P Value**
	Mild		**Moderate**		**Severe**		
	N	%	N	%	N	%	
Gender							
Male	10	15.6	13	18.8	12	20.3	0.004
Female	0	0	16	25	13	20.3	
Age group							
≤ 24	1	1.6	8	12.5	8	12.5	0.011
25-44	2	3.1	17	26.6	12	18.8	
45-59	5	7.8	2	3.1	6	9.4	
60+	2	3.1	1	1.6	0	0	
Surgical procedure							
Herniorrhaphy	5	7.8	11	17.2	3	4.7	<0.001
Appendectomy	0	0.0	3	4.7	14	21.9	
Hydrocelectomy	5	7.8	1	1.6	3	4.7	
Elective Caesarean Section	0	0.0	11	17.2	6	9.4	
Marsupialization (Bartholin's Cyst)	0	0.0	2	3.1	0	0.0	
Anesthetic Induction Technique							
General Anesthesia	6	9.4	14	21.9	23	35.9	0.015

Local Anesthesia	4	6.3	10	15.6	2	3.1	
Spinal Anesthesia	0	0	4	6.3	1	1.6	

Cross tabulation was used to find the interaction between the variables while fisher's exact test was used to calculate the p-values.

Table 4.10 shows the comparison of patients' postoperative thirst intensity level and selected demographic and surgical characteristics of the patients. The results showed that postoperative hunger association with gender, age groups, surgical procedure and anesthesia induction technique were statistically significant ($p<0.05$). Females had more figures higher hunger intensity. Most patients that underwent appendectomy experienced severe post-hunger compared to other surgery types and high number of those operated on under general anesthesia had higher hunger intensity. Additionally, Participants in the age group of 25-44 felt higher discomfort level.

CHAPTER V

5. Discussion

Application of shorter perioperative fasting duration for surgical patients is crucial in order to minimize or eradicate discomforts throughout their procedure which could also prevent negative outcomes such as complications or longer hospital stay. Many articles published on perioperative fasting durations recorded that it is not an unusual practice in hospitals to make patient fast more than necessary and this study made it clear that patients are being fasted for extended period of time, which is against the new recommendations. This study was carried out on 64 elective patients at Amuloko City Hospital (ACH), Nigeria, who had different type of surgery, gender, educational level, age group, employment status, marital status and medication allergy.

The type of surgery performed on the patients who participated in this study were Herniorrhaphy, Appendectomy, Hydrocelectomy, Elective Caesarean Section and Marsupialization with different admission length of 1-5 days. Only 9.4% of the patients had a known case of hepatitis B, whereas a large amount of participants were operated on under general anesthesia (67.2%), followed by local anesthesia (25%) and Spinal anesthesia (7.8%). Results of the study showed that all patients were operated on in the morning hours with the range of 7 am to 11 am. Although in this center, surgery is usually delayed for about 5 minutes to 30 minutes, there was only 1 case of a surgery delayed for an hour and the patient was left with no choice but to wait in the fasted state. This was also identified as an issue in the study conducted by Chon T et al (2017), stating that it is common for operations to be delayed in hospitals with busy operating theaters and could be caused by various unavoidable situations. However, this could lead to increased feeling of frustration, anger and anxiety in patients.

Last oral intake before surgery are divided into two categories namely; liquid diet (water\clear fluids) and solid diet (light\heavy), the fasting duration for both ranges between 8 hours to 13 hours with mean value and standard deviation of 10.78 ± 1.67,

going against the revised guidelines. ERAS for example, stated that patients should be in a fasted state for 6 to 8 hours for solids while clear fluid consumption could be taken up to 2 hours before the surgery (Fearon K.C.H et al., 2005). This mean value is lower compared to Gul et al (2018) study of preoperative fasting amongst patients that has a larger participant (164), which shows the mean value for solids to be 13.34 and that of liquids to be 12.44. A similar study performed by Tosun B et al. (2014) showed preoperative fasting duration to range from 7.50 to 24.50 with the mean value of 14.70 and 11.25 for solid and liquid respectively, which is also higher than our result.

The instructions given to patients for fasting was NPO after midnight for both liquid and solid, which was followed religiously by all participants, in which some of them reported that they stopped eating before or at 12 am as instructed, regardless of their surgery time, indicating that they were given outdated or limited information about the fasting hours. A similar study by Abebe W.A et al. (2016) recognized that a large percentage of their participants (98.1) were given instruction of NPO from midnight, even though some of the patients were scheduled for late procedure, which makes them fast longer than those operated on in the morning. Understanding and being aware of updated guidelines is an essential part of caring for elective patients undergoing surgery (Dorrance M, 2019).

