KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

KUMASI, GHANA.

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF POLICY, ECONOMIC AND MANAGEMENT

ASSESSING CANCELLATION OF ELECTIVE SURGERY AND ITS IMPACT ON PATIENT AND FACILITY AT KOMFO ANOKYE TEACHING HOSPITAL(KATH), KUMASI.

BY

NICHOLAS ANARFI

JUNE, 2019

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A THESIS SUBMITTED TO THE DEPARTMENT OF HEALTH POLICY, MANAGEMENT AND ECONOMICS, COLLEGE OF HEALTH SCIENCES, SCHOOL OF PUBLIC HEALTH, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN HEALTH SERVICE PLANNING AND MANAGEMENT.

JUNE, 2019

DECLARATION

I do declare that, except for the references to other people's work which has been duly acknowledge and cited, this piece of work is my own composition and neither in whole nor in part has this work been presented for the award of a degree in this university or elsewhere.

SIGNATURE…… DATE……

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SIGNATURE ……. DATE …….

Dr. Emmanuel Nakua
(Supervisor)

SIGNATURE …… DATE..……..

Dr. Peter Agyei Baffour
(Head of Department)

DEDICATION

This work is dedicated to my wife, children and my family.

ACKNOWLEDGEMENT

Over the past year, there are many individuals who deserve my gratitude for the assistance they gave me to accomplish this work. But space constraints will permit me to name only a few. Those not mentioned are held in my heart with the same gratitude as those whose names appear here. First of all, my sincere thanks go to Almighty God for His protection and guidance through this course. My sincere appreciation goes to my supervisor, Dr. Emmanuel Nakua who consistently gave valuable advice and constructive criticisms towards sharpening the correctness of the final draft. God bless you for the immense trouble you took to meticulously supervise this thesis.

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DEFINITION OF TERMS

Cancellation: is defined as a scheduled surgery that is booked on the finalized operation theatre list but is not performed on the planned day.

Cancellation rate: is defined as the ratio of the total number of cancellations of surgical cases in the total number of booked surgical cases

Elective surgery: any elective procedure/ surgery that is scheduled in advance because it does not involve a medical emergency.

Emergency Surgery: is surgery to treat acute illness subsequent to an emergency presentation. The patient may require immediate surgery or present for surgery at a later time following this unplanned presentation. Emergency surgery includes unplanned surgery for admitted patients and unplanned surgery for patients already awaiting an elective surgery procedure.

LIST OF ABBREVIATIONS

CSSD	-	Central Sterile Services Department
GHS	-	Ghana Health Service
Hb	-	Haemoglobin
ICU	-	Intensive Care Unit
KATH	-	Komfo Anokye Teaching Hospital
KNUST	-	Kwame Nkrumah University of Science and Technology
MOH	-	Ministry of Health
SPSS	-	Statistical Package for the Social Sciences
UK	-	United Kingdom
US	-	United State
WHO	-	World Health Organization

ABSTRACT

Background: Surgical operations constitute a significant aspect of treatment administered in hospitals. The situations where patients' surgical appointments are cancelled are an unfortunate occurrence within medical practice.

Objective: The main objective of the study was to assess cancellation of elective surgeries on the day of operation and its effect on patients and the hospital in KATH, Kumasi.

Methods: A descriptive cross-sectional study involving a self-administered questionnaire and face-to-face interview were conducted at the surgery department of KATH over a period of three months from May, 2018 to July, 2018. Total population (purposive sampling) was combined with convenient sampling technique in the selection of patients and health professionals for the study. Data analysiswas done with the aid Nvivo software. A sample size of 278 patients was used for the study with response rate of 97.12%.

Results: During the study, 1078 elective surgical operations were booked and 74.2% elective operations were performed over the study period. 278 cases were cancelled representing 25.78%. The study found the lowest rate of 3.0% for cardio-thoracic and the highest (28.1%) for trauma orthopaedics. Medical/work-up, patient-related, administrative-related and others accounted for 16.3%, 54.1%, 30.7% and 18.9% of the cancelled surgeries respectively. The most common patient-related reason for cancellation was patients not turning up (40.7%). Majority of the patients (47.8%) expressed the feeling of disappointment while 23.7% indicated prolongs their staying thereby increasing their bill. Regarding, hospital related effects, 25.2% indicated lost confidence in the hospital.

Conclusions: The study demonstrates a low cancellation rate compared to reported rates in Africa with trauma experienced the highest cancellation rate. However, the vast majority of cancellations could be avoided by improving the hospital administrative procedures and protocols.

Key words: Cancellation rate, Elective surgeries, Impact, Patient

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Surgical operations constitute a significant aspect of treatment administered in hospitals. It offers the only meaningful hope of cure in certain disease conditions hence hospital administration seeks to achieve excellence and efficiency in operating theaters. This objective proves difficult to attain with unanticipated postponement and cancellation of scheduled elective surgical operations (Mutwali et al.2016). The incidence of failure on carrying out scheduled surgery is a global phenomenon (Argo et al. 2009). Cancellation of elective surgery on the day of surgery may lead to dissatisfaction of patient, increased cost and decreased efficiency in the management of the operating theatre (Ebirim et al. 2012).

The situations where patients surgical appointments are cancelled are an unfortunate occurrence within medical practice (Dexter and Macario, 2009). There are many instances where patients scheduled to undergo surgery have their surgeries cancelled (Overdyk et al.,2006). These situations may cause significant and undesirable consequences such as; emotional stress to the patient and his/her family, increased financial burden and social disturbances (Mutwali et al. 2016). Many studies evaluating cancellation of booked and scheduled surgery among various surgical subspecialties in the medical field have reported cancellation rates ranging from 23% to 37% for surgical procedures (Dexter et al. 2003). With modern medical equipment in most developed part of the world, there are recorded cases of incomplete medical workup as well as lack of post-operative beds in the most developing part of the world (Overdyk et al. 2006). Equally administrative matters in handling surgical issues are common globally in the health care system (Robb et al., 2004).

