



**ASSESSMENT OF PREOPERATIVE ANXIETY FOR PATIENTS AWAITING
SURGERY AT UTHK**

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SURGERY AT UTHK**

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A dissertation submitted in partial fulfillment of the requirements for the degree of
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Declaration

I declare that this Dissertation contains my own work except where specifically acknowledged

RYAMUKURU David

Signature:

A rectangular box containing a handwritten signature in black ink. The signature is cursive and appears to read 'David RYAMUKURU'.

Date: July 27, 2017

DEDICATION

This study is dedicated to my parents, Harerimana Juvenal and Nyirankunda Clotilde and to my beloved wife, Musabiyise Mediatrice and my son Byishimo Ryamukuru Robert for their incomparable support.

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Firstly, glory is to the Lord God for the things he has done for me and the things He will do.

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ABSTRACT

Introduction

Preoperative anxiety is common in patients awaiting surgery. Perioperative nurses are in good position to relieve preoperative anxiety. Therefore an assessment of preoperative anxiety and associated factors is a fundamental step for better management of anxious patients.

Problem statement: The preoperative anxiety is still high and associated with poor surgical outcomes. However, the level of anxiety of patients waiting for surgery in Rwanda is not well documented, and at the best of researcher's knowledge, there is no research done in Rwanda on that phenomenon and if nothing was done about this the number of patients who suffer anxiety related complications could continue to occur at high level, therefore this study assessed preoperative anxiety level and the associated factors for patients awaiting surgery at UTHK, Rwanda.

The aim of this study is to assess the preoperative anxiety and the associated factors for patients awaiting surgery at UTHK.

Methods: This study used a cross-sectional analytical study design. The population of this study was adult patients awaiting surgery at UTHK using a convenience sampling strategies. A sample size of 151 adult patients was used and PITI was used to assess for preoperative anxiety. A self-administered questionnaire was used to collect data and SPSS version 20 was used in the analysis.

Results: The findings show that 72.8% had clinically significant preoperative anxiety level. Patients waited for orthopedic surgery are 10.22 times more likely to have clinically significant preoperative anxiety levels compared to patients waited for urology surgery (OR: 10.22; 95% CI 1.144 - 91.304; P= 0.037).

The old patients had low preoperative anxiety levels compared to patients with young age (OR: 0.22; 95% CI 0.075 - 0.650; P=0.006).

Conclusion: the results indicate that the overall participants had clinically significant preoperative anxiety level that was significantly associated with types of surgery medical diagnosis, and age.

Recommendation: elaboration of policy and procedure for management of preoperative anxiety and conducting research to explore predisposing factors of preoperative anxiety to patients who waited for orthopedic surgery.

KEY WORDS

Assessment: in this study assessment refers to the screening of patients for anxiety and finding out the factors associated with the anxiety.

Preoperative: This is a period that starts from the time the patient is informed that s/he will be surgically operated and ends at the time the intraoperative preparation of the patient starts. Preoperative anxiety in this study refers to the anxiety a patient may develop as result of waiting for a surgical operation.

Anxiety: In this study, anxiety means apprehensive tension or uneasiness that may result from the anticipation of having a surgical operation in future that is considered by a patient as a threat.

Patient awaiting surgery: this refers to a person who has been informed to undergo surgery but who is not yet surgically operated.

LIST OF SYMBOLS AND ACRONYMS

CMHS: College of Medicine and Health Sciences

IRB: Institutional Review Board

Md: Median

MOH: Ministry of Health

P= P value

SPSS: Statistical Package for the Social Sciences

UR: University of Rwanda

UTHK: University Teaching Hospital of Kigali

X^2 : Chi-square

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CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND TO THE STUDY

Preoperative anxiety is described as an unpleasant state of uneasiness or tension that is secondary to a patient being concerned about a disease, hospitalization, anesthesia, and surgery, or the unknown (Ebirim & Tobin 2010,p.1). The symptoms of preoperative anxiety are the results of the sympathetic, parasympathetic and endocrine systems (Sigdel 2015,p.1).

The majority of patients awaiting surgery experience anxiety and perceive the day of surgery as life threatening event that has never happened (Nigussie, Belachew & Wolancho 2014,p.1). In literature, 60% -80% preoperative anxiety was reported in the western population (Matthias & Samarasekera 2012, p.4; Gürsoy *et al.* 2016, p. 1) and in South Western Ethiopia, the incidence of preoperative anxiety was in between 60 - 92 % in surgical patients (Nigussie, Belachew & Wolancho 2014, p. 1). In Nigeria, the preoperative anxiety in adult patients varies between 11% to 80% (Akinsulore *et al.* 2015, p. 236).

It has been documented that in hospitalized patients with nonsurgical reasons 10% to 30% may present anxiety, this incidence of anxiety may rise up to 60%-80% in patients waiting for surgery and 5% of the anxious patients may refuse surgery (Gürsoy *et al.* 2016, pp. 1-2). The preoperative anxiety may be caused by medical diagnosis, physical separation from family, hospitalization, preoperative instructions including fasting period and other physical preoperative preparation, no or little knowledge about diagnosis, surgical interventions, or therapeutic methods, operating room environment and the patients may also worry about anesthesia, success of surgery, post-operative pain management and high costs of operation (Fathi *et al.* 2014, p. 90). The anxiety

starts at the time of being scheduled for surgery and increases to a peak level at the time of admission for surgery (Jawaid *et al.* 2007, p. 145; Wilson *et al.* 2016, p. 151).

The surgical team takes little consideration of preoperative anxiety while it predicts the difficult surgical process and outcomes (Homzová & Zeleníková, 2015, p. 324; Sigdel 2016, p. 5). Some studies reported that preoperative anxiety affects the path of surgery as it makes difficult the insertion of an intravenous catheter in the preoperative phase because it is associated with vasoconstriction (Moerman *et al.* 1996, p. 445), it is also associated with hypertension and increased heart rate (Nigussie, Belachew & Wolancho 2014, p. 2; Akinsulore *et al.* 2015, p. 236) and may lead to bleeding (Fathi *et al.* 2014, p. 91). As consequence of preoperative anxiety, all phases of anesthesia are affected; the anesthetic and postoperative analgesic required doses are increased (Laufenberg-feldmann *et al.*, 2013; Akinsulore *et al.* 2015, p. 236).

Preoperative anxiety may result in slower and more complicated recovery with a risk of infection as the effect of stimulation of endocrine and autonomic nervous system (Ebirim & Tobin 2010, p. 2; Nigussie, Belachew & Wolancho 2014, p. 1). Moreover, Rasouli *et al.* (2016, p. 535) found that the charge was \$3420 higher in patients with depression/anxiety who undergone knee arthroplasty than in patients without anxiety or depression ($P < .001$). In addition, Williams *et al.* (2014, p. 1) found that preoperative anxiety was an independent predictor of postoperative mortality or major morbidity in patient undergone cardiac surgery (OR 5.1; 95% CI 1.3, 20.2; $p=0.02$). Furthermore, Joseph, Whitcomb, & Taylor, (2015, p. 286) reported that preoperative anxiety strongly predicts anxiety six months postoperatively which was associated with poorer health outcomes in patients who underwent coronary artery bypass grafting surgery.

In addition, preoperative anxiety is associated with an increase in pain perception, nausea, and vomiting after surgery, it also correlates with long hospital stay, high health care cost and decrease patient satisfaction (Berth, Petrowski, & Balck 2007, p. 2; Nigussie, Belachew & Wolancho 2014, p. 1; Ayla *et al.* 2016, p. 2). This agreed with the findings of a study conducted by Ali, Altun and Hakan (2014, p. 225) who found that consumption of tramadol at six, twelve and twenty-four hours was significantly

higher in patients with higher preoperative anxiety than in patients with low preoperative anxiety ($P < 0.001$).

In Rwanda, the health sector is improving where the number of surgeons is increasing and perioperative nursing specialty started in October 2015. This informs the surgical team to work well on preoperative anxiety in order to prevent and manage preoperative anxiety that may result in shortening the hospital stay of patients and that in turn might increase the patients' satisfaction and a number of surgeries as the beds are made available in very short time. However the nurse to patients ratio is still low (MOH Rwanda 2015, p. 9); that can lead nurses to overlook on patients' psychological aspects; this requires the nurses to have a rapid means of preoperative anxiety screening.

It has been shown that the factors associated with the preoperative anxiety include the age, gender, marital status, education, level of health literacy, fear of surgery, separation from their family, financial loss, postoperative pain, fear of death and fear of unknown origin (Sigdel 2015, P. 1), Other factors, such as the fasting period, surgical waiting period, the type of surgery, uncertainty about the surgery, isolation from a social environment, concerns about not working after surgery, loss of identity and control during anesthesia (Ayla *et al.*, 2016, P. 2), previous surgical experience, and personal susceptibility to stressful situations (Nigussie, Belachew & Wolancho, 2014, P. 1) were also identified.

The information provided to patients before surgery, respect and empathy of nurses towards the patients and openness of nurses to the patients' concerns contribute positively to alleviate anxiety level of the patients awaiting surgery. High anxiety decreases the confidence of the patients and family members to participate in care (Bailey, 2010, P. 446). The operating room environment also affects the patient anxiety, the sound of alarms of machines, and instruments, and different unusual instruments, equipment, and attires may increase the anxiety levels of the patients as well (Bailey, 2010, P. 446; Ayla *et al.*, 2016, p. 5)

Perioperative nurses are experts in surgical courses and surgical environment, this knowledge qualifies them to manage successfully the patient anxiety with non-medical

interventions (Bailey, 2010, p. 446). Successful preoperative anxiety management may result in quick recovery, short hospital stay, fewer complications, less post-operative analgesic demands, and improved patient's compliance thus the surgical care becomes more economical and satisfying (Komolafe & Csernus, 2015, p. 95).

In addition, the nurses care for the patients for a long time compared to other health care team members, for example, anesthetists/ anesthesiologists or surgeons who preoperatively have limited time to visit the patients (Pritchard, 2010, p. 43). Therefore anxiety as nursing diagnosis in patient awaiting surgery may best be investigated and managed by nurses before the surgery (Pritchard, 2010; Komolafe & Csernus, 2015, p. 95)

Moreover, preoperative education and psychological support to patients by nurses have been mentioned to be among the most effective interventions to decrease the anxiety level. When a perioperative nurse is providing an education and psychological support, the patient gets an opportunity to express his/her thoughts, feelings and their expectations which increase the patient's confidence in the surgical team (Ayla *et al.*, 2016, p. 2).

Therefore regardless of the severity of the preoperative anxiety the perioperative nurse effectively reduces the anxiety that results in the smooth running of the surgical process, enhanced the postoperative healing process, low health care cost and patients satisfaction with the surgical care (Bailey, 2010, p. 446; Ayla *et al.*, 2016, p. 2). The preoperative detection of the level of anxiety and identification of associated factors are crucial for better preoperative anxiety management that results in a better surgical outcome, patient satisfaction and low health care cost with increased productivity.

1.2. PROBLEMT STATEMENT

A study conducted by Tanaka, Ohno, and Hori in 2015 found that heart rate and systolic blood pressure have raised higher in patients with anxiety than in patients without anxiety after entering operating room. In addition, Tanaka *et al.*, 2012 in their study

found that patients with a high anxiety level have a 2.17 fold higher risk of hypothermia during the first hour and a 1.77-fold higher risk of hypothermia during the first 2 hours than patients with a low/moderate anxiety level (Tanaka *et al.*, 2012, p. 464).

Moreover, the study conducted by Ali *et al.*, 2016 showed that patients with preoperative anxiety or depression had more than 6 times higher risk to be dissatisfied compared with patients with no anxiety or depression and dissatisfied patients were hospitalized 1 day more than satisfied patients, (Ali *et al.*, 2016, p. 2).

Furthermore, preoperative anxiety also is associated with an increase in health care cost. In a study conducted in patients with Preoperative Anxiety and Depression who undergone Total Joint Arthroplasty found that the hospitalization charges were significantly higher for patients with preoperative anxiety or depression with a median of \$55,670 compared to the hospitalization charges with median of \$52,270 for patients with no anxiety or depression and patients with anxiety or depression who were undergone total knee replacement were significantly hospitalized more days compared to patients without anxiety or depression with median length of hospital stay of 3.5 days and 3.4 days respectively, the authors also showed that the rate of complications was higher in patients with preoperative anxiety at 29% than in patients without those disorders at 15.5%, (Rasouli *et al.*, 2016, p. 534).

Despite the negative effects of preoperative anxiety on the surgical process, the only 17.6% of the patients were assessed for anxiety (Nigussie, Belachew & Wolancho, 2014, p. 5). Therefore for the purpose of smoothly running the surgical process which results in positive surgical outcomes, the nurse needs to assess preoperative anxiety level and associated factors in order to intervene effectively.

However, the preoperative anxiety of patients waiting for surgery in Rwanda is not well documented. At the best of researcher's knowledge, there is no research done in Rwanda on that phenomenon and if nothing was done about this, the number of patients who suffer anxiety related complications could continue to occur at high level, therefore this study assessed preoperative anxiety level and the associated factors for patients awaiting surgery at UTHK, Rwanda.

1.3. AIM OF STUDY

The purpose of this study is to assess the preoperative anxiety and the associated factors for patients awaiting surgery at UTHK.

1.4. RESEARCH OBJECTIVES

Determine the levels of preoperative anxiety of the patients awaiting surgery at UTHK.