Regarding post-operative nutrition, a majority (89.1%) of the patients were allowed to feed on only liquid diet after their surgery with postoperative fasting hours ranging from 4 hours to 24 hours for both liquid and solid with the mean value and standard deviation 10.88 ± 6.23 and 13.16 ± 8.31 respectively, which is way higher than that of De amorin et al (2015) findings that has a mean value of 5.1 hours, ranging from 2.5 to 20.5 hours. Although, NICE new protocol instructs health professional to allow cesarean section patients to resume food consumption as soon as the patients are ready to do so when they have no complications, ISA specifically stated that they can resume oral food 8 hours after surgery. However, in this study, new mothers were made to fast for 24 hours before taking a meal after surgery and few of them were allowed to take clear liquid after 14 hours due to excessive thirst, totally against the revised protocols. The meal was

well tolerated by 60 of the patients while only 4 patients experienced PONV. Previous research done by Elsaid R.M et al (2021) with 211 participants' shows a higher rate (45.5%) of incidence of PONV amongst participants. One of the major contributing factors to this long hour of fasting is caused by the prescription of NPO after midnight to patients by medical practitioners (surgeons\nurses) who either ignore the revised guidelines or are just not aware of it (El-Sharkawy A.M, 2020).

This study identified that the participants of this study experienced discomforts such as thirst, hunger, headache, nausea\dizziness and weakness\tiredness, which is comparable to Gul et al (2018) study showing that a large proportion of the patients experienced some type of discomforts such as thirst, malaise, mouth dryness and weakness. The intensity of preoperative discomfort level experienced before surgery include no discomfort, slight, mild and moderate, while that of Gebremedhn and Nagaratnam intensity for thirst and hunger ranges from no discomfort to severe, showing that some of the participants of their study experienced severe discomfort before surgery unlike our study.

For postoperative, discomfort intensity had increased dramatically reaching severe level with only 7 patients showing no signs of discomfort for just headache. In addition, when compared to other discomfort types, it is clear that thirst has the highest number of high levels of discomfort in both pre- and post-operative phases, followed closely by hunger. This was also proven by a randomized clinical trial done by Bopp et al (2011) as they recognized thirst and hunger as the leading factor affecting the patients in control group mainly caused by long fasting hours.

Association between fasting discomfort and fasting durations preoperatively illustrate a positive, and statistically significant correlation between thirst ($p=0.038$) and hunger ($p< 0.001$). Meanwhile, other types of discomfort (headache, nausea\dizziness, weakness\tiredness) showed a statistically negative correlation with fasting duration before surgery ($p< 0.001$), indicating that they are independent of each other. Gul et al

(2018) study recorded similar findings with p< 0.001 for hunger, thirst, mouth dryness and weakness. Headache and dizziness had a positive correlation with p value of 0.013 and 0.035 respectively which differs from our result that shows negative correlation for headache, nausea\dizziness and weakness\tiredness. Bopp et al (2014) study was also consistent with the findings that extended preoperative fasting increase the intensity of thirst, hunger, pain, nausea and vomiting, exhaustion felt by patients.

Association between our study fasting impacts and post-operative fasting durations of the patients demonstrated a positive statistically significant correlation between them ($p \leq .006$), proving that they are dependent of each other, and discomforts increases with the duration. Findings from De Amorim et al (2015) study showed that there is a relationship between patients' duration of fasting and increased complications (p=0.021).

This study also made a comparison of preoperative thirst with specific characteristics (gender, age group, surgical procedure and anesthetic induction technique) of the participants, showing no statistically significant in all categories. The results showed that the p-value corresponding to patients' preoperative thirst intensity level and gender, age groups and anesthetic induction technique as greater than 0.05 significant level, proving that there is no significant relationship between them. However, there was a clear statistically significant association of 0.023 (< 0.05) in between preoperative thirst level and surgical procedure. Herniorrhaphy and Elective Caesarean Section patients experienced more discomfort during this phase. Due to the uncertain nature of operating room, surgery are often delayed or scheduled late in the day with no regards for the nulla per os that was recommended, leading to increase in unpleasant results in patient experience (Chon T et al. 2017).