In the United Kingdom (UK), studies showed that about 7% of scheduled surgery operations are more likely to undergo cancellation nationally (Sanjay et al., 2007). A study by Schuster et al. (2011) showed that within 24 hours, 2 to 3 out of 10 appointed numbers of surgical cases are cancelled in the UK. In total 10 to 40% of booked surgical operations are cancelled before the surgery takes place in the first appointed date.

The reasons for cancellation of elective surgery are not unknown in the medical field. Ivarsson, Larsson, and Sjoberg(2004), cited many factors that may lead to the cancellation of surgical appointment. Common among the factors were; patient factors, lack of or inadequate pre-operative assessment and preparation, lack of operative room time, unavailable beds, surgeon related issues, and emergency surgical cases disrupting the elective list (Kaddoum et al. 2016). Similar reasons were noted by Argo et al. (2009) regarding most cancelled surgery in the United States of America (USA).

According to Hand, Levin and Stanziola (2010), the most common causes for cancellations of surgery in the USA were lack of theatre time (i.e., over-booked operating lists), lack of beds and poor co-ordination from hospital administrators and medical officers. Schofield et al., (2005) were of the view that an operating list may over-run to cause cancelling in surgery time because of delayed starts, slow turnover, and unanticipated medical or anaesthetic problems or staff shortages.

Many cancellations of surgical cases in USA were due to one or two of these factors and other related issues. Among the challenges facing medical practice in carrying out appointed surgeries, there are relatively easily measured factors that most developed medical centers adopted to avoid or reduce cancellation of surgical operations. Researchers such as Kumar &Gandhi (2012) emphasize on the possibility of some operating lists being predictably overbooked which can also cause cancelling of surgery.

In North America, the provision of surgery services is virtually unlimited in time because of the way in which health care is financed (Sanjay et al., 2007). Studies on surgery cancelling from North America emphasizes on the fact that most theatres are often fully utilized. There are limited medical facilities to take care of increasing surgery demand and also surgery takes a long time which requires patients to stay within the health center for long time. These challenges may result in operations and surgery cancellations (Leslie et al. 2007). According to Schuster et al. (2011) cancelling of surgery due to time over-running are frequent in the North America.

Hitherto, in most Asian and African countries where their medical fields are relatively less developed and under resourced, cancellation of an elective or booked surgical operation was not a cause for worry (Robb et al. 2004). However, over the years increasing cancellations of booked surgery is receiving public attention and researchers in the medical field seek to search for answers to the numerous challenges in surgical units in most regional and national hospitals (Sanjay et al.,2007). There is relatively poor statistics on the number of cases cancelled in a year. Pandit and Carey (2006) estimated that about 25% to 40% of most surgical cases are cancelled in Asia. Dexter et al.,(2011) argued that most cancelled surgery occurred in Africa than any other part of the world due to the poor medical condition and lack of surgeon and or anesthetists in most medical centers and hospitals in Africa.

In Ghana, the situation of cancelled surgery is common in most of the regional hospitals and referral hospitals across the country. However, reports from the Ghana Health Service, (GHS), Ministry of Health (MoH) and most annual reports from referral hospitals in Ghana showed that cancellations of elective surgical cases have been in the country for years. It appears there are few publications specifically examining cancellation of elective surgeries in

Ghana. However, there are cases of cancelled elective surgeries in most referral hospital such as Komfo Anokye Teaching Hospital (KATH). The purpose of this study is to investigate the reasons of cancellations of elective or booked surgeries in the second largest national referral hospital in Ghana with the aim to find solutions to address such instances in the medical field in Ghana.

1.2 Problem Statement

The cancellation of elective surgeries is a momentous drain on both health resources and patients' health (Farasatkish et al., 2009). One major problem with the issue of cancellation of elective surgery on the day of surgery is where patients have been prepared for surgery but the hospital lacks the appropriate logistics to admit patients, and required medical equipment to handle cases (Garg et al. 2009). In other situations, the problems of cancelled surgery are attributed to the patient factor. Staff within the medical field complains about high rate of patients not turning up for surgery after they have been scheduled for surgery (Jonnalagadda et al., 2015).

This situation has far negative effects on the health service as it leads to loss of resources, revenue and waste of time. Various researchers had noted that patient's failure to turn up for appointed surgery may not directly affect the patients alone but hospital resources (Miller, 2004; Kolawole & Bolaji, 2012; and Troung et al., 2016). The issue of cancellation of scheduled surgery on the day of operation is a major cause of the inefficient use of operating room time and is thus a waste of resources.

Cancellation of scheduled surgery creates economic and psychological effect for patient and caregivers. It has a long term negative emotional effects on the patient which includes anxiety and depression after hospital discharge (Lankoande et al., 2017). It is also potentially stressful

and costly to patients in terms of the working days lost and the disruption of daily activities. Cancellation of elective surgery may worsen client condition and also lead to mortality.

These situations may cause significant and undesirable consequences such as; emotional stress to the patient and his/her family, in addition to increase financial burden and social disturbances (Mutwali et al., 2016).

Most referral hospitals in Ghana invest heavily on medical resources in maintaining surgical operating facility and adequate human resources including surgeons, nurses, and anaesthetists to meet patients surgical needs. Komfo Anokye Teaching Hospital (KATH) is a referral center where most consultants and specialists are found and trained in subspecialties to provide specialist surgical care to patients. However, a persistent problem in most referral hospitals including KATH is the cancellation of elective surgical operations on the day of surgery on daily basis.

Averagely, 10% to 25% of elective surgical cases are cancelled on the day of surgery at KATH daily (Anecdotal evidence). The hospital management over the years has noticed increasing cancellations of elective surgical cases on the day of surgery with no justifiable rational from both patients and the management of theatre. These and many other negative implications associated with cancellations of elective surgery within KATH in Kumasi make it necessary to investigate the reasons that account for cancellation of elective surgeries in Komfo Anokye Teaching Hospital.