Determine the factors associated with the preoperative anxiety at UTHK.

1.5. RESEARCH QUESTIONS

What is the level of preoperative anxiety of the patients awaiting surgery at UTHK?

What are the factors associated with the preoperative anxiety at UTHK?

1.6. SIGNIFICANCE OF THE STUDY

The findings of preoperative anxiety for patients awaiting surgery at UTHK showed the anxiety level of the patients scheduled for surgery and associated factors. These findings provided a body of knowledge on preoperative anxiety and associated factors that may contribute to nursing education via teaching the nursing students or professional nurses in preoperative preparation of patients.

Furthermore, the findings may be used for further preoperative patient preparation or anxiety related researches. The health care administration may use the results of this study in planning the package of nursing interventions patients have to receive preoperatively and develop policy and procedure related to preoperative anxiety. Moreover, in nursing practice, the nurses may use the findings for early identification of anxious patients and patients needing more nursing interventions before they undergo the surgery.

The results may finally contribute to the quality of care the patients consulting UTHK receive as it has been shown that less anxious patients are satisfied with the care and low anxiety levels decrease the hospital stay and health care cost. Once the anxious patients are screened at early and individualized interventions are implemented on time, it results in low anxiety that leads to quick recovery and better patient outcome and increases the productivity of people. The productive people contribute to Rwanda development.

1.7. STRUCTURE/ORGANIZATION OF THE STUDY

CONCLUSION TO CHAPTER ONE

This chapter demonstrates the background of the study, the problem statement, the aim of the study and it also shows the objectives of the study, research questions, and the significance of the study. This guide the researcher on the scope of the research by clarifying the objectives the research need to achieves referring to the background of the research problems. The following chapter reviews the literature related to preoperative anxiety in patients awaiting surgery and the associated factors, this chapter enables the investigator to review the existing literature so that he may conduct research supported by other existing literature.

CHAPTER TWO: LITERATURE REVIEW

2.1. INTRODUCTION

This study was conducted within the context of previous knowledge, this required the investigator to review the existing literature before conducting a study. According to Polit and Beck (2014, p. 116), a literature review helps the investigator to identify what is known and not known about the study topic; it also guides the investigator to identify the methods to use and to interpret the findings of the new study. This chapter reviews the literature related to preoperative anxiety.

2.2. THEORETICAL LITERATURE ON PREOPERATIVE ANXIETY

Awaiting surgery is known to provoke anxiety. Preoperative anxiety may be the reason of postponement of the surgical procedure or influence negatively the surgical process. Anxiety can be explained as a reaction to stress or fear and elicits the autonomic physiological response that helps a person to fight or flight the danger (Marran 2010, p. 9).

Studies have shown that people react differently to anxiety-provoking situations and related this difference to trait anxiety that described by Spielberger as an established individual difference in anxiety proneness and how stressful situations are perceived (Marran, 2010, p. 12).

Bakr, Ali, and Khudhr (2014, p. 2) have described trait anxiety as a relatively permanent personality characteristic that is not influenced by a stressful situation. This implies that surgery does not affect trait anxiety of the patient.

However, state anxiety that has been described as an unpleasant emotional response while coping with threatening or dangerous situations (Tovilović *et al.* 2009, p. 492). State anxiety level varies depending on how the situation is judged by an individual to be high or low threatening. State anxiety level is high in a dangerous situation and low in the safe or less dangerous situation (Bakr, Ali, & Khudhr 2014, p. 2).

According to Strongman K.T. (1995, p. 8) ,the anxiety is different from fear in sense that fear is caused by tangible object with known expected outcome and it can be escaped while anxiety happens when the danger is not palpable and it cannot be avoided, the author continued showing that anxiety is characterized by being unsure of the future and how to behave once a person meets the danger.

It has been reported that the main purpose or function of anxiety is to detect the danger or threat in a potentially harmful environment so that a person reacts effectively to escape the danger (Douilliez and Philippot 2006, p. 8).

According to Do, Duangpaeng, and Hengudomsab (2013, p. 160), after detecting the presence of the preoperative anxiety, the nursing care plan aimed to prevent, manage and reducing it should be developed. A perioperative nurse has a responsibility to monitor patients' anxiety, identify what causes their anxiety, and then determining possible solutions to preventing or decreasing it and helping them prepare for the surgery. According to Davis-Evans (2013, p. 355), perioperative nurses can use non-pharmacological and pharmacological interventions to reduce anxiety.

In a study conducted by Maghsoodi, Zarea and Haghizadeh (2014, p. 1) found that the establishment of therapeutic communication sessions with patients is effective in reducing the severity of their anxiety. The authors also showed that the communication and therapeutic relationship with the patient in the more purposeful manner can speed up the recovery process. It is during communication, a patient and a nurse interact and a patient expresses his/her feeling and nurse help a patient to cope with the stressful situation. This finding is supported by the results of a study called impact of Doctor-patient communication on preoperative anxiety conducted by Nikumb *et al.* (2012, p. 19) which found that better doctor-patient communication is associated with lower anxiety.

Humor can be used in perioperative setting to create relationships, decrease anxiety, release anger in a socially accepted way, avoid painful feelings and facilitate learning. When humor is used by a nurse a therapeutic atmosphere which increases the likelihood of a more positive surgical experience is established (Davis-Evans, 2013, p. 359).

In a study conducted by Kushnir, Friedman, and Ehrenfeld (2012, p. 121) coping with preoperative anxiety in cesarean section, they found that listening to favorite music immediately before a cesarean section is effective for reducing anxiety. They explained that music may orient the patient's attention away from negative stimuli to something familiar and soothing, thus promoting relaxation and changes in physiological responses. The findings showed that the women listened to their favourite music before cesarean section reported an increase in positive emotion and decrease in negative emotion and perceived the situation less threatening compared to women who did not listen to the music. Negative emotions cause specific action tendencies (fight or flight) while the positive emotions broaden the scope of attention, cognition, and action.

Similarly to this study Johnson, Raymond and Goss (2012, p. 154) in their study perioperative music or headsets to decrease anxiety found that music is a inexpensive, easy to administer and satisfier of most people intervention to decrease anxiety and Wakim, Smith and Guinn (2010, p. 231) in their study entitled the efficacy of music therapy found that listening to music correlated with lower anxiety, lower blood pressures, lower respiratory rates, and lower heart rates but they stressed on allowing the patient to choose his or her preference for the type of music or even bringing a portable music device from home.

Guo, East and Arthur (2012, p. 58) found that preoperative education is effective in reducing the levels of anxiety and Pereira, Figueiredo-braga and Carvalho (2016, p. 733) found that an empathic patient-centered approach significantly reduces the anxiety, improves surgical recovery and wound healing and raises the satisfaction of the patient with the quality of the information provided. In this approach the patient is encouraged to express his or her feelings and psychological support and tailored information are provided to the patient and the patient's questions are addressed in a calm, supportive and confident manner within an atmosphere of privacy, care, concern, with a non judgmental and respectful attitude.

Support from family, friends, and health care providers and anxiolytic or antidepressant medications can help with relieving severe anxiety but the medications

are associated with risks of potential side effects, dependence and withdrawal (Guo, East, and Arthur, 2012).

2.3. EMPIRICAL LITERATURE ON LEVELS OF PREOPERATIVE ANXIETY

Levels of preoperative anxiety are categorized in either high or low levels of preoperative anxiety, clinically significant or not clinically significant. However, clinically significant preoperative anxiety and high preoperative anxiety level are used interchangeably and not clinically significant and low preoperative anxiety level are used interchangeably. Some authors classify the levels of preoperative anxiety in no, mild, moderate or severe preoperative anxiety (Bakr, Ali and Khudhr 2014, p.3). The categorization of levels of preoperative anxiety depends on the used preoperative anxiety assessment tool based on its cut-off score.

The studies using Hospital Anxiety and Depression Scale (HADS) consider the sum score ≥ 11 as high preoperative anxiety level and the sum score < 11 as low preoperative anxiety level (Santos, Martins and Oliveira 2014, p.7; Williams *et al.* 2014, p.1). For studies that employ State version of State Trait Anxiety Inventory (S-STAI) to assess preoperative anxiety consider the sum score > 44 score as significant anxiety or high anxiety level and the sum score ≤ 44 as low anxiety level or not significant anxiety (Jafar and Khan 2009, p 359; Nigussie, Belachew and Wolancho 2014, p.5) and for the studies using the Pre-operative Intrusive Thoughts Inventory ('The PITI' or 'PITI-20') consider the sum score ≥ 15 as clinically significant preoperative anxiety level and the sum score < 15 as not clinically significant preoperative anxiety level (Crockett, Gumley and Longmate 2007, p. 688).

The study conducted by Maheshwari and Ismail (2015, p.196) showed that women with high preoperative anxiety levels preferred general anesthesia for caesarean section ($P < 0.005$). Many researches indicate that preoperative anxiety affects negatively every step of the perioperative process. Kim *et al.* (2010, p.330) showed that for the patients aged 45 or older had high preoperative anxiety levels and their anxiety scores correlated significantly with the changes in pulses rate ($P = 0.047$ by Pearson correlation), in

addition preoperative anxiety scores predicted a 20 % or more change in blood pressure ((AUC = 0.729, P = 0.024) and in heart rate (AUC=0.767, P=0.049).

Furthermore, Kil *et al.* (2012, pp. 121-122) found that patients with higher preoperative anxiety required a greater amount of propofol to reach light sedation ($r^2 = 0.053$ $P=0.021$) and moderate sedation ($r^2=0.127$ $P=0.010$). Postoperatively the analgesic requirement increases as well, the wound healing delays, health care cost rises, and the hospital stay is prolonged. This was supported by study conducted by Ali, Altun and Hakan (2014, p. 225) who found that preoperative anxiety scores significantly correlate with the duration of hospitalization ($r = 0.370$, $p = 0.001$), and patients with a high anxiety had longer extubation time than patients with low anxiety ($P=0.03$), in addition, the patients with high anxiety had more agitation ($p=0.029$) and shivering ($P=0.044$) as side effects of anesthetic agents than patients with low anxiety (Ali, Altun and Hakan 2014, p. 225).

In a study conducted on patients undergone total knee arthroplasty found that patients with high preoperative anxiety or depression had more than 6 times high risk to be dissatisfied than patients without anxiety or depression and patients with post-operative deep infection had 3 times risk to be dissatisfied, those dissatisfied patients had 1 day more of hospital stay than satisfied patients (Ali *et al.* 2016, p. 3). Preoperative anxiety is associated with the risk of infection and with postoperative nausea and vomiting (Pokharel 2011, p. 373; Homzová and Zeleníková 2015, p. 324; Ayla *et al.* 2016, p. 1).

2.4. FACTORS ASSOCIATED WITH PREOPERATIVE ANXIETY

It has been reported that preoperative anxiety may be associated with many factors. These include demographic data, previous surgical experience, and anesthetic technique, types of surgical procedures, medical diagnosis, and information about surgery.

Jafar and Khan (2009, p.360) conducted study in Pakistani, they found that age is contributing factor predicting preoperative anxiety and preoperative anxiety decreased with an increase in age ($p < 0.001$), similarly Bakr, Ali, and Khudhr (2014, p. 6) found that young patients are more anxious than old age patients ($P < 0.01$) and they reported

that, this happened because young people are less experienced and more prone to anxiety and fear compared to old age people.

Contrary to those studies, Fathi *et al.* (2014, p. 92) found that the anxiety levels increased with the age, the old patients presented the higher level of anxiety than young patients ($p < 0.001$), this finding was in line with the results of study conducted by (Basak *et al.* 2015, p. 19) that showed that patients who were aged more than 35 years old expressed more anxiety than young patients and Nigussie *et al.* (2014, p. 5) found that age does not influence the preoperative anxiety levels significantly.

The study conducted in Sri Lanka by Matthias and Samarasekera (2011, p. 4) showed that females experienced more preoperative anxiety for surgery and anesthesia than males, similar results were found in a study conducted by Fathi *et al.* (2014, p. 92) in Iran that women experienced more anxiety than men. Masood *et al.* (2009, p. 39) and Basak *et al.* (2015, p. 19) explained these findings to be due to family relationship closeness and bonding of the females and the fact that women express easily the anxiety and they are more affected by separation from their family. Contrary to this study Nigussie, Belachew and Wolancho (2014, p. 5) in their study conducted in Jimma University Specialized and Teaching Hospital in Ethiopia showed that sex did not influence significantly preoperative anxiety.

Marital status has been identified by some of the researchers as the factor affecting preoperative anxiety. Fathi *et al.* (2014, p. 94) found that widowed or divorced female experienced more anxiety while single and married patients experienced lower preoperative anxiety levels. This study also showed that high education levels and income rate and better social support were significantly correlated with lower preoperative anxiety, these study findings are similar to that reported by (Basak *et al.* 2015, p. 19) who reported that low income and low level of education were associated with higher anxiety. Contrary to these findings Nigussie, Belachew, and Wolancho (2014, p. 5) found that education level did not influence preoperative anxiety and higher income rate correlated with higher anxiety levels and Komolafe and Csernus (2015, p. 97) found that feeling anxious was not associated with marital status ($p \leq 0.375$).