The comparison of patients' preoperative hunger intensity level and selected demographic and surgical characteristics of the patients illustrate that the p-value of patients' preoperative hunger intensity level and gender and age group as greater than 0.05 significant level, proving that there is no significant relationship between them. However, there was a clear statistically significant association in between preoperative thirst level

and surgical procedure (<0.001) and anesthetic induction technique (0.039) as well. Appendectomy patients had higher level of hunger compared to others, while large numbers were operated on under general anesthesia. Patients diagnosed with appendicitis often experience fixed pain on the right iliac fossa. In addition, some of the common symptoms of appendicitis includes nausea, vomiting and anorexia (Shimi S.M, 2011). Therefore, this could explain the higher intensity of discomfort in this group of patients.

Regarding the comparison made of postoperative thirst and selected characteristics (gender, age group, surgical procedure and anesthetic induction technique), a statistically remarkable difference can be noticed with gender, surgical procedure and anesthesia induction technique, as they were statistically significant ($p<0.05$). More discomfort severity can be seen in females and caesarean section patients. Gender has been found to be a significant factor during surgery of which females tend to experience more discomfort as the fasting duration progresses because they have lower pain or discomfort tolerance than men (Cepeda, M.S & Carr, D.B, 2003). Also, caesarean section has the longest fasting time post-surgery, so it is understandable that the longer the fasting the higher the discomforts in those particular patients (De Amorim et al, 2015). High number of those operated on under general anesthesia had higher thirst intensity. On the other hand, this result was unable to determine a relationship between age groups and postoperative thirst as p-value was higher than 0.05.

Comparison of postoperative hunger with the selected characteristics (gender, age group, surgical procedure and anesthetic induction technique) were all statistically notable ($p<0.05$). Anesthetic induction technique differences indicates that there was a difference between anesthesia type and post-surgery hunger. Compared to other anesthesia induction type, majority of the patients that underwent general anesthesia experienced severe hunger. Fasting before the use of general anesthesia before surgery aim to minimize the acidity and volume of the contents in the stomach, in order to decrease the risk of regurgitation (Stuart, P.C, 2006) and its side effects include dizziness, shivering

and cold, nausea and vomiting and temporary memory loss. Furthermore, most patients that underwent CS and appendectomy experienced severe thirst the most, compared to other surgery types.

CHAPTER VI

6. Conclusion

Result of this study showed that despite the revised guidelines existence for a long time, many hospitals still practice prolonged fasting for their patients undergoing surgery. It is clearly showed by this research that the fasting duration of patients pre-surgery does not follow the ASA protocol of accepting the intake of clear liquids, 2 hours before the procedure and resumption of oral intake as soon as 4 hours after operation (ASA, 2017). The most intense discomfort experienced by the participants were thirst and hunger in both pre- and post-operative phases. Although the relationship between discomfort level and the fasting duration is clear that it increases according to the length of fasting, more research is needed to understand the extent the duration affects the patients in terms of their demographic and surgical characteristics. The participant's team (surgeon and nurses) showed no concern about the fasting duration, which is worrisome and shows the importance of raising more awareness to health professionals about the benefit of applying the new guidelines in our hospitals worldwide because it will improve patients comfort, safety and total experience by minimizing their discomfort level as low as possible which might be helpful to make them more positive about their surgery outcome regardless of the type of procedure. If more research into perioperative fasting is funded by government, it will ensure that health workers are well equipped, educated and informed on the effectiveness of shorter fasting hours.

CHAPTER VII

7. Findings and Recommendations

7.1. Findings

The main findings of the study that was conducted with the aim of examining the preoperative and postoperative fasting durations, and its association with discomfort among the surgical patients are as follow:

- With regards to the patients' perioperative feeding characteristics. Majority of the patients (90.6%) ate solid food as their last meal prior to surgery and 9.4% of them took liquid meal. Preoperatively, fasting ranged between 8-13 hours (mean ± SD= 10.78 ± 1.67). Post-surgery meal consumed by most patients were liquid diets with fasting duration ranging from 4 hours to 24 hours with mean value and standard deviation of liquid and solid of 10.88 ± 6.23 and 13.16 ± 8.31 respectively. The most frequent hours fasted after surgery for liquid was 6 hours, followed by 14 hours (29.7% and 26.6% respectively) whereas that of meal saw 34.4% of the participants fasting for 24 hours (26.6% of them are cesarean section patients) and 32.8 of them fasted for 6 hours. Furthermore, 93.8 percent of the studied patients tolerated the post-surgery meal well while 4% which are pregnant women experienced PONV (Table 4.3)