1.3 Rationale of Study

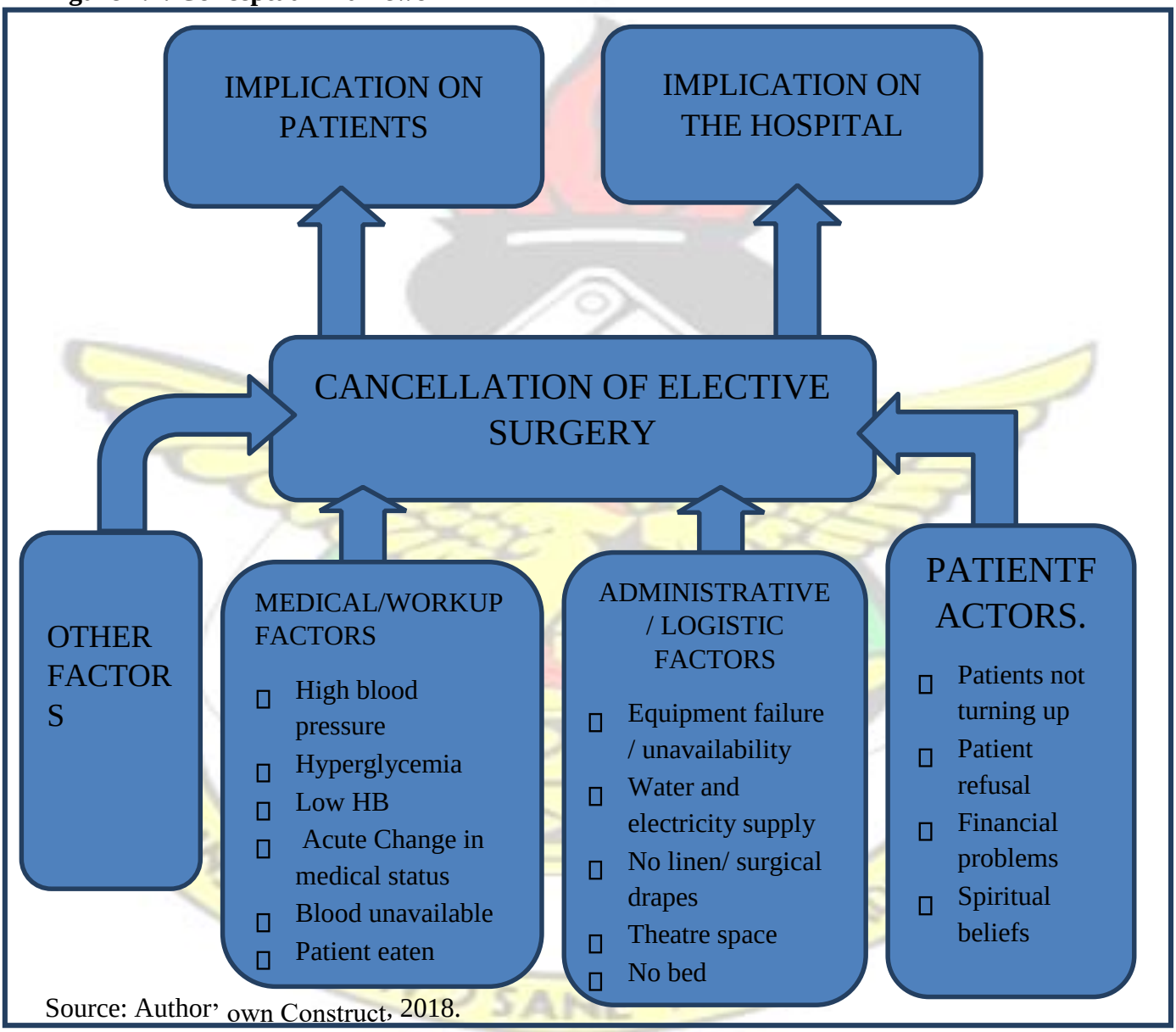
The study findings are of great importance in reducing cancellations of elective surgical cases in Kath, Ghana and beyond. The study aims to come out with reasons that lead to cancellation of elective surgeries and its effect on patient and facility. These findings would help improve

patient health outcomes by recommending measures that are evidenced base and sustainable to be instituted as a means of reducing avoidable cancellation of elective surgeries.

1.4 Hypothesis/Conceptual Framework

Figure 1.1 describes the conceptual framework of cancellation of elective surgeries in a teaching hospital, KATH.

Figure 1.1: Conceptual Framework



Source: Author' own Construct, 2018.

The conceptual framework describes the reasons that account for cancellation of elective surgeries (medical/work up, patients related and administrative/ logistics) and its effect on the

patients and the hospital. This would help improve patients health outcomes and management to reduce waste and improve on the theatre efficiency and utilization.

1.5 Research Questions

The study seeks to answer the following research questions;

1. What is the rate of cancellation of elective surgical cases in Komfo Anokye Teaching Hospital (KATH)?
2. What are the reasons or factors that contribute to the cancellations of elective surgical cases in Komfo Anokye Teaching Hospital (KATH)?
3. What are the effects of cancelled surgery on patients and on the hospital?

1.6 Study Objectives

1.6.1 General Objective

The main objective of the study is to assess cancellation of elective surgery on the day of operation and effect of cancellation on patients and the hospital in Komfo Anokye Teaching Hospital (KATH), Kumasi.

1.6.2. Specific Objectives

1. To determine the cancellation rate of elective surgical cases on the day of surgery in Komfo Anokye Teaching Hospital (KATH) within the period of study.
2. To identify the reasons that contributing to the cancellations of elective surgical cases in Komfo Anokye Teaching Hospital (KATH).
3. To examine the effects of cancelled surgery on patients and the hospital.

1.7 Scope of Study

The study focused on cancellation of elective surgeries that occurred in the major theatres of the KATH from May 2018 to July 2018. In this case, the cancellation rate, the reasons for cancellation and the implication of the cancellation on both the patient and the facility were assessed from both patients and health professionals.