Previous surgery affects the anxiety of the patients as demonstrated by many studies (Bakr, Ali, and Khudhr 2014, p. 5; Jafar and Khan 2009, p. 361 and Homzová and Zeleníková 2015, p. 324) that reported that patients who had at least one prior surgery presented a low level of anxiety. This may be explained by having a history of surgery makes the patient more aware of the surgical process (anesthesia, intraoperative and postoperative pain control and probable outcomes of surgery) that prevent patient to develop more fear of unknown or rely on a misconception about anesthesia and surgery. In addition, those patients were survived from previous surgery and did not develop any or severe complication from surgery and got signs and symptoms relieved after surgery. Contrary to those findings, Nigussie, Belachew, and Wolancho (2014, p. 5) and Hong (2001, p. 4) found that having previous surgical operation or anesthesia did not influence significantly preoperative anxiety, this was explained as due to lack of understanding on explanation or lack of information on that previous experience of surgery or anesthesia and they concluded that nature and quality of previous surgery is more important factor influencing the anxiety than just having previous surgery.

Shoaei *et al.* (2016, p. 707) found that the longer the patient's waiting time for surgery, the higher anxiety ($P=0.003$). In addition, Matthias and Samarasekera (2011, p. 5) found that waiting for the operation was ranked the first anxiety causing factor for preoperative anxiety. Furthermore some studies reported that types of anesthetic technique are associated factors with preoperative anxiety. This was supported by study conducted by Bosc *et al.* (2015) in patients undergoing oculoplastic and strabismus surgery found that patients undergone surgery under general anesthesia had higher anxiety levels than patients undergone surgery under local anesthesia ($P=0.002$). In addition some other studies reported that patients under general anesthesia are more anxious than patients under local anesthesia (Jawaid *et al.* 2007, p. 147; Mitchell 2013, p. 41; Maheshwari and Ismail 2015, p. 197).

Provision of information was reported to be associated with low preoperative anxiety. This is supported Lee *et al.* (2016, p. 698) who found that surgeon's explanation of the surgery performed reduce preoperative anxiety 72.3 %, Aust *et al.* (2016, p. 4) reported

that 63.7% of the patients believed that information would aid them to cope with their anxiety.

In addition, Kalogianni *et al.* (2016, p. 447) found that anxiety and postoperative complications were reduced in patients undergoing cardiac surgery due to preoperative education delivered by nurses and Maheshwari and Ismail (2015, p. 197) found that patients gaining information from anesthetists were less anxious than patients receiving information other than anesthetist. Moreover, Ebirim and Tobin (2010, p. 3) reported that postponement was the most common reason for anxiety and Homzová and Zeleníková (2015, p. 323) reported postponement among the factors associated with anxiety.

2.5. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION

A number of studies on preoperative anxiety was conducted by different researchers. It has been shown that preoperative anxiety affects negatively every steps of surgical process. Many studies conducted to find out preoperative anxiety levels or prevalence and factors affecting preoperative anxiety, however the impact of types of surgery and medical diagnosis was not adequately addressed.

Santos, Martins and Oliveira (2014, p. 7) conducted a study of anxiety in the preoperative surgical patient found that there was a statistical differences in preoperative anxiety according to medical diagnosis but the author did not tackle on those medical diagnosis, therefore in this study the medical diagnosis was addressed. In addition few literatures are available for the impact of types of surgery and medical diagnosis on preoperative anxiety.

A study conducted in Pakistani surgical patients to find out the prevalence of preoperative anxiety found that there were significant preoperative anxiety and the anesthetic visit was seen as one of the interventions that help to decrease anxiety (Jafar and Khan 2009, p. 359). In addition a study conducted by Fathi *et al.* (2014, p. 90) assessed preoperative anxiety for patients candidates for heart surgery found that the women were more anxious than males and recommend that women should be the focus

of preoperative psychiatric consultation. Moreover, Bakr, Ali and Khudhr (2014, p. 1) found that young patients with no history of previous surgery had high preoperative anxiety levels and those patient group should be focus preoperatively to alleviate their anxiety levels. Many literatures agreed on the importance of preoperative assessment before surgery in order to maximize the surgical outcome and minimize the negative effect of anxiety to the surgery. However many available studies do not include all patients waiting surgery, therefore this study included all patients waited for surgery during the period of data collection.

Despite the recommendation of assessing preoperative anxiety of patients awaiting surgery by putting into consideration the different factors associated with the preoperative anxiety, in Rwanda where health sector is improving and surgical and perioperative nursing specialties in particularly is improving with the aim of maximizing the patient surgical outcome, there is no study done on preoperative anxiety in patients awaiting surgery, this may be seen as the overlook on mental health issues of the patients, that is known to expose the patients to poor surgical outcomes. The University teaching hospital of Kigali is a referral hospital of Kigali that cares for the patients coming from all districts of Rwanda and it is considered as a public hospital that provide a high quality of care and role models of other public hospitals in Rwanda. Therefore this current study was aimed to assess preoperative anxiety level and the associated factors for patients awaiting surgery at UTHK, Rwanda may contribute to the improvement of mental health of patients awaiting surgery that may in turn result in good patient surgical outcomes.

2.6. THEORETICAL FRAMEWORK

Mogg and Bradley (1998) cognitive-motivational model of anxiety was used in this study. This model explains how different factors influence the development of anxiety threat (Majtyka, 2015, p. 5) . Anxiety is future-oriented, the environment is screened for the threat and the possible danger is anticipated.

An anxious person who is not significantly depressed presents a preattentive bias for external threat cues, once the threat is identified by Valence Evaluation System (VES),

a person develops the vigilance towards the threat. The externally oriented cognitive and behavioral responses of an anxious individual towards the threat does not only depend on the valence evaluation system but also relies on the involvement of a more general goal- engagement system that controls the strength of behavior oriented to external goals and stimuli (Mogg and Bradley 1998, pp. 816-820).

Those rapid and automatic set of responses (i.e. cognitive, behavioral and physiological) interrupt the ongoing goals and activities in order to deal with the potential (Mogg and Bradley 1998, p. 817; Majtyka, 2015, p. 6).

The valence evaluation system that is responsible for assessing stimulus threat value does not only analyses the stimulus but also it integrates the context and memorial information about the stimulus as results of previous learning experiences to determine its output. It is in this regards trait anxiety reflects the reactivity of the valence evaluation system to aversive stimuli. However, valence evaluation system is more sensitive in high trait anxiety individuals (anxiety-prone) meaning that those individuals the threat that would be viewed as insignificant, they viewed it as high subjective threat value (Majtyka 2015, p. 5; Mogg and Bradley 1998, p. 817).

The output of VES is carried out into a Goal Engagement System (GES) that determines the allocation of resources for cognitive processing and action. If the stimulus is labeled as having high threat value, GES automatically interrupts the ongoing activities and orient attention towards the threat and if the stimulus is tagged as having little or no threat value, the stimulus is ignored and continue to pursue the current goals. The response to the threat stimulus is determined by the different variables including stimulus input, its situational context, the organism's current anxiety states prior learning and individual differences in vulnerability to anxiety (Mogg and Bradley 1998, p. 817; Majtyka 2015, pp. 5-6)

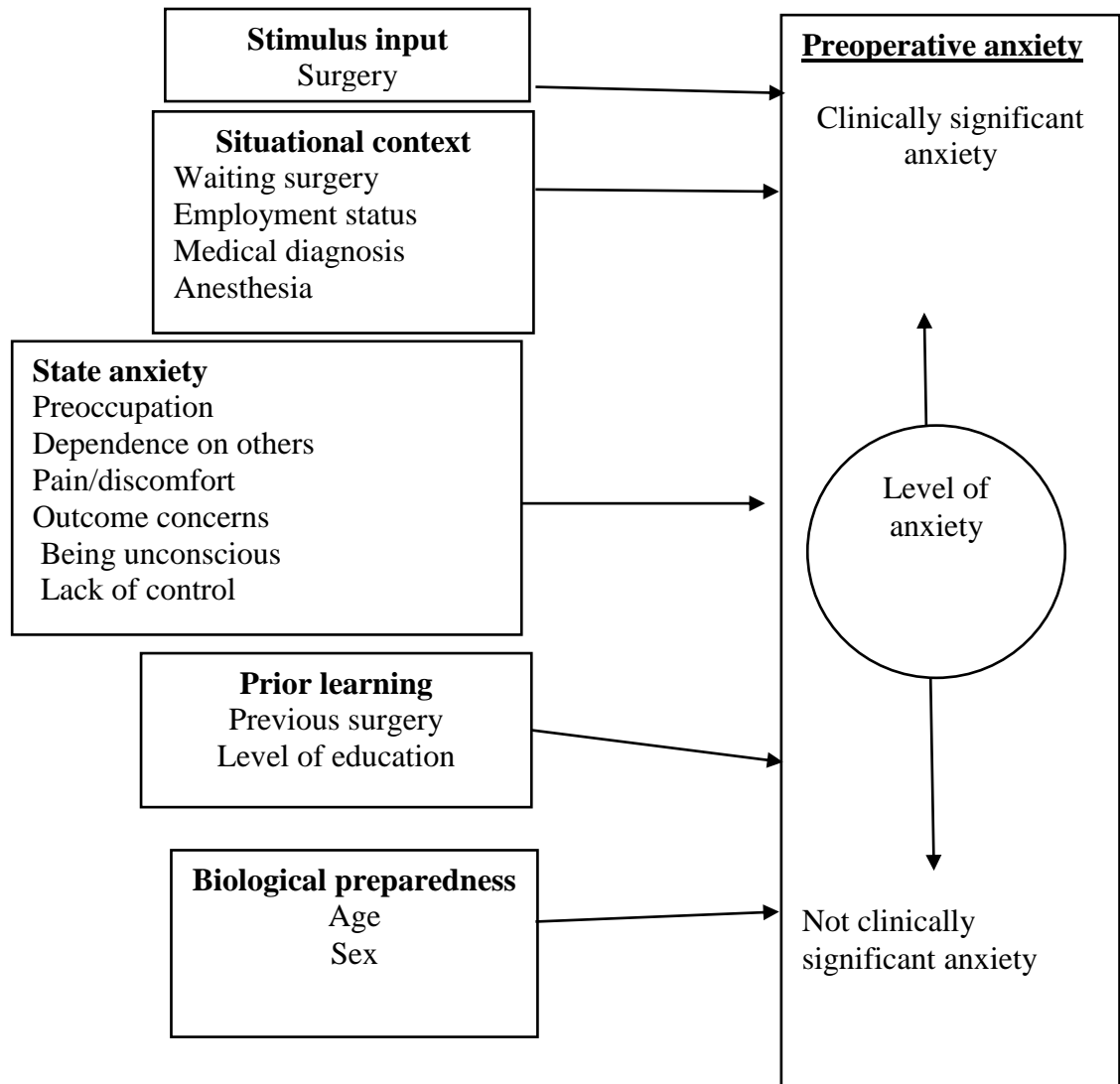


Figure1: Mogg and Bradley (1998) Cognitive-Motivational Model of anxiety representing the factors influencing the level of anxiety. Figure adapted from (Majtyka, 2015) figure 1.1 Mogg and Bradley (1998) cognitive motivational model of anxiety representing the factors influencing vigilance or avoidance of threat

State anxiety that is composed of preoccupation, dependence on others, pain/discomfort, outcome concerns, being unconscious and lack of control have been references of developing the preoperative anxiety scale that simulate the perioperative period (Crockett, Gumley and Longmate 2007, p. 685). Prior learning that includes history of previous surgery and level of education and biological preparedness that includes age and gender of the individual contribute to the preoperative anxiety levels a patient develops after being informed that she or he will be treated with surgery (Majtyka 2015, p. 5)

The stimulus input is surgery as shown by different researchers that realization of going into surgery provokes the anxiety and the patient is worried about the results of the surgical operations (Jawaid *et al.* 2007, p. 145). Preoccupation, dependence on others, pain/discomfort, outcome concerns, being unconscious and lack of control made the themes that detect a person with significant preoperative anxiety levels (Crockett, Gumley and Longmate 2007, p. 685) Waiting for surgery, medical diagnosis, types of surgery, types of anesthetic technique, employment status, level of education, history of previous surgery, age and gender are the factors associated with preoperative anxiety levels. Fear of different events expected during surgery increases the anxiety state of the patient as reported by different researchers including (Yilmaz, Sezer and Gu 2011, p. 957) who reported that fear of complication and results of operation, fear of death, fear of unknown, fear of anesthesia, fear of the operating room (OR) environment, postoperative pain, postoperative nausea and vomiting, concerns about regaining consciousness after anesthesia, surgical errors and postponed surgery may cause the anxiety to patients awaiting surgery.

Conclusion

In this chapter, literature related to preoperative anxiety was reviewed. The theoretical knowledge and empirical knowledge about preoperative anxiety were explored. A critical review and research gap identification was performed and theoretical framework was explained.

CHAPTER THREE: METHODOLOGY

3.1. INTRODUCTION

Research methodology outlines how the steps, strategies, and procedures a researcher were used to collect data and analyze data. This chapter describes the research design, study area, population of the study, sampling, data collection instruments and procedures, validity and reliability, data analysis, ethical consideration and problems and limitation of the study

3.2. RESEARCH APPROACH

The quantitative non-experimental research approach was used for this study as it observed the natural occurrence of preoperative anxiety and its associated factors. This study statistically analyzed preoperative anxiety in numbers.

3.3. STUDY DESIGN

A cross-sectional analytical study design was used. The data aiming to determine the level of anxiety and associated factors were collected at a single occasion. The study design was analytical study as it studied the association of preoperative anxiety level and factors.