- In terms of the intensity of preoperative discomforts experienced by patients, a high percentage of participants (53.1%) experienced mild thirst level while exactly 23.4% saw slight level of thirst, followed by Moderate (20.3%). In terms of preoperative hunger, the intensity level with the highest number of patients was also mild (46.9%). Other discomfort types had a larger amount of patients with no discomforts. Postoperatively, there was a noticeable dramatic increase in patients total discomfort level compared to prior to surgery, as 42.2% and 39.1% experienced severe and moderate thirst respectively. Exactly 43.8% had a

moderate level of hunger, followed by 40.6% of those suffering from severe hunger (Table 4.4).

- Spearman correlation test result showed a positive correlation and a statistically significant relationship between preoperative thirst and fasting duration before surgery rs (64)= .261, p=.038. There was a positive correlation between hunger and the fasting duration prior to surgery, which are statistically significant rs (64)= .415, p<0.001. The results also proved that the association between headache and preoperative fasting duration indicate that they were statistically significant with negative correlation rs (64)= -.490, p<.001. There was also a significant negative correlation in terms of nausea\dizziness rs (64)= -.652, p<.001. Lastly, with regards to weakness\tiredness, there was a significant negative correlation rs (64)= -.497, p<.001. (Table 4.5)

- The association between postoperative fasting impacts and solid\liquid fasting duration were all statistically significant, positive correlated with p≤.006 (Table 4.6)

- Regarding the comparison of patients' preoperative thirst intensity level and selected demographic and surgical characteristics of the patients. The results showed that the p-value corresponding to patients' preoperative thirst intensity level and gender, age groups and anesthetic induction technique as greater than 0.05 significant level, proving that there is no significant relationship between them. However, there was a clear statistically significant association of 0.023 (< 0.05) in between preoperative thirst level and surgical procedure. Herniorrhaphy and Elective Caesarean Section patients experienced more discomfort during this phase. (Table 4.7).

- The comparison of patients' preoperative hunger intensity level and selected demographic and surgical characteristics of the patients illustrate that the p-value of patients' preoperative hunger intensity level and gender and age group as greater than 0.05 significant level, proving that there is no significant relationship between them. However, there was a clear statistically significant association in between preoperative thirst level and surgical procedure (<0.001) and anesthetic induction technique (0.039). Appendectomy patients had higher level of hunger compared to others, while large numbers were operated on under general anesthesia. (Table 4.8).

- Comparison of patients' postoperative thirst intensity level and selected demographic and surgical characteristics of the patients. The results showed that postoperative thirst association with gender, surgical procedure and anesthesia induction technique were statistically significant ($p<0.05$), females had more figures (20) for severe thirst. Furthermore, most patients that underwent CS and appendectomy experienced severe thirst the most compared to other surgery types and high number of those operated on under general anesthesia had higher thirst intensity. On the other hand, this result was unable to determine a relationship between age groups and postoperative thirst as p-value was higher than 0.05 (Table 4.9).

- Comparison of patients' postoperative hunger intensity level and selected demographic and surgical characteristics of the patients. The results showed that postoperative hunger association with gender, age groups, surgical procedure and anesthesia induction technique were statistically significant ($p<0.05$). Females had more figures higher hunger intensity. Most patients that underwent appendectomy experienced severe post-hunger compared to other surgery types and high number of those operated on under general anesthesia had higher hunger intensity. Participants in the age group of 25-44 felt higher discomfort level (Table 4.10).

7.2. Recommendations

Based on the findings of this study the following recommendations were made;

- Revised perioperative fasting guidelines should be implemented to help manage and reduce perioperative discomforts caused by fasting.
- Further studies focusing on specific surgical types needs to be carried out, as well as the level of awareness of surgeons and nurses about the new guidelines. Accordingly, medical professionals, especially surgeons\doctors and nurses should be provided with evidence based and up-to-date resources in order to enhance their knowledge and promote good surgical practices.

7.3. Limitations

- This study was performed in one hospital. For that reason, the findings might not be applicable to all Nigerian surgical patients.
- Unable to separate preoperative fasting duration of solid from liquid because the patients gave the same answer for both.