1.8 Organization of the Study

The research is divided into six main chapters. Chapter one gives general introduction grouped under the following headings; introduction background to the study, statement of the problem, justification of the study, objectives of the study, research questions and the organization of the study. Chapter two involves review of related literature on the subject under the study. Chapter three presents detailed and elaborated methodology used in the research work. Chapters four and five presents results and discussions. Finally, the sixth chapter provides conclusions and recommendation drawn from the study. The references and appendices are also outlined at the end of this chapter.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter of the study provides scholarly review of literature regarding cancellation of elective surgical operations. The review was conducted using empirical approach where previous works on cancellations of surgery were thoroughly reviewed and critiqued. The review looked at the methods adopted in previous studies regarding cancellations of surgery and the findings these studies came out with. It also looked at the weaknesses and strengths in the methods adopted by previous researchers in studying cancellations of surgery cases. The chapter presented under the following sub-headings: The rate of cancellation of surgical cases, the causes or reasons for the cancellations, the implications of cancelled surgery on patients' health and hospital and measures that can be adopted by hospital management to reduce the incidence of cancelled surgery cases.

2.1 Rate of Cancellation of Elective Surgical Cases

In a study by Smith et al., (2014) on same-day cancellation of surgery cases, it was found that out of 7081 elective surgeries, 134 patients experienced same-day cancellations of cardiac surgery. In another study by Rajender and Ritika (2012), about 7272 patients were scheduled for surgery during the study periods; It was found that 1286 (17.6 %) of the scheduled elective surgeries were cancelled on the day of surgery. This was the highest figure of surgery cancellation that occurred in the discipline of surgery in the study area. The study further found

that 7.1% of surgery cases were cancelled two days before the appointed date and the least (0.35%) surgery cancellations occurred three days before the surgery date.

According to Kumar and Gandhi (2010), it was found that 913 cases of booked theatre surgery sessions were scheduled by 133 surgeons in the period in which they conducted their study; 241 of these cases were cancelled on the day of surgery. The cancelled cases as well included about 124 of 472 surgery cases booked in other health institution conducted by Sanjay et al., (2007).In most developed region cancellation of booked surgeries is not the norm. However, there are records of cancelled surgical cases in the most developed and wellequipped medical centers in USA and in Europe.

A study by Schuster et al. (2011), in the US found that surgical cases booked for operation during the weekdays were likely to be cancelled. In their studies on effect of hospital size and surgical case cancellation it was found that turnout rate was low for patients booked for surgical services in weekends than normal working days. Schuster et al. (2011) study revealed 18.7% of most weekends surgical cases are cancelled compared to 11.8% surgery cancellations done on normal working days in most health center in the US. These views were supported by a study by Sanjay et al. (2007), that surgical cases cancellations were more frequent in some days in the week than others. They therefore noted that patients should know the days that surgeons are available to avoid cancellation of cases.

In a study by Ivarsson et al. (2004), on the number of surgery cases cancellation, it was found that public health facilities recorded about 18.1% cancellation of surgery compared to 17.5% cancellation of surgery cases in private hospitals. They found that private health facilities do not want to lose customers, hence they ensured that most of the booked surgery cases were not cancelled. According to Notrica et al. (2011), in Rwanda about 35% of all booked surgeries in most of the district hospitals in the country experiences cancellation. They noted lack of health

personnel and patients not turning up for surgery on the date of surgery as main reason for cancellation of booked surgeries in most hospitals in Rwanda.

In another study by Lavy, Sauven and Mkandawire (2011), on the state of surgery in tropical countries in Africa, it was noted that 30% to 55% of surgery cases were likely to faces challenges resulting in cancellations of elective surgeries on the date of operations. Farmer and Kim (2009) found out in a study that about 25% of most booked surgery cases are cancelled in developing countries compared to 11% of booked surgery cases being cancelled in developed countries. They noted that more elective surgery cancellations occur in Africa, Asia and Northern America than US and Europe.

According to another study by Kingham et al. (2009), conducted in Sierra Leone on surgical capacity in Sierra Leone, it was noted that most surgical cases are cancelled and most patients are not being operated on the date of booked surgery. It was found that out of 1291 surgical cases booked in most hospitals within the national capital only 923 cases were operated on the date of surgery. The study further noted that most surgery cases are rescheduled in the country due to lack of facilities to accommodate patients and patients' inability to meet surgery operating cost, hence the patients by themselves request for more time to be able to organize funds for surgery.

A study by Timmers et al. (2016), at the Orthopaedic Hospital in Effiduase-Koforidua in Ghana revealed that 99 patients admitted and booked for surgery. The center was able to operate on 37 of these patients who were booked for surgery within the year 2011: 23 patients had their surgeries done on the day they were actually booked for surgery. 9 patients had their operation a day before the initial booked date, 2 patients had to be rescheduled their surgery date. In another study by the same authors, it was found that at the St. John of God Hospital in Koforidua, 68% of booked surgery cases were operated on with 32% cases being

cancelled.

2.2 Reasons or Causes of elective surgery cancellations

According to Smith et al., (2014) the most commonly cited reason for surgery cancellation were based on factors which are non-foreseeable. According to Smith et al., (2014), the foreseeable cancellation causes comprised only 17% of cancellations. It was found that the non-foreseeable factors account for the great causes of cancellations of surgery cases which constituted about 59%. Aside the foreseen and non-foreseen factors, they further identified indeterminate factors which account for about 24% of all cancellations of surgery cases.

The views of Smith et al., (2014) were earlier on revealed in a study by Hussain and Khan (2005). However, recent studies have always emphasized on unforeseen anaesthetic or surgical problems as the causes of delay in the planned list for surgery operation. The unforeseen factors most of the time makes it difficult for the anaesthetist to follow the planned time for all cases. As noted by Paschoal and Gatto (2006), the time taken for a particular surgery case to be operated upon also depends on the skill of the operating surgeon. Paschoal and Gatto (2006), found that surgeons who are inexperienced take more than the expected time to complete a case.

In most surgery involving inexperienced surgeons, the time spent on surgery was prolonged and this affected the time alloted for other cases. It was also noted by Hussain and Khan (2005) that surgery time duration may also exceed the usual planned surgical time as a result of unpredicted surgical complications. At times the surgeons are unable to tell whether there will be complications and the time period required to address such complications. These unpredictable situations account for cancellations of most cases.