3.4. STUDY SETTING

The study was conducted at University Teaching Hospital of Kigali (UTHK) which is popularly known as CHUK, French acronym of “Centre Hospitalier Universitaire de Kigali”. UTHK was awarded a status of a referral and teaching hospital on 7/12/2000 by the law No41/2000; it has a capacity of 513 beds. This hospital performs surgeries for the patients transferred from all districts of Rwanda. In 2011 an estimated number of surgeries was 460 surgeries/ month for a catchment area of more than 6,200,000 people and 67.7% of patients came from outside of Kigali (Wong *et al.* 2015, pp. 37-38).

UTHK performs a number of surgical specialties including general surgery, urology, neuro-surgery, Ear Nose Throat (ENT) surgery, orthopedic surgery, Plastic surgery, Gyneco-obstetric surgery among others.

UTHK is built in Rwanda, Kigali city, NYARUGENGE District, NYARUGENGE sector. It is situated in few meter from Serena Hotel, next to Baho International Hospital, Nyarugenge branch. Data collection was conducted in wards that receive patients who come for elective surgery.

3.5. STUDY POPULATION

All adult patients awaiting surgery during the period of data collection constituted study population. The data collection was conducted during 2 months, March and April 2017. The number of surgeries done in that period of the previous year (2016) constituted a population of 241 (Data from Health Management Information System CHUK Operating Theatre, March and April 2016).

3.6. STUDY SAMPLE

The study sample is a subset of the population element (Polit and Beck 2014, p. 177). A sample size is the number of participants selected from the target population. By using Yamane (1967:886) at a confidence interval of 95% and error of 5%. The calculation of 241 population comes up to 151 participants.

$$n = \frac{N}{1 + N(e)^2}$$

Where

n= the sample size

N = the size of population

e= the error of 5 percentage points.

3.7. SAMPLING STRATEGY

A non-probability sampling technique using a convenience sampling strategy was used; the patients who were available during data collection period and accepted to participate in research were selected from the study (Wood and Ross-Kerr, 2011). The operating theater list was used to localize the patient in hospitalization ward, the sampling concerned on the patients who would be operated on next day of data collection.

Inclusion criteria: adult ASA (American Society of Anesthesiologists) I and II admitted patients (age between 16 - 80years) undergoing various elective surgeries under general or spinal anesthesia.

Exclusion criteria: Patients with known mental health problems, mental retardation and who was taking any type of anxiolytics, who undergoes the emergency surgery and who understand neither English nor Kinyarwanda language.

3.8. DATA COLLECTION INSTRUMENT

In this study, Pre-operative Intrusive Thoughts Inventory (PITI) tool used to evaluate anxiety of patients in preoperative period was used. This tool was developed by Crockett, Gumley, and Longmate (2007), the tool is Likert scale and is composed of 20 questions. The questionnaire was forward translated in Kinyarwanda by someone fluent in both English and Kinyarwanda and back translated into English by someone else who is also fluent in both English and Kinyarwanda languages who did not have any knowledge of the questionnaire. The questionnaire was made of three sections. Section A asks about participant's demographic data and it is made of five questions, section B asks about information related to health of the participant and it is composed of seven questions and Section C: consists of PITI 20 items which together self-assess preoperative anxiety.

The PITI was made of six themes that are pre-occupation, outcome concerns, being unconscious, loss of control, dependence on others and pain/discomfort which reflect the preoperative situation. PITI is 20 item questionnaire, with 4 points Likert scale

ranging through “not at all” with 0 points, “some of the time” with 1 point, “often” with 2 points and “most of the time” with 3 point

3.9. DATA COLLECTION METHODS AND PROCEDURES.

The data collection was done one day before surgery. The list of patients scheduled on next day operating room was used by the investigator to recruit the participants. After recruitment, the patients was visited, explained the purpose of the study and instructions of filling the questionnaire. The written informed consents were obtained and then the participants filled the questionnaires. For participants who did not know to read, oral informed consent was obtained in presence of witness and signed by the witness, investigator and with a fingerprint of the participant then the witness completed the questionnaire for him/her. The questionnaire consisted of demographic data, health information and the tool for anxiety self- assessment that the participants used to assess their own anxiety.

3.10. VALIDITY AND RELIABILITY

3.10.1. VALIDITY

The validity of a research tool refers to the extent to which a tool really measures what it intends to measure (Polit & Beck 2014, p. 205). Content validity refers to the extent to which an instrument is made of appropriate items for the concept to be measured (Polit & Beck 2014, p. 205). Within this study, content validity was ensured by checking items in the data collection tool against the study objectives and concepts in the conceptual framework to ascertain whether they measured all elements to be investigated. The table 3.1 shows the content validity which highlights items of measurement corresponding to the study objectives and conceptual framework.

Table 3. 1: Content validity

Objectives	Conceptual framework	Questionnaire
To determine the level of preoperative anxiety of the patients awaiting surgery at UTHK	State anxiety	Section C : statements:1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
To determine the factors associated with the preoperative anxiety	Situational context State anxiety Stimulus input Prior learning Biological preparedness	Section A: Questions: 1, 2, 3, 4,5 Section B: questions: 6,7, 8,9, 10, 11,12 Section C : statements:1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

3.10.2. RELIABILITY

Polit and Beck (2014, p. 72) define reliability as the degree of consistency or accuracy with which an instrument measures an attribute.

Pilot study

A pilot study was conducted on 12 patients waited for surgery at UTHK. The purpose of this pilot study was to test understandability of research questionnaire for participants and test the internal consistency of preoperative anxiety self-assessment tool which was Pre-operative Intrusive Thoughts Inventory (PITI) after being translated in Kinyarwanda. The patients used in the pilot study were not included in the final research sample. The pilot study found that questionnaire is understandable. Pre-operative Intrusive Thoughts Inventory (PITI) tool was developed by Crockett, Gumley and Longmate (2007, p. 685). The developers of the PITI have proven that the tool was

reliable and valid with good internal consistency for the full scale with a Cronbach alpha coefficient of 0.91. In the current pilot study, the Cronbach alpha coefficient of 0.916 was reported.

3.11. DATA ANALYSIS

The data from this study were coded and entered for analysis into the Statistical Package for Social Sciences (SPSS) version 20.

To determine the level of preoperative anxiety of the patients awaiting surgery at UTHK the sum of the statement of self-assessment scores of preoperative anxiety was done. The highest score of the scale is 60 points and the lowest score is 0, the author of the tool reported that 15 or more score on PITI-20 scale reliably detects the patients with significant anxiety.

The sum of points of an each individual PITI item was made to obtain total preoperative anxiety score of each participant in order to detect participants who reached cut-off score of ≥ 15 that is the baseline of detecting clinically significant anxiety. The participants scored fifteen (15) or more was ranked as having clinically significant preoperative anxiety while participants scored less than fifteen (15) was ranked as not having clinically significant anxiety (Crockett, Gumley and Longmate 2007, p. 688).

For objective two that was to determine the factors associated with the preoperative anxiety. The data was positively skewed therefore non-parametric test was used to test the relationships between variables from demographic data and health information section of the questionnaire and the preoperative anxiety level.

The Kruskal-Wallis, Chi-square test for independence and bivariate correlation were used in this study. Tables and figures were used to show the distribution of participants.

3.12. PROBLEMS AND LIMITATIONS OF THE STUDY

I. Problems:

At University Teaching Hospital of Kigali, there is no ward (area) specific for accommodating patients awaiting surgery, therefore, the investigator had to use the operating room list of the scheduled patients to allocate the participants

II. Limitations

Since the study was conducted at one hospital, the convenience sampling strategy was used, the findings cannot be generalized to other population that do not share the same characteristics.

3.13. ETHICAL CONSIDERATIONS

The data collection was conducted after getting ethical clearance from the University of Rwanda, College of Medicine and Health Sciences Institutional Review Board. The ethical clearance from UR-CMHS IRB was presented to UTHK ethical committee to get permission to conduct the study to the patients. Data collection started after getting ethical clearance from UTHK.

The investigator explained to the participants all about the study including the purpose of the study and risk- benefit to participate in this study, then the participants voluntarily gave and signed a written or oral consent to participate in the study. The participants were informed that they have fully right to withdraw from the study without any penalty if they feel uncomfortable about continuing. Confidentiality was assured to the participants as the questionnaires and informed consent forms were anonymous.

The filled questionnaire and informed consent forms are stored in locked cupboard and data are kept on a computer that is protected by a password known only by the investigator; the private information was also not disclosed to someone else. All participants were treated fairly and equally. Each participant has been given an oral explanation of the study and a sheet providing an explanation about research. The

researcher gave time to the participants to ask whatever they want about the study and provide the appropriate response to asked question.

3.14. DATA MANAGEMENT

Data collection was conducted only by the investigator himself to ensure confidentiality. The investigator kept completed questionnaires and informed consent forms in a locked cupboard only accessible by him. Electronic data was saved on a computer and the researcher used a special password to gain access to this computer. All data collected will be securely kept until five years and be disposed of in fire.

3.15. DATA DISSEMINATION

The final report will be communicated to the supervisors and defense panel members, then submitted to University of Rwanda library. The findings of this study will also be communicated to the University Teaching Hospital of Kigali. Research article will be submitted to peer review journal for publication

3.16. CONCLUSION

This chapter discussed the methodology the researcher followed to conduct this study. It clarified the research design and all procedures that were used to get a sample, collect data and analyze them. It also discussed the ethical aspect of this study by considering the ethical principle of respect for persons, beneficence, and justice.

CHAPTER FOUR: RESULTS

4.1. INTRODUCTION

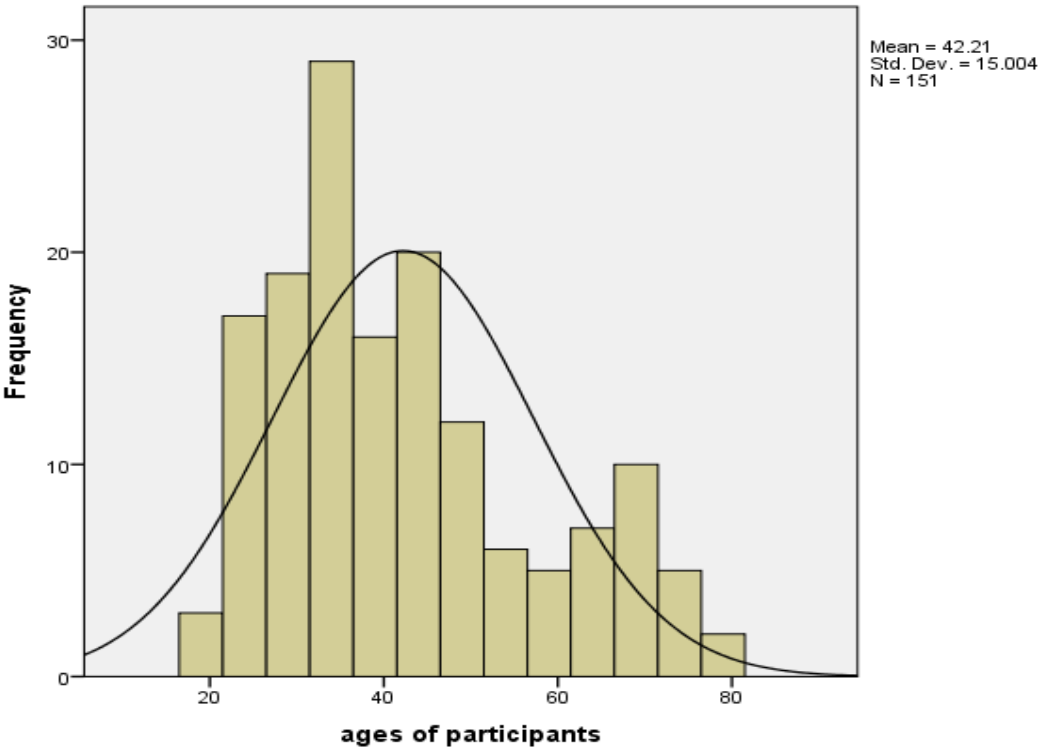
Chapter four present the results of the study. The results presented in this section are the responses of participants to the research questionnaire. The results are presented in figure or table. The results reflect on three sections of research questionnaire that are demographic data, health information, and preoperative anxiety self-assessment

4.2. PRESENTATION OF RESULTS AND INTERPRETATION

4.2.1. CHARACTERISTIC OF PARTICIPANTS

The demographic data include age, gender, marital status, the level of education, and employment status.

Figure 4.1. Age of the participants waiting for surgery at University Teaching Hospital of Kigali.



The age of participants ranged from 19 years old to 80 years old. The median age is 38 years old and interquartile range of 21.

Table 4.1. Frequency of demographic data (n = 151)

Demographic data	Characteristic of demographic data variables	Frequency	Percent
Gender	Male	96	63.6
	Female	55	36.4
Marital status	Single	30	19.9
	Separated	3	2.0
	Cohabiting	11	7.3
	Married	94	62.3
	Widow	13	8.6
The level of education	None	7	4.6
	Incomplete primary education	36	23.8
	Primary	53	35.1
	Incomplete secondary education	23	15.2
	Secondary	12	7.9
	University	20	13.2
Employment status	Not employed	35	23.2
	Self-employed	86	57.0
	Private sector employed	19	12.6
	Public sector employed	11	7.3

In terms of gender of participants, the majority of them was male at 63.6% (n=96) while the female was 36.4% (n=55) of the participants.