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APPENDICES
Appendix 1

Data Collection Tool

Dear Study Participants:

I will be very grateful if you will take your time to participate in this survey. As Near East University Master Degree of Surgical Nursing student, I am conducting a research study of the current practices of preoperative fasting durations and discomfort among the surgical patients.

I encourage you to ask any question that is not clear enough to you; please feel free to answer the questions accordingly without withholding any vital information that may be of great help. I assure you that information collected about you will be kept confidential, all completed surveys, notes and analyzed data will be destroyed once the research study has been finalized.

Thank you for your participation.

CONSENT FORM

I have read and understood the information sheet provided above and the explanation given by the researcher.

Please tick the box below

☐ I hereby voluntarily consent to participate in the research.

A. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANTS

1. Name of Patient:_____
2. Gender: □ Male □ Female
3. Age Group: □ 18-24 □ 25-44 □ 45-59 □ 60+
4. Educational Level: _____
5. Employment Status:_____
6. Marital Status: _____

B. PREOPERATIVE AND POSTOPERATIVE FASTING

If a question does not apply to you, skip to the next question.

7. Name of operation: _____
8. What time did you take your last meal (including water) before surgery:_____
9. What did you eat last before surgery:_____
10. What did you drink last before surgery:_____
11. What time was your surgery scheduled:_____
12. What was your fasting duration before the surgery?
13. Who gave you instructions about your fasting hours and post-surgery oral nutrition: _____
14. What time did you take your first meal after surgery:_____
15. What was your first meal after surgery:_____
16. What time did you take your first liquid:_____
17. Was the first meal tolerated well by the patient? Is there PONV? _____
18. Number of days spent in hospital after surgery:_____
19. Please state any known illness: (Hepatitis, HIV, Diabetes Mellitus, GI obstruction etc):_____
20. Please state any known medications: _____

C. PATIENTS' DISCOMFORT LEVEL ASSESSMENT

Please rate the level of your perioperative symptoms. Tick the correct number that best describes your experience. Please use the following guidelines to rate the intensity of your symptoms: options includes; no discomfort (0), Slight (1-2), Mild (3), Moderate (4-6) and Severe (7-10) respectively. With **no discomfort** representing the absence of the symptoms and **severe** as the highest intensity of these symptoms.

	INTENSITY OF PREOPERATIVE DISCOMFORT	No discomfort	Slight	Mild	Moderate	Severe
17.	Thirst					
18.	Hunger					
19.	Headache					
20.	Nausea/Dizziness					
21.	Weakness/Tiredness					
22.	Others (please mention in the space below)					

	INTENSITY OF POSTOPERATIVE DISCOMFORT	No discomfort	Slight	Mild	Moderate	Severe
19.	Thirst					
20.	Hunger					
21.	Headache					
22.	Nausea/Dizziness					
23.	Weakness/Tiredness					
24.	Others (please mention if the space below)					

D. This section must be filled by one of the surgical team only:

- Anesthetic Induction Technique:_____
- Time of blade on skin:_____

Appendix II

YAKIN DOĞU ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMALAR ETİK KURULU