Smith et al. (2014), also found out that, the medical reasons for cancellation were about 51% and 17% for administrative. They also identified some unknown factors which accounted for 12% of surgical cases cancellations. The study further found that factors such as "procedure no longer required" account for 11% and pre-complication accounting for 3% of cancellations of elective surgeries among patients.

According to Rajender and Ritika (2012), the most commonly cited cause for surgical cases cancellation was the lack of availability of theater space at the time the operation was required. This accounted for about 63% of cases cancellations. The second common reason for surgery cancellation was failure on the part of patients to turn up for surgery (19%). The study by Rajender and Ritika (2012) also found that 149 surgery cases cancellations (11.6%) were because of medical reasons cited by the study findings, and 16 (1.2%) surgeries were cancelled by the surgeon as a result of change in the medical plan or management. Aside these factors that accounted for elective surgery cancellations, the study by Rajender and Ritika (2012), further noted that 28 (2.1%) of surgery cases were cancelled because most of the patients were not ready for surgery at the time of the surgery and 40 (3.1%) surgical cases were cancelled due to equipment failure within the health facility where the surgery will be conducted.

In a different study by Kumar and Gandhi (2012), it was noted that shortage of operating time accounted for most of the surgery case cancellations. This formed about 63% of all cancelled cases. The study found that time of operation was the most important factor of cancellation of surgery operation in this study area. It was noted that most of the alloted surgery time was wasted due to late start of most cases and hence the number of cases scheduled for day ended up taking much more time than had been allotted earlier. The time interval between surgical cases at times is difficult to estimate by the doctors. Much time is need at the preparation and cleaning stage of surgery and transportation of patients to recovery unit. This time period leads to delay and cancellation of elective surgeries.

In determining the factors that account for elective surgical cases cancellations, Garg et al. (2009), found that majority of surgery cases were cancelled due to lack of availability of time to operate on patients. Garg et al. (2009), had findings similar to Kumar and Gandhi (2012) who also indicated that time was one factor that served as a hindrance to cancellation of surgical operations in most health facilities.

The time was further emphasized by Hanns et al., (2005) and El-Dawlatly et al., (2008). In both of these studies, it was found that unplanned time admissions and time duration used for surgical operations between cases were the major factors for cancellations of some surgical cases. These studies revealed that during the preparation of theatre lists of cases to be operated on, there are instances where the individual preparing the list may not be familiar with the procedure and time required for the operation. Also, most surgical operation time period differs and this leads to a situation where cases are delayed in the operation room than the actual time schedule for the operation. Time spent at the operation is a reason for cancellation of lot of booked surgeries.

Schofield et al. (2005), noted that some patients after being booked for surgery may not actually need surgery. In such cases the operations are cancelled. There are instances where patients also required further workup and medical checkup before actual surgery which most patients at time failed to do. This as well leads to cancellations of elective surgeries according to Schofield et al. (2005). Schofield et al. (2005), noted that lack of time for patients to do all necessary check-up before surgery leads to cancellations of cases. The study by Schofield et al. (2005) again noted that in situation where more cases are booked than the health facility capacity, cases have been cancelled.

It is noted that most cases were not just cancelled by causes such as time scheduling error but can mainly be caused by surgeons under estimation of the time needed for the operation.

Surgeons are required to add more time to patients' recovery time but this can also lead to time wasting and can affect the awaiting list and can lead to case cancellations. A retrospective study on causes of elective surgery cancellation in the USA by Pandit and Carey (2006) revealed that after closely examining 56,000 surgery cases, 31% of lists were predictably overbooked. They found that most health centers booked for cases than they could actually work on. The end results for such instances were case cancellations.

Pandit and Carey (2006) noted that when cases are overbooked, the time interval between two surgical interventions can affect the others cases yet to be operated upon. No matter the longer time period allocated for each case, when the patient takes a longer time than the anticipated time to recover from anesthesia the end results will lead to the cancellation of other cases.

Vinukondaiah et al. (2000), also found that over running which lead to time wasting in surgery cases was one of most common causes of cancellation of surgery cases on the day of surgery. In a study by Ferschl et al. (2005), it was further confirmed that 50% lists of all surgery cases were overbooked and as a result 50% over ran their scheduled time. The implication here is that overbooked cases led to cancellation of cases.

In a study by Leslie et al. (2012), other factors that accounted for cancellations of surgical cases was when a junior surgeon is being taught in the process and is allowed to do the surgery especially for laparoscopic procedures. This led to waste of time as more time will be required to perform the procedure. Leslie et al. (2012), also noted that unavailability of sterilized instruments in most medical facilities and technical problems with instruments can lead to cancellations of cases. The study by Leslie et al. (2012), noted that it is not standard that lack of operating time was the single most important factor for cancellation of cases but the medical equipment as well account for cancellation of cases. This is because some medical centers lack medical equipment to handle some surgery cases (Leslie et al., 2012).

To further emphasize on the issue of inadequate preoperative medical optimization and equipment a study by Rajender and Ritika (2012), noted that about 11.6% of all cancelled surgery cases in their study was due to lack of medical equipment. Lack of medical equipment is one important reason for cancellation of cases. According to Zafar et al. (2007), the one major reason why patients with hypertension, respiratory tract infections and uncontrolled diabetes surgery cases are cancelled frequently is lack of medical equipment in operation patients with such complications in their study area.

Zafar et al. (2007), study observed that patients who are evaluated on the day before surgery by the anesthesiologist in their study area showed signs of hypertension, respiratory tract infections and uncontrolled diabetes which the hospital lack equipment to handle such patients. In another study by Jamieson (2008), patients who required preoperative medical optimization during surgery are often referred to physician at the day of surgery but, most of the time, surgeons scheduled or re-planned their surgery days. A study by Hanns et al. (2005), also noted that surgery cases may be cancelled due to anesthesia related reasons. It is reported in the study by Hanns et al. that about 8% of most surgeries are cancelled due to anesthesia related factors on the surgery day.