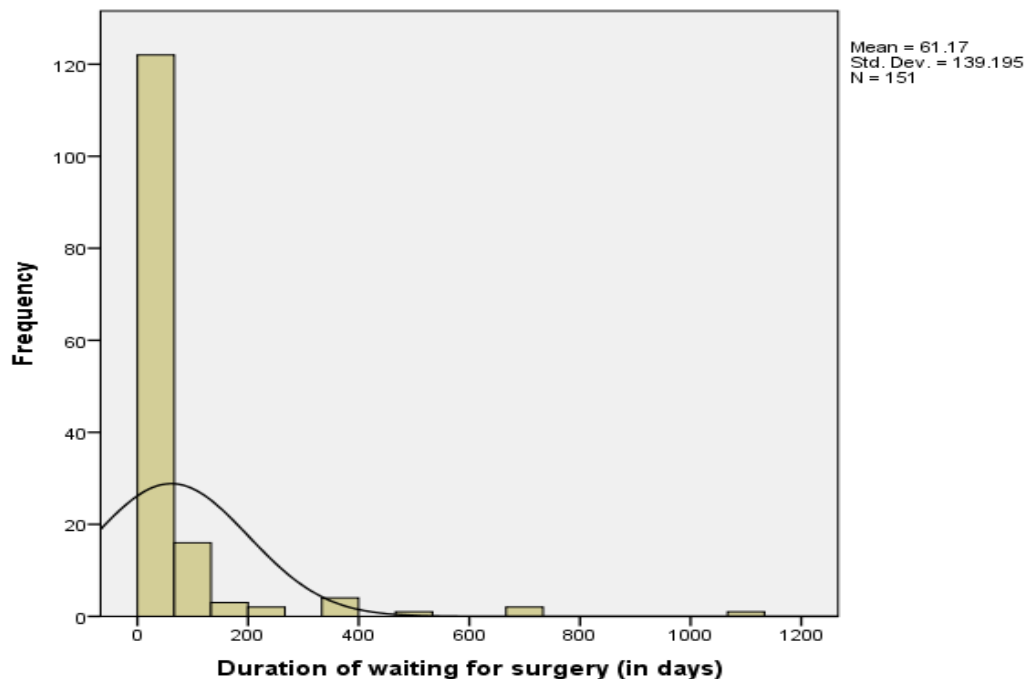
Marital status of the participants, the highest number was married that constituted 62.3% (n=94), followed by single 19.9% (n=30), widow 8.6% (n=13), cohabiting 7.3% (n=11) and separated 2% (n=3), no divorced participant found in this study. Concerning the level of education of the participants, the study revealed that many participants completed the primary school 35.1% (n=53), followed by 23.8% (n=36) participants who did not complete the primary school, 15.2 % (n=23) did not complete

the secondary school, 13.2% (n=20) had university education, 7.9% (n=12) completed secondary school and 4.6% (n=7) did never attend school. Regarding an employment status, 57% (n=86) are self-employed, 23.2% (n=35) are not employed, 12.6% (n=19) are private sector employed and 7.3% (n=11) are public sector employed.

Information on participant's health condition

Health information of the participants is made of information related to medical diagnosis, waiting duration for surgery, types of surgery, anesthetic technique, and information about surgery, postponement and previous history of surgery.

Figure 4.2. Duration of waiting for surgery in a number of days.



The minimum duration of waiting for surgery is one (1) day and maximum duration is 1080 days. The median duration is 14 days and interquartile range of 55 days. These findings imply that some patients waited for surgery for a long time and other patients get an appointment for surgery as soon as they meet surgeons.

Table 4.2. Distribution of participants according to their health information about health condition (n = 151)

Health information data	Element of health information	Frequency	Percent
Medical diagnosis	Malignant	20	13.2
	Non-malignant	80	53.0
	Traumatic injury	44	29.1
	Obstetric	7	4.6
Type of surgery	Urology	23	15.2
	Orthopedic	40	26.5
	ENT	9	6.0
	Gyneco-obstetric	15	9.9
	Neuro-surgery	1	.7
	General surgery	56	37.1
	Plastic surgery	7	4.6
Types of anesthetic technique	Spinal anesthesia	94	62.3
	General anesthesia	57	37.7
Information about surgery	None	24	15.9
	Not enough	24	15.9
	Enough	103	68.2
Postponement of surgery	Yes	25	16.6
	No	126	83.4
Previous history of surgery	Yes	57	37.7
	No	94	62.3

Out of total participants, 53% (n=80) reported to have a non-malignant medical diagnosis (this category of medical diagnosis includes all kind of medical diagnosis that is not traumatic in origin and no suspect of cancer), 29.1% (n=44) reported to have traumatic injuries, 13.2 % (n=20) reported to have a malignant medical diagnosis (this medical diagnosis includes all surgical conditions that have been shown by histopathological exam that they are cancerous conditions) and 4.6% (n=7) reported to

have surgery for obstetric reasons. This shows that majority of the participants undergo surgery due to nonmalignant surgical conditions.

According to the surgeries the participants waited for, 37.1% (n=56) out of total participants waited for general surgery, 26.5% (n=40) waited for orthopedic surgery, 15.2% (n=23) waited for urology, 9.9% (n=15) waited for gyneco-obstetric surgery, 6% (n=9) waited for Ear, Nose, Throat (ENT) surgery, 4.6% (n=7) waited for plastic surgery and 0.7% (n=1) waited for neuro-surgery. The findings show that general surgery was frequently performed procedures.

The participants have been informed about their type of anesthetic technique to use during the surgical process. 62.3% (n=94) have been informed for use of spinal anesthesia and 37.7% (n=57) have been informed for use of general anesthesia. This shows that spinal anesthesia is frequently used more than general anesthesia.

In term of information about surgery, the majority of the participants 68.2% (n=103) reported that they get enough information about their surgeries, 15.9% (n=24) have reported that the information they received was not enough and 15.9% (n=24) have reported that they did not receive any information about their surgeries. This indicates that the participants had the different level of judgment of information given about surgery whereby the majority of the participants judged the information given about surgery to be enough.

Regarding whether the participants have ever been postponed, the highest number of participants 83.4% (n=126) reported no postponement and 16.6% (n=25) reported yes. This indicates that the postponement of surgery is not dominant. The majority of the scheduled patients for surgery are operated.

Concerning the previous history of surgery, 62.3% (n=94) of the total participants reported yes, and 37.7% (n=57) of them reported. These findings show that majority of patients had previous surgery.

4.2.2. PREOPERATIVE ANXIETY LEVELS

Levels of the preoperative anxiety were self-assessed by participants themselves, using the Pre-operative Intrusive Thoughts Inventory (PITI).

Table 4.3 Distribution of participants according to response of each item of PITI scale (n = 151)

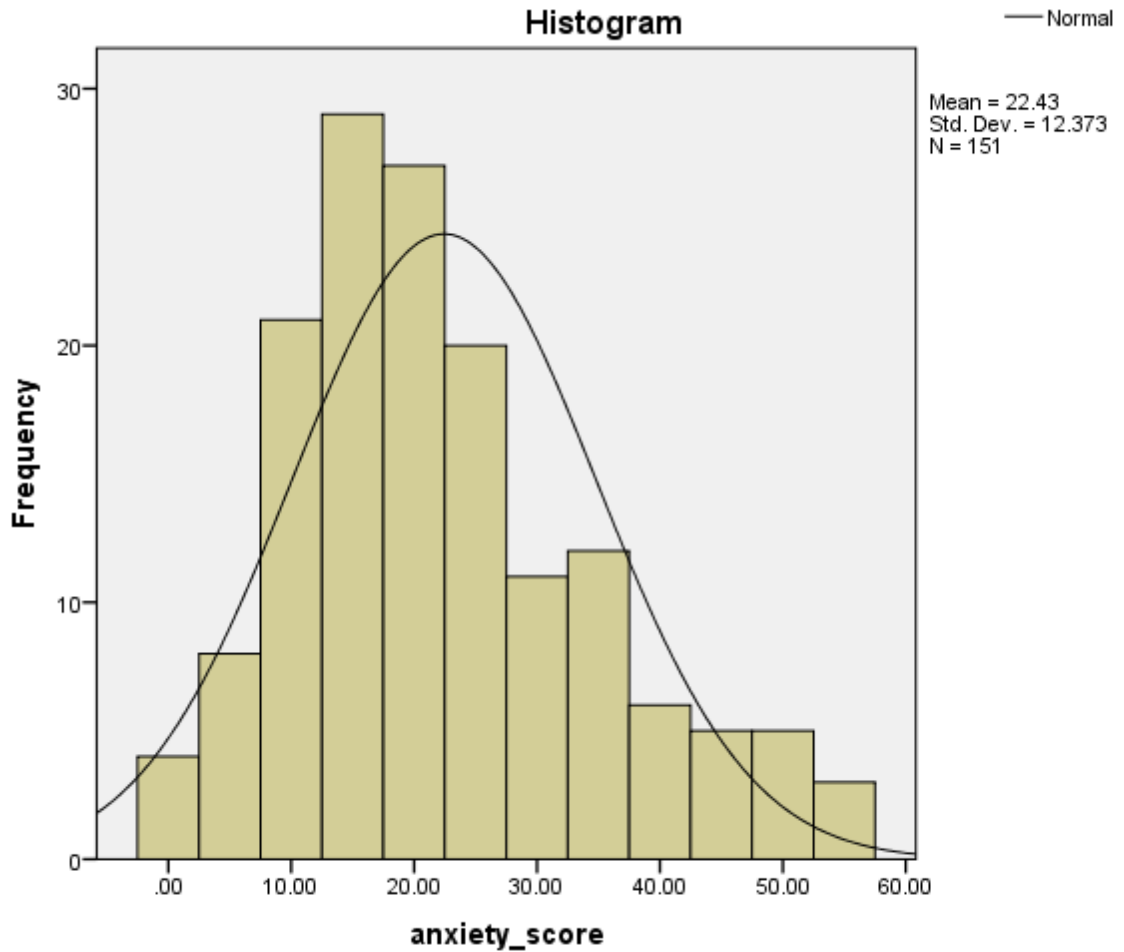
Items	Statistics	Not at all	Some of the time	Often	Most of the time
Worry to wake up	Frequency	97	36	10	8
	Percent	64.2	23.8	6.6	5.3
Nervous due to waiting for the surgery	Frequency	61	51	23	16
	Percent	40.4	33.8	15.2	10.6
worry about the time of getting results	Frequency	54	47	39	11
	Percent	35.8	31.1	25.8	7.3
Worry about soreness afterwards	Frequency	22	47	43	39
	Percent	14.6	31.1	28.5	25.8
Worry about dependence on others	Frequency	69	30	29	23
	Percent	45.7	19.9	19.2	15.2
Feeling of being out of control due to waiting surgical procedure	Frequency	59	50	28	14
	Percent	39.1	33.1	18.5	9.3
Worry about being unconscious	Frequency	71	48	22	10
	Percent	47.0	31.8	14.6	6.6
Worry about the surgical findings	Frequency	38	52	31	30
	Percent	25.2	34.4	20.5	19.9
Worry about the outcome of the surgical procedure	Frequency	36	51	32	32
	Percent	23.8	33.8	21.2	21.2
Worry about duration of pain	Frequency	15	60	43	33
	Percent	9.9	39.7	28.5	21.9
Worry about calling other people for help	Frequency	48	49	32	22
	Percent	31.8	32.5	21.2	14.6

Continued...

Worry about unawareness of what happen during the procedure	Frequency	81	44	13	13
	Percent	53.6	29.1	8.6	8.6
Worry about surgical complications	Frequency	30	46	34	41
	Percent	19.9	30.5	22.5	27.2
Keep thinking about the surgical procedure	Frequency	47	55	31	18
	Percent	31.1	36.4	20.5	11.9
Worry about feeling sick or fainting	Frequency	73	37	24	17
	Percent	48.3	24.5	15.9	11.3
Worry about discomfort on wake up	Frequency	43	69	25	14
	Percent	28.5	45.7	16.6	9.3
Worry about dependence after the surgical procedure	Frequency	37	57	35	22
	Percent	24.5	37.7	23.2	14.6
Worry about doing what is not in signed informed consent form	Frequency	82	33	25	11
	Percent	54.3	21.9	16.6	7.3
Worry about duration of unconsciousness	Frequency	72	43	22	14
	Percent	47.7	28.5	14.6	9.3
Preoccupation of having the surgical procedure	Frequency	16	65	39	31
	Percent	10.6	43.0	25.8	20.5

Each participant scored each item on PITI scale, to obtain the overall anxiety score of each participant, the sum of score of each item was performed. This helped the investigator to categorize a participant as having either clinically significant preoperative anxiety or not having clinically significant preoperative anxiety. In order to choose a statistical test for analyzing data, the distribution of data was tested.

Figure 4.3. Anxiety scores for participants.



This histogram represents descriptive statistics of the sample by anxiety score. The participant's self-assessed minimum anxiety score of 0 and maximum anxiety score of 56. The median anxiety was 20 score and interquartile range of 16.

A Shapiro-Wilk's test P value is < 0.05 ($P=.000$) with visual inspection of the histogram and Q-Q plot showed that anxiety scores are not normally distributed with skewness of 0.686 ($SE=0.197$) and kurtosis of -0.030 ($SE=0.392$).