ARAŞTIRMA PROJESİ DEĞERLENDİRME RAPORU

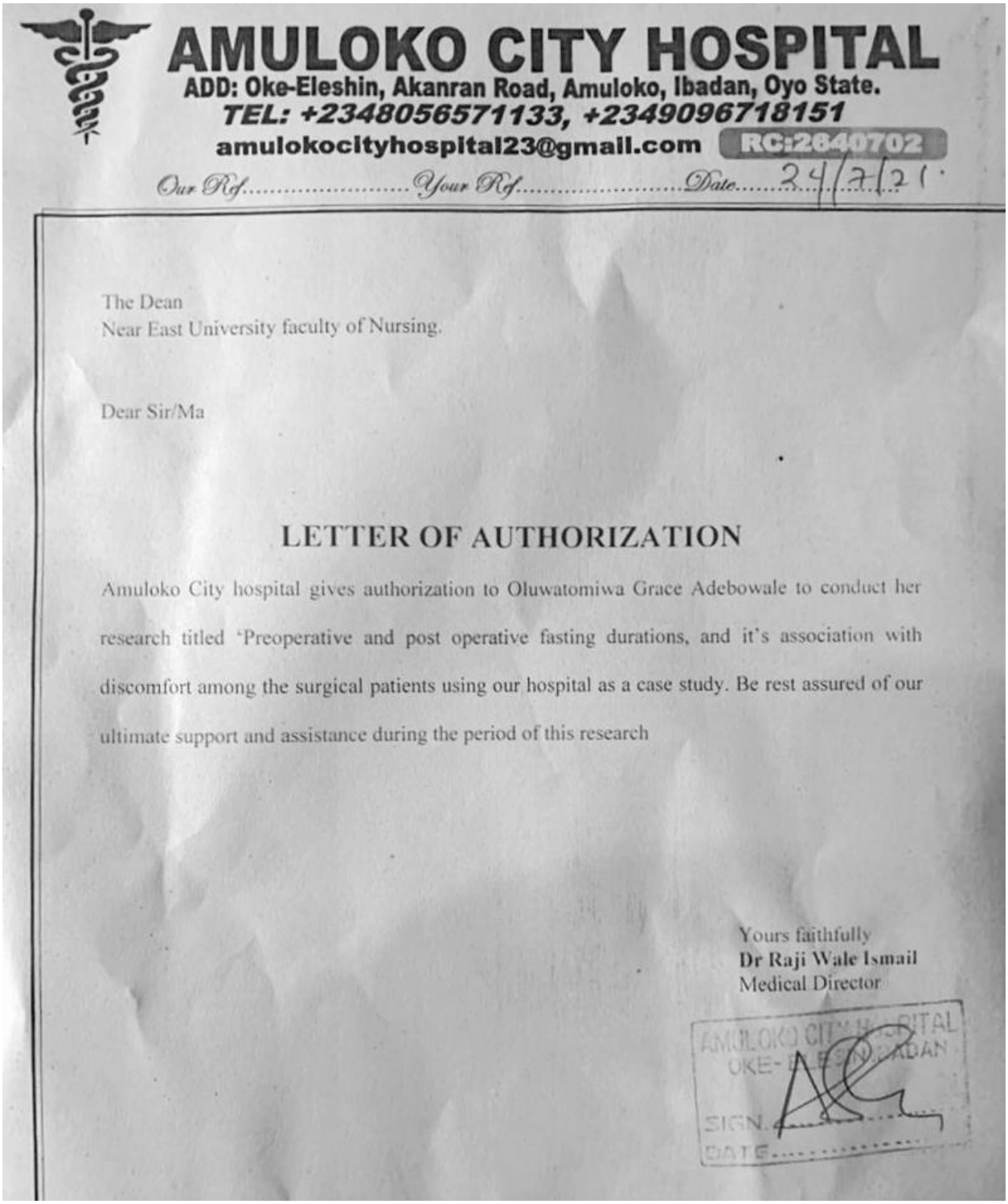
Toplantı Tarihi : 29.07.2021
Toplantı No **:** 2021/93
Proje No **:**1379

Yakın Doğu Üniversitesi Hemşirelik Fakültesi öğretim üyelerinden Prof. Dr. Nurhan Bayraktar'ın sorumlu araştırmacısı olduğu, YDU/2021/93-1379 proje numaralı ve **"Preopreative and postoperative fasting durations, and its association with discomfort among the surgical patients"** başlıklı proje önerisi kurulumuzca online toplantıda değerlendirilmiş olup, etik olarak uygun bulunmuştur.

Y

Prof. Dr. Rüştü Onur
Yakın Doğu Üniversitesi
Bilimsel Araştırmalar Etik Kurulu Başkanı

Appendix III



AMULOKO CITY HOSPITAL
ADD: Oke-Eleshin, Akanran Road, Amuloko, Ibadan, Oyo State.
TEL: +2348056571133, +2349096718151
amulokocityhospital23@gmail.com RC:2640702

Our Ref..... Your Ref..... Date..... 24/7/21

The Dean
Near East University faculty of Nursing.