More pressuring factors that accounted for cancellations of surgery cases according to Paschoal and Gatto (2006), was absence of separate facilities for day-case surgery. They noted that most medical centers lack facilities on the day of surgery to accommodate all patients that are booked for surgery. Paschoal and Gatto (2006), found that when cases are to be operated on the day, the rate at which some cases are cancelled when cases are overbooked is high, as the facility may not have adequate and available resources to care for all patients at the same time. Jamieson (2008) also noted that lack of beds in some health center as reason for cases cancellation. When there are mass casualties and emergency cases, booked surgeries may be

cancelled for the surgeons to attend to the emergency cases. During emergency situations, elective surgical list is cancelled as a result of emergency. The health facility may cancel elective cases to address emergency cases in operations room when they anticipate lack of bed and facilities to meet all the patients' health needs.

Although emergency situations may result in cancellations of booked surgery, most studies do not consider this factor as a serious factor for cancelled surgery unless their inadequate medical facilities and equipment to handle all cases (Pandit et al., 2007). Emergency cases may lead to last-minute cancellation of elective surgeries by the surgical team.

From the reviews of literature, it was clearly established that many factors account for cancellation for surgery cases. Most of these studies have presented more institutional and structural based factors rather than individual factors. In a broader look; this study aims to combine factors from the health facility level and patients' level factors in understanding the causes of surgery cases cancellation within the Ghana context using elective surgery cases in Komfo Anokye Teaching Hospital (KATH).

In a study by Wright and Walker (2007) it was noted that some common non-clinical reasons for cancellations of elective surgeries in most health facilities include: the fact that hospital beds are always unavailable at the time of surgery, surgeon unavailable in the health facility, increase and continue emergency cases that need theatre which surgery are to be performed, cases of theatre list over-ran, cases of hospital equipment failure, administrative error within the health facility and unavailability of anaesthetist in some cases.

The study will further add to existing literature regarding the factors that account for surgical cases cancellation as most literature suggest that there are many unanswered questions

regarding why booked or elective surgery are cancelled on the day of surgery within the Ghanaian context.

2.3 Implications of Cancelled Surgery on Patients' Health and Hospital Management

Studies have shown that cancellation of booked surgery have far negative implications to patients and health facilities (Fizan et al., 2010; Meara and Greenberg, 2015). According Paschoal and Gatto(2006), cancellation of surgery has negative effect on hospital's resources. It drains on health resources and waste time. Hussain and Khan (2005) mentioned that most hospitals invest more money and resources in maintaining surgeons and when surgical cases are cancelled, the hospital lose a lot from such cases. Cancellation of surgeries, lead to waste of theatre staff available time and resource and create unpredictable schedule for surgeon with increase operating cost at hospital (Ferschl et al., 2005).

Although cancellation of elective surgical cases is a cost to hospital operation cost the persistent problem in most hospitals can lead to great loss of skills (Vinukondaiah, 2000). When cancellation of surgery cases persists especially with short-notice of cancellation of scheduled operations at the last minute it can lead to complication to patients and loss of life (Pandit and Carey 2006). According to Paschoal and Gatto (2006) the waste form of loss of surgery cancellation has to do with the same day of surgery cancellation.

In some cases, patients may be prepared for surgery and the staff assembled and ready to operate yet the cases can be cancelled. In such cases, the loss is to both patients and waste of resources to health facilities and waste of time to staff (El-Dawlatly et al. 2008). In other cases of surgical cancellation, patients and staff may not be directly affected, this happens when the surgeon has cancelled the operation. This has negative implication on hospital resources because the patient may be informed and may not turn up for surgery but the theatre booking

has always been recorded and distributed, which means no new cases can be booked on that date. The end result is that the hospital losses the resource committed for the surgery and also lost from booking new cases (Zafar et al. 2007).

One major effect with the issue of cancelled surgery is the cases where patients have been prepared for surgery but the hospital lack anesthetists, bed (space) to admit patients, and required medical equipment to handle cases (Garg et al.,2009). In others situation, the problems of cancelled surgery are due to the patients. Staff within the medical field complains about high rate of patients defaulting surgical appointment after they have been booked for surgery (Jonnalagadda et al., 2015). This situation has far negative effects on the health center as it loss resources and waste of time. Some researchers noted that patients failure to turn up for booked and appointed surgery may not directly affect the patients alone but hospital resources (Miller, 2004; Kolawole & Bolaji, 2012; Troung et al., 2016).

Cancellation of booked surgery is a major cause of the unproductive utilization of operating room time in most hospital leading to waste of hospital resources. According to smith et al., (2014), Cancellation of elective surgeries leads to waste of resources within health facilities. In the views of Smith et al. (2014) cancellation of booked surgery is potentially stressful and costly to patients. When patients attend hospitals only to be told that their cases have been cancelled, it can be stressful to patients in terms of the working days lost by going to hospital and the manner going to hospital can be disruptive in their daily life (Rajender and Ritika, 2012).

In a study by Jamieson (2008) in was found that cancellation of booked surgery can lead to depressive effect on patients. In a study of 342 booked cases that were cancelled on the day of surgery conducted by Garg (2009), it was reports that 74% of the patients who experienced same day cancellation have depressive effect as result of cancellation. It further reported that

most patients who have ever experience same day cancellation of surgery cases have high level of emotional involvement before the next booked surgery.

According to Hanns et al. (2005) repeated cancellations of booked surgery on the day of surgery can have implications for patient satisfaction. In another study by Pandit and Carey (2006) it was noted that cancellation of elective surgical cases does not only affect patients but affect the staff morale. A study by Vinukondaiah et al. (2000) revealed that same day cancellation of elective surgery affect hospital and the patient relationships and may lead to situation when the public will lose trust in the health facility in meeting the surgical care needs of the public.