The cut-off of ≥ 15 scores was considered to detect patients with clinically significant preoperative anxiety levels and without clinically significant preoperative anxiety levels.

The table 4.4 represents participants with clinically significant preoperative anxiety and without clinically significant preoperative anxiety.

Table 4.4 Frequency of preoperative anxiety level

Preoperative anxiety	Frequency	Percent
Not clinically significant anxiety	41	27.2
Clinically significant anxiety	110	72.8
Total	151	100.0

This table shows that participants with clinically significant preoperative anxiety were 72.8% (n=110) against 27.2% (n=41) who presented no or not clinically significant preoperative anxiety.

The investigator explored if there is any difference in preoperative anxiety level among different group of participants. The investigator tested the difference between two independent groups on preoperative anxiety scores by using Mann-Whitney U test and the investigator also tested the difference between more than two independent groups by using the Kruskal-Wallis. The tables below (table 4.5 and 4.6) represent the Kruskal-Wallis that had significant P value ($P < .05$).

Table 4.5 Distribution of preoperative anxiety score across medical diagnosis

	Medical diagnosis	N	Median	Mean Rank	X²	P value
Anxiety Score	Malignant	20	22.00	78.15	15.0	.002
	Non-malignant	80	19.00	69.56	86	
	Traumatic injury	44	26.00	93.36		
	Obstetric	7	11.00	34.36		
	Total	151	20.00			

Distribution of preoperative anxiety score across the medical diagnosis. A Kruskal-Wallis test revealed a statistically significant difference in preoperative anxiety score across four different medical diagnosis groups (group 1, n=20: malignant, group 2, n=80: nonmalignant, group 3, n=44: Traumatic injury, and group 4, n= 7: obstetric), p=0.002. The traumatic injury group recorded higher median anxiety score (Md=26) than the other three groups which have Md= 22, 19 and 11 for malignant, non-malignant and obstetric medical diagnosis respectively. This implies that participants with traumatic injuries had higher preoperative anxiety score than other participants with other medical diagnosis.

Table.4.6 Distribution of preoperative anxiety score according to type of surgery

		Type of surgery	N	Median	Mean Rank	X²	P value
Anxiety Score	Urology		23	16.00	63.59		
	Orthopedics		40	32.00	99.34		
	ENT		9	18.00	76.06		
	Gyneco-obstetric		15	17.00	55.63	18.797	.005
	Neurosurgery		1	12.00	31.50		
	General Surgery		56	20.00	72.64		
	Plastic surgery		7	22.00	60.21		
	Total		151	20.00			

Distribution of preoperative anxiety score according to the type of surgery. A Kruskal-Wallis test also revealed a statistically significant difference in preoperative anxiety score across seven different types of surgery to undergo groups (group 1; n=23: urology, group 2, n=40: orthopedic, group 3, n=9: ENT, group 4, n=15: gyneco-obstetric, group 5, n=1: neuro-surgery, group 6, n=56: general surgery and group 7, n=7: plastic surgery), p=0.005. The group of participants to undergo orthopedic surgery reported higher median preoperative anxiety score (Md= 32) than other six groups which reported the median preoperative anxiety score of 22, 20, 18, 17, 16, and 12 for plastic surgery, general surgery, ENT surgery, gyneco-obstetric surgery, urology surgery and neurosurgery groups respectively. This indicates that participants who waited for orthopedic surgery had higher preoperative score than participants who waited for other types of surgery.

A Mann-Whitney U Test and A Kruskal-Wallis test revealed no significant difference in preoperative anxiety score for a group of gender, marital status, the level of education, employment status, type of anesthetic technique, information about surgery,

postponement of surgery and previous surgery. This means that preoperative anxiety level is the same across those groups.

Table 4.7 Distribution of median preoperative anxiety score for different groups

Group category	Group names	Median anxiety score	Percent
Gender	Male (n = 96)	20.00	.920
	Female (n = 55)	19.00	
Marital status	Single (n = 30)	21.50	.851
	Separated (n = 3)	21.00	
	Cohabiting (n = 11)	29.00	
	Married (n = 94)	20.00	
	Widow (n = 13)	13.00	
The level of education	None (n = 7)	19.00	.806
	Incomplete primary education(n = 36)	22.00	
	The primary (n = 53)	22.00	
	Incomplete secondary education (n = 23)	17.00	
	The secondary (n = 12)	23.00	
Employment status	The University (n = 20)	16.50	.217
	Not employed (n = 35)	20.00	
	Self-employed (n = 86)	20.00	
	Private sector employed (n = 19)	26.00	
Anesthetic technique	Public sector employed (n = 11)	16.00	.509
	Spinal anesthesia (n = 94)	20.00	
Information about surgery	General anesthesia (n = 57)	20.00	.722
	None (n = 24)	20.00	
	Not enough (n = 24)	22.00	
Postponement of surgery	Enough (n = 103)	20.00	.679
	Yes (n = 25)	20.00	
Previous surgery	No (n = 126)	20.50	.534
	Yes (n = 57)	19.00	
	No (n = 94)	22.00	

This table shows that preoperative anxiety score is not statistically significant since the P value is greater than 0.05, this indicates that the preoperative anxiety score is the same in the following group of participants:

Gender group, female and male had no different anxiety score (P=.920). Marital status does not affect the anxiety score of participant (P=.851), The level of education does not influence preoperative anxiety score (P=.806), employment status have not effect on exhibition of preoperative anxiety (P=.217), the anesthetic technique planned to be used for participant had no effect on his/her preoperative anxiety score (.509), provision of information about surgery did not alleviate the preoperative anxiety since no difference found in preoperative anxiety score (P=.722), being postponed for surgery did not influence the preoperative anxiety experience of participant (P=.679) and having previous surgery do not reduce anxiety for participant who waited for subsequent surgery (P=.534).

4.2.3. FACTORS ASSOCIATED WITH PREOPERATIVE ANXIETY LEVEL

The Chi-square test for independence was used to explore the factors associated with preoperative anxiety and P value < .05 was considered to confirm that the factor tested is associated with preoperative anxiety. The table 4.8 and 4. 9 are the output of Chi-square test for independence that has been significant.

Table 4.8 the association between preoperative anxiety levels and medical diagnosis

Medical diagnosis	Clinical anxiety		Total	X ²	P value
	Not significant	Significant			
Malignant	4 (20%)	16 (80%)	20 (100%)	9.579	.023
Non-malignant	24 (30%)	56 (70%)	86 (100%)		
Traumatic injury	8 (18.2%)	36 (81.6%)	44 (100%)		
Obstetric	5 (71.4%)	2 (28.6%)	7 (100%)		
Total	41 (27.2%)	110 (72.8%)	151 (100%)		

In terms of medical diagnosis, participants with malignant medical diagnosis 16 (80%) reported clinically significant preoperative anxiety, participants with non-malignant medical diagnosis 56 (70%) had clinically significant preoperative anxiety, those with traumatic injuries 36 (81.8%) had clinically significant preoperative anxiety while participants with obstetric conditions 2 (28.6%) had significant preoperative anxiety (p=0.023). This shows that there is an evidence of relationship between medical diagnosis and preoperative anxiety level (Chi-square= 9.573, df= 3, p= 0.023). The patients with traumatic injuries had higher preoperative anxiety levels than patients with other medical diagnosis

Table 4.9 The association between preoperative anxiety levels and the age category

Age category	Clinical anxiety		Total	X ²	P value
	Not significant	Significant			
Young adults (18 - 39 years old)	16 (20.8%)	61 (79.2%)	77 (100%)	6.327	.042
Middle adults (40 - 59 years old)	13 (27.1%)	35 (72.9%)	48 (100%)		
Late adults (60 - 80 years old)	12 (46.2%)	14 (53.8%)	26 (100%)		
Total	41 (27.2%)	110 (72.8%)	151 (100%)		

In this study, the age of participants was grouped into three categories that are young adults aged from 18 to 39 years old, middle adults aged from 40 to 59 years old and late adults aged from 60 to 80 years old in order to identify which group of participant is different another for preoperative anxiety. The young adult participants aged from 18 to 39 years old 61 (79.2%) had significant preoperative anxiety, middle adult participants aged from 40 to 59 years old 35 (72.9%) had significant preoperative anxiety against late adult aged from 60 to 80 years old 14 (53.8%) had significant preoperative anxiety (p=0.042). These findings show that there is an evidence of a relationship between age category and anxiety level (Chi-square= 6.327, df= 2, p= 0.042) and the higher preoperative anxiety levels are in the category of young adults.

This study showed that there is evidence of relationship between age group and preoperative anxiety levels. To determine the direction of relationship between age and preoperative anxiety bivariate correlation was conducted and Spearman rho correlation coefficient was considered since the data are not normally distributed.

Table 4. 10 Correlation Between age and preoperative anxiety score

		Anxiety score	
Spearman's rho	Age of the participants	Correlation Coefficient	-.198
		Sig. (2-tailed)	.015
		N	151

A relationship between age and anxiety score was investigated using Spearman's rho correlation coefficient. There was a small negative correlation between two variables, $r = -0.198$, $n=151$, $p= 0.015$). This means that as the ages of the participants increase, the preoperative anxiety decreases slowly.

Binary logistic regression test was used to assess the impact of each factor on preoperative anxiety levels. The table 4.11 shows the impact of each variables on preoperative anxiety levels.

Table 4.11 Logistic regression between preoperative anxiety levels and related determinants

Variables	Odds Ratio	P.Value	[95% Conf. Interval]
<i>Age category</i>			
<i>Young adult ref</i>			
Middle adult	0.63	0.364	0.233 - 1.706
Late adult	0.22	0.006	0.075 - 0.650
<i>Medical diagnosis</i>			
<i>Malignant medical diagnosis ref</i>			
Non-malignant	0.67	0.578	0.166 - 2.728
Traumatic injury	0.21	0.145	0.027 - 1.708
Obstetric	0.03	0.018	0.002 - 0.568
<i>Surgery type</i>			
<i>Urology ref</i>			
Orthopedic	10.22	0.037	1.144 - 91.304
ENT	1.75	0.58	0.242 - 12.596
Gyneco-obstetric	2.33	0.528	0.168 - 32.135
General surgery	1.41	0.554	0.455 - 4.339
Plastic surgery	1.16	0.894	0.134 - 10.031

The table 4.11 shows that orthopedic surgery contributes more in predicting preoperative anxiety (OR: 10.22; 95% CI 1.144 - 91.304; P= 0.037). This indicates that patients waiting for orthopedic surgery are 10.22 more likely to have clinically significant preoperative anxiety level compared to patients waiting for urology surgery.

The old age was found to be a protective factor. The old patients had low preoperative anxiety levels compared to patients with young age (OR: 0.22; 95% CI 0.075 - 0.650; P=0.006). This shows that the patients with advancing age are 0.22 less likely to be clinically significant anxious compared to patients with young age, this may probably due to that it is the first time for young patient to experience the surgical procedure.

Furthermore, some medical reasons are the protective factors for developing clinically significant preoperative anxiety, this is supported by the current findings which found that participants who came for surgery with an obstetric reason had low preoperative anxiety levels compared to patients who come for surgery with malignant medical diagnosis (OR: 0.03; 95% CI 0.002 - 0.568; P=0.018). This may be explained that many participants who came for surgery with obstetric reasons expect the quick recovery and a healthy baby while those participants with malignant medical conditions may not have a full hope of recovery.

CHAPTER FIVE: DISCUSSION

INTRODUCTION

Chapter five presents a discussion of results presented in chapter four. The results are interpreted based on the literature review. Statistical significance is interpreted based on the P value ≤ 0.05 that indicates that the finding is statistical significance. The discussion also reflects on the research questions.

Levels of preoperative anxiety of patients awaiting surgery at UTHK

This study found that 110 (72.8%) of the participants had clinically significant preoperative anxiety levels. This high preoperative anxiety levels may probably be caused by the absence of forums that facilitate the patients to discuss with their health care providers about their health issues and the surgery in particular that in turn might be caused by the heavy workload of health care workers of the hospital. In addition many patients are transferred from rural district hospitals that are not complex as University teaching hospital of Kigali, moreover the patients are far from their family that may support them.

This finding is quite similar to that of a study conducted in Jimma University Specialized Teaching Hospital, South Western Ethiopia that showed that 70.3% of the patients had high preoperative anxiety levels Nigussie, Belachew, and Wolancho, (2014, p. 5). Furthermore, the results are congruent with the study conducted in Sri Lanka that reported that the prevalence of preoperative anxiety was 76.7% (Matthias and Samarasekera 2011, p. 5). This prevalence is higher than that found in a study conducted by Tanaka *et al.* (2012) in high income country study at Tokai University Hospital, Kanagawa, Japan that found that 51% of the patients had high anxiety level (Tanaka *et al.* 2012, p. 463).

The findings of this study revealed that the patients are more anxious. This negatively affects the surgical process outcomes that may include the increase of anesthetic dose during induction phase of anesthesia, an increase of pain sensation after surgery that in turn increases the analgesic drug consumption, instability of vital signs that may

complicate intraoperative surgical process and increase hospital stay that results in health care cost increase, therefore the health care providers might create the forum that facilitate them to provide health information to patients and give them the time to address their concern about health, surgery and environment as well.