Dear Sir/Ma

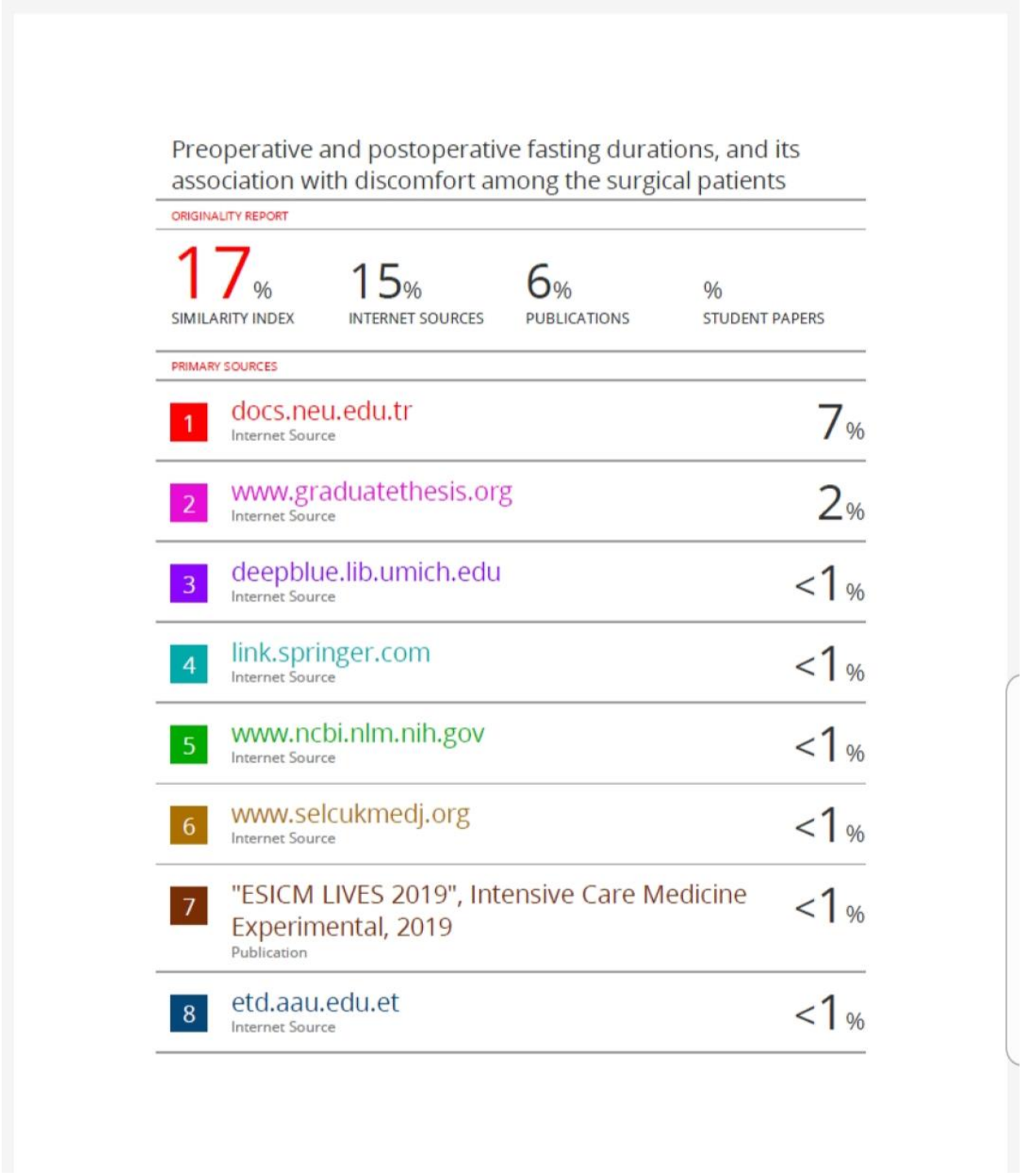
LETTER OF AUTHORIZATION

Amuloko City hospital gives authorization to Oluwatomiwa Grace Adebowale to conduct her research titled 'Preoperative and post operative fasting durations, and it's association with discomfort among the surgical patients using our hospital as a case study. Be rest assured of our ultimate support and assistance during the period of this research

Yours faithfully
Dr Raji Wale Ismail
Medical Director

AMULOKO CITY HOSPITAL
OKE-ELESHIN, IBADAN
SIGN.
DATE.....

Appendix IV
Turnitin Similarity Report



Preoperative and postoperative fasting durations, and its association with discomfort among the surgical patients

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CURRICULUM VITAE

1. Personal Information

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2. Education

Year	Grade	University	Field
2020	Bachelor	Near East University	Nursing
Till Date	Masters	Near East University	Surgical Nursing

3. Academic & Professional Experience

PERIOD	TITLE	DEPARTMENT	UNIVERSITY
April, 2020 – September, 2020	Volunteer	Nursing	Amuloko City Hospital, Nigeria

4. Computer Knowledge

Microsoft Office	Very good
SPSS	Good