Vinukondaiah et al. (2010) noted that cancellation of elective surgical cases can lead to underutilization of theatre staff and time. Similar reasons were noted by Argo et al., (2009) regarding effects of most cancelled surgery in the United States (US). According to Hand, Levin &Stanziola (2010), the most common effects for cancellations of surgery in the US were unused theatre time (i.e., over-booked operating lists), unused of beds and poor coordination from hospital administrators and medical officers.

In United Kingdom (UK), studies showed that about 7% of scheduled elective surgical operations are more likely to undergo cancelling nationally which end up resulting into complication to patients and leads to loss of resources to health facilities (Sanja, Dodd, Miller, Arumugam & Woodward, 2007).

The provision of surgery services is virtually unlimited in time because of the way in which health care is financed (Sanjay, Dodds, Miller, Arumugam & Woodward, 2007). Studies on surgery cancelling from North America emphasis on the fact most theatres are often full utilized. However, cancellation of cases can result to life threatening situation for patients.

2.4 Measures that can be adopted by Hospital to Reduce the Incidence of Cancelled

Surgery Cases

According to Kumar and Gandhi (2012) the incidence of surgery cases cancellations can be curbed through avoidance of late starts of operation. Most cases are delayed because most of the surgeries do not start on time; they waste much time without actually starting the main operation. To avoid cancellation of surgery cases, this can be achieved by effective cooperation from anesthesiologist and surgeons to start cases on the right time without late start. Kumar and Gandhi (2012) further suggested that at a team approach could be adopted to avoid cancellations of surgical cases. When the anesthesiologists' and surgeons work as a team, in presence of efficient theater In-charge, the time required for surgery operation can be improved and more cases can be operated upon in a day to avoid cancellations of elective cases.

Smith et al. (2014) suggested that surgery cases cancellations can be reduced through diversity of staff working together in cooperative operation theatre. This will help reduce conflicts and misunderstanding among the anesthesiologist and surgeons and can lead to efficiency and good time management. Another study by Leslie et al. (2012) suggested that a good administrator can improve surgery scheduling time to reduce time spent in preparing/cleaning and handle resources better to avoid cancellations of surgery cases.

In a study by Hanns et al. (2005), it was suggested that surgery cancellation can be reduced by ensuring that the medical problems that lead to elective surgery cancellation are identified on time and the number of cancellations on medical grounds can be avoided by establishing a formal liaison with the physicians and the patients by improving effects mode of sharing of information between patient, doctors, and nurses. The patients who have their cases cancelled should be given day-care counseling. This should be adequately provided to ensure that patient's do not cancel their booked surgery after been scheduled for surgery (Pandit and Carey 2006).

In Leslie et al. (2012) study, it was argued that patients meeting for post anesthesia care should be educated well and the time alloted for each patient should be well planned. Also, Leslie et al, noted that patients in theatre unit should be discharge using a criterion that lead to promptly discharged to prevent delay in time shifting to avoid time delay and cancellation of cases.

Ologunde et al. (2009), noted that to reduce surgical cases cancellation, patients who intend to miss booked date of surgery should try as much as possible to inform the health authority with notice regarding their inability to attend surgery on the booked date. They noted that aside clinical reasons, patients and health authority should provide information to each other in cases a booked surgical case is to be cancelled. The idea of telephone notice cancellation could be adopted by patients and health authority so that both parties can have full information regarding happening within the health facility to ensure effective utilization of health resources.

Brugha et al. (2015), advance similar views by noting that effective relations and flow of information between patients and surgeon can help reduce surgery cases cancellation. They argued that if patients are able to provide health authority with prior information about their inability to turn up for surgery on already scheduled date, the hospital can plan to avoid waste. Further emphasizing on the need of flow of information between patients and hospital management during surgery, Meara and Greenberg (2015), argued that when hospital authority knows the number of patients who booked for elective surgery but may not be able to attend surgery as early planned. They are able to re-plan and booked new patients which can reduce waste of time and ensure effective management.

Wright and Walker (2007), suggest that more beds should be provided and reserved for surgery. Health facility should plan and book for cases with the numbers of beds in the facility in mind. Since health facilities normal have a fair idea about the number bed in the health center, the

number of surgery booked for operation should be in line with the number of beds the facility allocate for surgical patients.

They further suggested that health management should put up measures to ensure that there will be surgeons available during period that patients have booked for surgery. The Surgeon in the health facility should know cases they are to operate on daily bases to avoid unavailability of surgeon after patients have been booked for surgery. Farmer et al. (2009) opined that, health authority should put up measures to avoid theatre staff and bed unavailability situations that lead to cancellation of elective surgical cases. They noted that surgery cases should be booked according to the health facility beds capacity and theatre staff should make available in the date of booked surgery to avoid cancellation of surgery cases.

A similar view was shared by Lavy et al. (2011), regarding measures to reduce surgery cases cancellation. Lavy and his colleagues noted that aside patients' factors such as their inability to pay for surgery cost, authoritative factors that account for surgery cancellation should be effectively address by hospital management. Kumar and Gandhi (2010) suggested that cancellation of surgical cases could be minimized if more surgeons and anesthetists are trained and made available to health facilities. It was noted that one major causes of surgery cases cancellation has always been as a result of lack of surgeon or anesthetists in health facility which lead to cancellation of surgical cases in most health facility. To ensure effective use of resource in hospitals, the surgeons and anesthetists should be provided in health centers to carry out surgery.

Argo et al. (2009)shared similar idea by noted that most health facilities in Africa record high number of cancellations of surgery cases because of lack of health professional such surgeons and anesthetists. Hence, to improve upon the issue of surgery cases cancellation, the government needs to commit more resources in training more anesthetists and surgeons.

In another studies by Farasatkish et al. (2009) and Notrica et al. (2011) it was noted that most health facilities do not lack surgeons and anesthetists but do not have the need equipment to carry out surgery. This according to most hospital management account for surgery cases cancellation. They therefore noted that for surgery cases cancellation to be reduced, then the government needs to provide health facilities with modern equipment needed to conduct surgery. The government should not only train surgeons and anesthetists but should provide them with equipment to work with as most hospitals lack theatre equipment to carry out effective surgery.