The factors associated with preoperative anxiety

It has been documented that preoperative anxiety decreases with age increasing. In study conducted by Bakr, Ali and Khudhr (2014, p. 1) showed that young age group had more preoperative anxiety levels than old age group and the preoperative anxiety decreases as age increasing. These findings are congruent with findings of current findings. This may be explained that young people probably are less experienced in hospitalization and or in surgical process. Probably it was the first time for young patients to attend the hospital for undergoing surgery and many of the young people are still building the better future. However the correlation between age and previous experience of surgery or hospitalization was not explored. Contrary to this study, Fathi *et al.* (2014, p. 92) and Basak *et al.* (2015, p. 19) found that older patients had more anxiety level than younger patients. Though findings of Nigussie, Belachew, and Wolancho (2014, p. 9) reject a significant association between age and preoperative state anxiety. This implies that health care providers should put focus on young patients for the interventions aiming to relief preoperative anxiety.

Preoperative anxiety may be associated with medical diagnosis. The current study revealed that patients with traumatic injury had higher preoperative anxiety levels and patients with the obstetric medical diagnosis had lower preoperative anxiety level ($P=0.002$). This may be explained that patients with traumatic injuries may undergo surgeries but they can heal with some disfigurement or they may believe that they will not resume their pre trauma health status. In addition the patients with traumatic injuries may have post injury psychological distress. The clients who come for obstetric reasons are less anxious because many of the participants come to hospital for caesarian section that they consider to be life saving for both mother and her baby.

Similar to this study, Sollárová, Sollár and Kónya (2014, p. 66) observed an influence of medical diagnosis to preoperative anxiety whereby they found that patients with spine surgery had higher anxiety than patients with lower and upper limb medical surgery ($p < 0.05$) and Santos, Martins and Oliveira (2014, p. 7) reported a statistical differences in preoperative anxiety, stress and depression levels according to the medical diagnosis.

This implies that the health care providers should consider the medical diagnosis of patients in providing counseling and other interventions that prevent or alleviate preoperative anxiety.

Preoperative anxiety and types of surgery. This study revealed that patients who undergo orthopedic surgery have higher preoperative anxiety levels. This may be explained that orthopedic surgery is among the major surgeries that is performed after traumatic injuries, the patients may still have the post traumatic distress and may not yet accept the procedure that is going to be performed which may involve the excision (removal) of traumatized body organ, insertion of an implant or immobilization of affected bone with external fixators. The orthopedic procedure itself employs the fearful instruments such saw, osteotomes, gouges, bone cutting forceps among others. Additionally, healing process for the patients with orthopedic conditions takes long and this may results to many complications including deformities, limited activity of daily living and impairment. This implies that the patients who wait for orthopedic surgery need more attention in order to decreases the preoperative anxiety, since it has been reported that patients with emotional challenges such as anxiety are at high risk of poor functional improvement after orthopedic surgery (Ayers, Franklin and Ring, 2013, P 1). Therefore, information provision on the surgical process and active listening should be taken care of.

This study is consistent with some studies that reported that types of surgery correlated with preoperative anxiety (Jafar and Khan, 2009, p. 361). Basak *et al.* (2015, p. 20) reported that the types of surgery is an important factor related to preoperative anxiety this has been supported by Homzová and Zeleníková (2015, p. 324) who found that

high preoperative anxiety was associated with breast surgery and oncological disease surgery. Contrary to this study, Matthias and Samarasekera (2011, p. 5) found that type of operation was not statistically significance associated with preoperative anxiety. This indicates that patients who wait for orthopedic surgery may be attention to the health care providers in order to get the expected surgical outcomes.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSIONS

In this study, the level of preoperative anxiety in patients awaiting surgery at CHUK was found to be clinically significant as median was 20 over 60 which indicates that overall participants had clinically significant anxiety. Participants with Clinically significant preoperative anxiety were 72.8% while 27.2% were not clinically anxious.

The higher preoperative anxiety levels was found in young adult whereby 79.2 % (61) had clinically significant preoperative anxiety ($p=0.042$). The patients with traumatic injuries were mostly anxious, 81.8% (36) of patients with traumatic injuries were clinically anxious ($p=0.023$). In addition, the patients with traumatic injuries had higher preoperative levels than other patients with other medical diagnosis. The patients with the traumatic injuries had higher median anxiety score ($Md=26$) compared to patients with other medical diagnosis ($p=0.002$). Furthermore, patients who waited for orthopedic surgery are 10.22 times more likely to have clinically significant preoperative anxiety levels compared to patients waited for urology surgery.

Moreover, the current study assessed factors that are associated with anxiety. Medical diagnosis, types of surgery and age were found to be associated with anxiety. Obstetric medical reasons (OR: 0.03; 95% CI 0.002 - 0.568; $P=0.018$). and old age (OR: 0.22; 95% CI 0.075 - 0.650; $P=0.006$) have found to be protective factors for preoperative anxiety levels while orthopedic surgery was a predicting factor for preoperative anxiety levels (OR: 10.22; 95% CI 1.144 - 91.304; $P= 0.037$). Other factors including previous surgery, gender, educational level, information on health which were found to be associated with anxiety in previous studies were not statistically significant in this current study.

6.2 RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made to:

University Teaching Hospital of Kigali is recommended to elaborate policy and procedure for managing preoperative anxiety and to conduct counseling sessions before surgery

The school of nursing and midwifery should ensure that curriculum equips the nurses with competencies on psychological care of preoperative patients, equip students with counseling skills for preoperative surgery and increase perioperative nurses that are specialized in care of surgical patients

The nurses and other health care providers especially surgeons and anesthetists/anesthesiologist are recommended to incorporate preoperative anxiety assessment in routine assessment of patients waited for surgery, to put in considerations the age, types of surgery and medical diagnosis in providing preoperative nursing care, to assess the need of information for each patient in order to provide patient specific information and tailored towards patients need, this may decrease anxiety currently and for future surgical occasion and to take preoperative anxiety nursing diagnosis as the priority for patient awaiting surgery

The researchers are recommended to conduct another study that evaluates the predisposing factors of preoperative anxiety to patients who waited for orthopedic surgery

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APPENDICES

Research questionnaire

Study Title: **ASSESSMENT OF PREOPERATIVE ANXIETY FOR PATIENTS AWAITING SURGERY AT UTHK**

Participant Number...

Date...

Instructions: This questionnaire is composed of three sections. Section A asks you the personal information. Section B asks you your health information and Section C asks you to circle the number that correspond to the each statement as it applies to you.

SECTION A: DEMOGRAPHIC DATA

Please answer each question

1. How old are you? -----

2. What is your gender? Male Female

3. What is your marital status?

Single Married Divorced Separated Cohabiting

Widow

4. What is your level of education:

I never schooled

I did not complete the primary school

I completed the Primary School

I did not complete the secondary school

I completed the secondary school

I have University education

5. What is your employment status:

Self-employed

Private sector employed

Public sector employed

Not employed

SECTION B: HEALTH INFORMATION

Please answer the following questions related to your health.

6. What is your medical diagnosis?
.....

7. How long do you wait for surgery?days

8. Which surgery have you been informed to undergo?
.....

9. Which type of anesthetic technique have been informed to use for you?

- Spinal anesthesia
- Block anesthesia
- General anesthesia

10. Did you get information about surgery?

- None
- Not enough
- Enough

11. Have you ever been postponed for surgery?

- Yes
- No

12. Have ever undergone surgery before?

- Yes
- No

SECTION C: PREOPERATIVE ANXIETY SELF ASSESSMENT TOOL

Many people experience anxiety and worrying thoughts before having an operation. We are interested in the thoughts that you have been having about your planned surgical procedure in the last 2 weeks.

Please read the following statements and indicate how often the statement has applied to you, by circling the appropriate number. Do not spend too much time thinking about each one

		not at all	some of the time	often	most of the time
1	I worry that I won't wake up	0	1	2	3
2	Waiting for the surgical procedure makes me nervous	0	1	2	3
3	I worry about the time it will take to get the results	0	1	2	3
4	I worry about how sore I will be afterwards	0	1	2	3
5	I worry that I will have to rely on others	0	1	2	3
6	The thought of having the procedure makes me feel out of control	0	1	2	3
7	I worry about being unconscious	0	1	2	3
8	I worry about what they are going to find	0	1	2	3
9	I worry about the outcome of the surgical procedure	0	1	2	3
10	I worry about how long the pain will last	0	1	2	3
11	I worry that I will have to call on people to help me	0	1	2	3
12	I worry about things happening during the procedure that I will not be aware of	0	1	2	3
13	I worry about surgical complications	0	1	2	3
14	I keep thinking about the surgical procedure when I'm on my own	0	1	2	3
15	I worry about feeling sick or fainting	0	1	2	3
16	I worry that I may feel uncomfortable when I wake up	0	1	2	3
17	I worry that I won't be able to do things for myself after the surgical procedure	0	1	2	3
18	I worry that something may be done when I am unconscious that I haven't agreed to	0	1	2	3
19	I worry about how long I will be unconscious for	0	1	2	3
20	I am pre-occupied by thoughts of having the surgical procedure	0	1	2	3

Thank you for your participation in this study

IBAZWA KU BUSHAKASHATSI

Inyito y'ubushakashatsi: **Isesengurampamvu y'umuhangayiko wa mbere yo kubagwa ku barwayi bo mu bitaro bya Kaminuza bya Kigali**

Umubare w'ugira uruhare muri ubu bushakashatsi.....

Itariki...

Amabwiriza: Iri bazwa rigizwe n'ibice bitatu: Igicye cya "A" kirabaza amakuru arebana n'irangamimerere yawe. Igice cya "B" kirabaza amakuru ajyanye n'ubuzima bwawe, n'igice cya "C" kibaza kubijyanye n'umuhangayiko uterwa no kubagwa.

IGICE CYA A: AMAKURU AREBANA N'IRANGAMIMERERE

Tanga igisubizo kuri buri kibazo

1. Ufite imyaka ingahe? -----

2. Igitsina: gabo gore

3. Ufite irihe rangamimerere?

Ndi ingaragu Narashatse

Natandukanye n'uwo twashakanye mu mategeko

Sinkibana n'uwo twashakanye mu mategeko Nashatse bitemewe
n'amategeko Ndi umupfakazi

4. Wize amashuri angahe?

Sinigeze niga

Sinarangije amashuri abanza

Narangije amashuri abanza

Sinarangije amashuri yisumbuye

Narangije amashuri yisumbuye

Nize kaminuza

5. Ukorera he?

Ndikorera

Nkorera ikigo cyigenga

Nkorera Leta

Ntakazi mfite

IGICE CYA B: AMAKURU AJYANYE N'UBUZIMA

Subiza ibi bibazo bikurikira bijyanye n'ubuzima bwawe

6. Bakubwiye ko urwaye iki?

.....

7. Umaze igihe kingana iki utegereje kubagwa?.....iminsi

8. Bazakubaga iki?

.....

9. Bakubwiye ko bazagutera ubuhe bwoko bw'ikinya?

Ikinya cyo mu mugongo

Ikinya cya agace bazakubaga gusa

Ikinya cyo kugusinziriza

10. Wahawe ubusobanuro bwo kubagwa?

Ntabwo

Ntibuhagije

Burahagije

11. Bigeze basibya kubagwa kwawe?

Yego

Oya

12. Ni ubwa mbere ugiye kubagwa?

Yego

Oya

IGICE CYA C: Kwisuzuma Umuhangayiko

Abantu benshi barahangayika ndetse bakagira impungenge mbere yo kubagwa. Dushishikajwe no kumenya icyo waba utekereza muri ibi byumweru bibiri bishize ku bijyanye n'ibagwa ryawe.

Soma izi nteruro zikurikira werekane inshuro byakubayeho, ubyerekanisha gushyira akaziga ku mubare uhwanyeye n'izo nshuro. Ntute umwanya munini utekereza ku nteruro.

		Nta na rimwe	Rimwe na rimwe	Kenshi	Kenshi cyane
1	Ngira impungenge ko ntaribukanguke	0	1	2	3
2	Gutegereza kubagwa bituma numva ntaguwe neza	0	1	2	3
3	Mpangayikishijwe n'igihe kubagwa bizarangirira	0	1	2	3
4	Mpangayikishwa nuko nyuma yo kubagwa nzababara	0	1	2	3
5	Mpangayikishwa n'uko ngiye kuzajya ntugwa n'abandi	0	1	2	3
6	Iyo ntekereje ukuntu ibagwa rizagenda numva bindenze ubwenge	0	1	2	3
7	Mpangayikishwa n'ukuntu nzaba ntakizi aho ndi	0	1	2	3
8	Mpangayishwa nuko bazasanga uburwayi bumeze	0	1	2	3
9	Mpangayikishwa n'ibizakurira kubagwa	0	1	2	3
10	Mpangayikishwa n'ububabare igihe buzamara	0	1	2	3
11	Mpangayikishwa n'ukuntu nzajya mpamagara abandi ngo bamfashe	0	1	2	3
12	Mpangayikishwa n'ibizaba mu gihe barikumbaga ntazigera menya	0	1	2	3
13	Mpangayikishwa n'ingaruka mbi zaterwa n'ukubagwa	0	1	2	3
14	Nkomeza gutekereza ukuntu bazambaga iyo ndi jyenyine	0	1	2	3
15	Mpangayikishwa n'uburwayi cyangwa kugwa igihumure nyuma yo kubagwa	0	1	2	3
16	Ngira impungenge ko nakumva ntameze neza igihe nkangutse	0	1	2	3
17	Mpangayikishwa n'uko ntazabasha kugira icyo nakwikorera nkimara kubagwa	0	1	2	3
18	Mpangayikishwa n'uko haricyakorwa kitari mu bushake byanjye igihe naba nataye ubwenge	0	1	2	3

19	Mpangayikishijwe n'igihe nzamara nataye ubwenge	0	1	2	3
20	Ibitekerezo byanjye bigaruka cyane ku kuntu ibagwa rizagenda	0	1	2	3

Murakoze ku ruhare mugize muri ubu bushakashatsi.

INFORMATION DOCUMENT

Title: Assessment of preoperative anxiety for patients awaiting surgery at UTHK

Researcher: David Ryamukuru

University of Rwanda

College of Medicine and Health Sciences

School of Nursing and Midwifery

Dear participant,

I am a student in master of sciences in perioperative nursing at the University of Rwanda. I am currently conducting a research project. The purpose of this study is to assess the preoperative anxiety and the associated factors for patients awaiting surgery at UTHK.

This information document invites you to participate in this study and the information you provide will be confidential and do not mention your name anywhere. The participation requires you to respond to the questionnaire that will take about 20 minutes. The questionnaire consists of a series of questions and you are asked to provide information that seems most appropriate for you. Your participation is totally voluntary and feel free to withdraw from the study anytime when you feel uncomfortable. This study invites the adult patients waiting for surgery to participate. After signing a consent form you will complete a questionnaire. You will not have any monetary benefit but your participation will help us to answer research questions.

If you have any questions or concerns regarding this research project, please feel free to contact me at **daviramu@yahoo.fr**, tel: **078 3601725**. Or you may contact my supervisors, **Innocent Ndateba**, at ndateba2@gmail.com, tel: 0788520514 or Dr. Donatilla Mukamana at donatillam@hotmail.fr, tel: 0788304396 or Prof. Adejumo Oluyinka at adejumoo@gmail.com

Thank you for your time and co-operation.

Regards.

David Ryamukuru

Supervisors: Mr. Innocent Ndateba, Dr. Donatilla Mukamana and Prof. Adejumo Oluyinka

INFORMED CONSENT FORM TO PARTICIPATE IN RESEARCH

Study title: Assessment of preoperative anxiety for patients awaiting surgery at UTHK.

You have been asked to participate in a research study. You have been informed about the study by David Ryamukuru and have read the information document which has the details of the study. You may contact me on 0783601725 or daviramu@yahoo.fr any time if you have questions about the research or if you get in trouble as a result of the research. You may also contact any of my supervisors; **Innocent Ndateba**, at ndateba2@gmail.com, tel:0788520514 or Dr. Donatilla Mukamana at donatillam@hotmail.fr, tel: 0788304396 or Prof. Adejumo Oluyinka at adejumoo@gmail.com. This proposal has been reviewed and approved by UR CMHS IRB, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find more about the IRB, you may contact the Chairperson of the CMHS IRB at tel: **0788 490 522** or the Deputy Chairperson at tel: **0783 340 040**. Your participation in this research is voluntary, and you will not be penalized or lose benefits and it will not impact your health care if you refuse to participate or decide to withdraw. If you agree to participate in this study, you have to sign this document below in the space provided as a sign of your acceptance of participation.

I have read the information document, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Signature of participant:

Date:

INYANDIKO YEREKANA AMAKURU KU BUSHAKASHATSI

Inyito y'ubushakashatsi: Isesengurampamvu yo guhangayika mbere yo kubagwa ku barwayi bo mu bitaro bya Kaminuza bya Kigali

Umushakashatsi: David Ryamukuru

Kaminuza y'Urwanda

Koleji y'ubuvuzi n'ubuzima

Ishuli ry'ubuforomo n'ububyaza

Kuri wowe udufasha muri ubu bushakashatsi,

Ndi umunyeshuli wiga mu cyiciro cya gatatu cya kaminuza muri Kaminuza y'u Rwanda mu gashami ka perioperative nursing. Ubu ndi mu cyiciro cyo gukora ubushakashatsi. Intego y'ubu bushakashatsi ni isesengurampamvu y'ihangayika rigirwa n'abarwayi bategereje kubagwa hano mu bitaro bya kaminuza bya Kigali.

Iyi nyandiko iraguhamagarira ubufatanye mu kuduha amakuru ajyanye n'ubu bushakashatsi. Amakuru uzatanga ni ibanga kandi ntanahagomba kugaragara izina ryawe. Ubufatanye tugusaba ni nk'iminota 20 yo gusubiza ibibazo bijyanye n'ubu bushakashatsi.

Iribazwa rigizwe n'uruhererekane rw'ibibazo, icyo tugusaba ni ugusubiza icyo ubona ari cyo kijyanye n'uko ubyumva kurusha ibindi. Ubu bufatanye ntagahoto karimo ndetse igihe icyo aricyo cyose wakumva bitakunogeye wabihagarika. Ubufatanye muri ubu bushakashatsi tubusaba abantu bafite imyaka y'ubukure kandi bategereje kubagwa. Nyuma yo gusinya iyi nyandiko itwemerera ubufatanye urasubiza ibibazo biri ku mugereka. Ubu bufatanye nta nyungu y'amafaranga irimo uretse gusa gufasha ko bugenda neza.

Ugize ikibazo icyo aricyo cyose kijyanye n'ubu bushakashatsi wabimenyesha kuri imeli:daviramu@yahoo.fr Telefoni: 0783601725. Cyangwa abarimu bahagarariye ubu bushakashatsi aribo: Innocent Ndateba, kuri imeli ndateba2@gmail.com ,telefoni: 0788520514 , Dr. Donatilla Mukamana kuri imeli donatillam@hotmail.fr, telephoni: 0788304396 cyangwa Prof. Adejumo Oluyinka kuri emeli: adejumoo@gmail.com, telefoni:0784445859

Urakoze kubw'umwanya n'ubufatanye ugize muri ubu bushakashatsi.

David Ryamukuru

AMASEZERANO YO KWEMERA KUJYA MU BUSHAKASHATSI

Inyito y'ubushakashatsi: **Isesengurampamvu yo guhangayika mbere yo kubagwa ku barwayi bo mu bitaro bya Kaminuza bya Kigali**
Twagusabye ubufatanye muri ubu bushakashatsi.

Ryamukuru David yakumenyesheje uko ubu bushakashatsi buteye unasoma inyandiko isobanura uko ubushakashatsi buteye. Mu gihe hari ikibazo ushaka kumbaza ushobora kungeraho ukoresheje iyi nimero ya telefoni: 0783601725 cyangwa iyi imeli: daviramu@yahoo.fr igihe icyo aricyo cyose ukeneye kugira icyo umbaza kijyanye n'ubu bushakashatsi. Ushobora no guhamagara abarimu banjye banampagarariye muri ubu bushakashatsi kuma adereshe akurikira: Innocent NDATEBA, ndateba2@gmail.com tel: 0788520514 cyangwa Dr Donatilla MUKAMANA kuri donatillam@hotmail.fr tel 0788304396 cyangwa Prof Adejumo Oluyinka kuri adejumoo2@gmail.com.

Iyi mbanzirizamushinga y'ubu bushakashatsi yagenzuwe kandi yemezwa na UR CMHS IRB ifite inshingano zo kugenzura ko abazifashishwa mu bushakashatsi nta ngaruka byabagiraho. Ukeneye kugira ibyo umenya kuri IRB, wavugisha umuyobozi wa IRB kuri **0788 490 522** cyangwa umwungirije kuri **0783 340 040**. Ubufatanye bwawe muri ubu bushakashatsi buturuka ku bushake bwawe, nta gihano cyangwa se gutakaza inyungu runaka ndetse n'ingaruka iyo ariyo yose wagira ijyanye na serivisi y'ubuvuzi urimo gahabwa wagira mugihe waba wanze kudufasha muri ubu bushakashatsi cyangwa se mu gihe waba uhagaritse ubufatanye. Mu gihe waba wemeye kudufasha muri ubu bushakashatsi, wasinya mu mwanya wabigenewe nk'ikimenyetso cyerekana ko watwemereye ubufatanye.

Nasomye iyi nyandiko cyangwa bayinsomeye. Nahawe umwanya wo kubaza ibibazo kandi buri kibazo nabajije nahawe igisubizo kinyuze. Nemeye ku bushake byanjye gufasha muri ubu bushakashatsi.

Sinyatire y'umufatanyabikorwa

Itariki:

INFORMED CONSENT FORM FOR ILLITERATE

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Signature of witness
participant

Thumb print of

Date



Statement by the researcher

I have accurately read out the information document to the potential participant, and to the best of my ability I made sure that the participant understands the purpose of the study, the participant right to voluntary participate, freely refuse or withdraw to participate in study

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Name of Researcher/person taking the consent:

Signature of Researcher /person taking the consent:

Date:

INYANDIKO ITWEMERERA UBUFATANYE

Inyandiko yerekana amakuru kubushakashatsi

Inyito y'ubushakashatsi: Isesengura mpamvu yo guhangayika mbere yo kubagwa ku barwayi bo kubitaro bya Kaminuza bya Kigali

Umushakashatsi: David Ryamukuru

Kaminuza y'Urwanda

Koleje y'ubuvuzi n'ubuzima

Ishuli ry'ubuforomo n'ububyaza

AMASEZERANO YO KWEMERA KUJYA MU BUSHAKASHATSI

Nabaye umuhamya wuko inyandiko y'iyemerera bufatanye yasomewe neza uwemeye gufasha mubushakashatsi kandi akaba yanemerewe kubaza ibibazo akeneye byose. Ndemeza ko uwemeye gufasha yabikoze kubushake bye

Umukono w'umuhamya

Igikumwe

cy'uwemeye gufasha

Itariki:



INYANDIKO YEMEZA Y'UMUSHAKASHATSI

Nasomeye iyi nyandiko uwemeye kudufasha kandi mubushobozi byanjye bwose nagerageje uko nshoboye kose ngo uwemeye kudufasha ko asobanukirwa neza impamvu y'ubu bushakashatsi, uburenganzira bwe bwo kudufasha, kuba yakwanga ndetse nokuba yahagarika kudufasha igihe icyo aricyo cyose.

Ndemeza ko uwemeye kudufasha yahawe umwanya wo kubaza ibibazo bijyanye n'ubu bushakashatsi ndetse nibibazo byabajijwe bikaba byabonewe ibisubizo. Ndemeza ko uwemeye kudufasha yabikoze kubushake bwe ntagahato, k'ubuntu ndetse nubushake bwe bwite.

Izina ry'ukora ubushakashatsi/Usaba ko wamwemerera ubufatanye muri ubu bushakashatsi:

Umukono w'ukora ubushakashatsi/Usaba ko wamwemerera ubufatanye muri ubu bushakashatsi:

Itariki:

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 16/01/2017
Ref: CMHS/IRB/111/2017

RYAMUKURU David
School of Nursing and Midwifery, CMHS, UR


Dear RYAMUKURU David

RE: ETHICAL CLEARANCE


Reference is made to your application for ethical clearance for the study entitled *“Assessment Of Preoperative Anxiety For Patients Awaiting Surgery At UTHK”*.

Having reviewed your protocol and found it satisfying the ethical requirements, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.

 Professor Kato J. NJUNWA
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR




JB Gahutu
IRB Vice-Chair

Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR



**CENTRE HOSPITALIER UNIVERSITAIRE
UNIVERSITY TEACHING HOSPITAL**

Ethics Committee / Comité d'éthique

February 3rd, 2017

Ref.: EC/CHUK/256/2017

Review Approval Notice

Dear Ryamukuru David,

Your research project: "Assessment of Preoperative Anxiety for Patients Awaiting Surgery at CHUK."

During the meeting of the Ethics Committee of University Teaching Hospital of Kigali (CHUK) that was held on 3/02/2017 to evaluate your protocol of the above mentioned research project, we are pleased to inform you that the Ethics Committee/CHUK has approved your protocol.

You are required to present the results of your study to CHUK Ethics Committee before publication.

PS: Please note that the present approval is valid for 12 months.

Yours sincerely,



John Nyirigira
The Secretary, Ethics Committee,
University Teaching Hospital of Kigali

<<University teaching hospital of Kigali Ethics committee operates according to standard operating procedures (Sops) which are updated on an annual basis and in compliance with GCP and Ethics guidelines and regulations>>

B.P. :655 Kigali- RWANDA www.chk.rw Tél. Fax : 00 (250) 576638 E-mail : chuk.hospital@chukigali.rw

PERMISSION OF USING TOOL

Le Mardi 18 avril 2017 10h51, Oluyinka Adejumo <adejumoo@gmail.com> a écrit :

This was the response from one of the authors, the Professor who supervised Dr Crockett.

The development and validation of the Pre-operative Intrusive Thoughts Inventory
Report message · Block user

- [Oluyinka Adejumo](#)

14 days ago

Hello Prof Gumley

Are you by any chance involved in the development of the PITI? A masters student of mine is interested in using the tool for his dissertation. He has been trying to get hold of the principal author (Crockett) but unsuccessful.

If you are one of the authors, can we ask for permission to use the tool through you?

Sincerely

Prof O Adejumo

[Andrew Gumley](#) to you

8 days ago

Dear Prof Adejumo

I supervised Dr Crockett. I'm not in contact with her but I am delighted if you would use the scale.

Yours sincerely

Kind regards