This view was equally argued by Hussain and Khan (2005) that when surgeons are trained with equipment to work with as in the case of most hospitals in Africa where equipment are lacking in most health facilities, the resources used to train the surgeons become useless as the trained surgeon cannot work without the needed equipment. It was therefore argued health facilities should be well equipped with the equipment that supports surgery to reduce surgery cases cancellation.

This study will as well add to the existing literature and fill the literature gaps on measures to reduce surgery cases cancellation within KATH in Kumasi and suggest measures to reduce cases cancellations.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter examines the method that was applied in the current study. The study applied both qualitative and quantitative research methodology. The chapter highlights the research design, population of study, sampling techniques, sample size, method of data collection, data analysis, ethical consideration and limitations to the study.

3.1 Study Methods and Design

A descriptive cross-sectional study involving a self-administered questionnaire and interview was conducted. It employed the use of mixed method approach where both quantitative and qualitative data were collected. The quantitative data will help the researcher make inferences. The qualitative aspect enabled the respondents to express themselves regarding the problems of study in a more detailed and precise manner. Semi-structured questionnaire was also administered to patients. The study was conducted over a period of three months, from May, 2018 to July, 2018.

3.2 Profile of Study Area

The study was conducted in Komfo Anokye Teaching Hospital (KATH), Kumasi, Ghana. Komfo Anokye Teaching Hospital is located in the vibrant and culturally rich city of Kumasi, the regional capital of Ashanti, with a population of about 4.7 million (2010 population census). As such referrals are received from the following region (namely Northern, Upper West and Upper East Region, Brong Ahafo, Central, Western and Eastern Regions). Kath was established in 1955 and became a Teaching Hospital for the training of medical students from the Kwame Nkrumah University of Science and Technology (KNUST) in 1975.

It is the second largest, tertiary, referral and Teaching Hospital in the country, and the only tertiary institution in the Ashanti Region. It serves as a major referral centre in the northern sector of Ghana. At present, it is a training centre for Ghana Post Graduate College of Physicians and Surgeons. The hospital also provides training for nurses and midwives from Kumasi Nurses and Midwifery Training College and nurses from other nurses training colleges in the metropolis as well as Pharmacy and Medical laboratory scientist students from the KNUST.

The hospital has (12) clinical directorates, and (2) non- clinical directorates namely surgery, Obstetrics and Gynaecology, Child Health, Medicine, Polyclinic, Diagnostics, Emergency Medicine, Traumatology and Orthopaedics, Oncology, Anaesthesia and Intensive care, EENT, Oral health, Domestics and Technical Services. The hospital has a staff population of 3,909 who fall under these categories, Doctors (9.4%), Top Management (0.2%), Nurses and Midwives (42.2%), Certified Registered Anaesthetist (1.3%), Pharmacist and Pharmacy technicians (3.8%), Administration and Finance (6.6%), Clinical support (10.9%) and Allied Health (5.6%) (KATH Annual Report, 2013).

The hospital has two (2) major theatres namely main theatre and the accident and emergency theatres and 3 other minor theatres. The main theatre has 5 theatre suits distributed among four (4) sub specialties; general surgery, paediatric surgery, urology, and gynecological surgery. And one (1) theatre is solely reserved for emergencies. The accident and emergency theatre also have 4 theatre suits distributed exclusively among 4 sub specialties; trauma orthopedic surgery, plastic surgery, neuro surgery and cardiothoracic surgery. The theatres operate 24 hours daily from Sunday to Saturday. Elective surgical lists are prepared by the surgical team and distributed to the respective units (anaesthesia, nursing and CSSD) by 16:00 GMT prior to the scheduled date.

3.3 Study Population

The study population included patients whose elective surgery have been cancelled and health professional who are involve in the care of patients undergoing surgery in the surgical department of Komfo Anokye Teaching Hospital.

3.3.1 Inclusion criteria

All patients of all ages scheduled to undergo elective surgeries at Kath (from May to July 2018) were enrolled into the study. The study populations also included health professionals who are involve in the care of patients undergoing surgery and were willing to partake in the study without coercion. Data on surgeries scheduled for weekdays were collected on daily basis.

3.3.2 Exclusion criteria

All patients undergoing emergency surgical procedures and elective caesarean sections were excluded from the study. Data on surgeries on public holidays and weekends were also excluded.

3.4 Study Variables

In order to fulfill the objectives of this study, the variable considered under the objectives are described in the ensuing sub-section below.

Dependent Variable: - Cancellation rate of elective surgery, reasons for cancellation as well as implication on both patient and the hospital.

Independent Variable: Socio demographic factors: - age, educational level, employment status and hospital admission status, surgical diagnosis, proposed surgical procedure and surgical specialty.

3.5 Sampling

3.5.1 Sampling Technique

The study adopted a non-probability sampling technique. A total population sampling (purposive sampling) was combined with convenience sampling in the selection of patients and health professionals for the study. This was due to the smaller sample size and quickness with which data can be gathered, availability, willingness to partake in the study.

3.5.2 Sample size

The total population of patients of all ages scheduled to undergo elective surgeries at KATH during the three months of study {May (n=93), June (n=78) and July (n=107} was found to be 278 from reviewing hospital records. For the health professionals, data were gathered till the researcher achieved saturation at ten (10) respondents.

3.6 Data Collection Techniques

A semi-structured questionnaire and interview guide was used to collect data for this study. These instruments were developed based on pertinent literature and the research objectives. Terre (2006) point out that interviewing and questionnaire are probably the most commonly used form of data gathering in qualitative and quantitative research. For the purpose of this research, the data was collected in two phases.

In phase one, the researcher contacted the surgery department of KATH for the daily operation list within the period of study to assessed the cancellation rate. An interviewer administered questionnaire was used to collect data from patients whose operation was cancelled. The questionnaire was sub-divided into three sections. The first section was on the socio-demographic data including sex, age, marital status, and religious affiliation of the respondents.

The second section focused on the reasons for cancellation of elective surgery and the third focused on the implication or effects of the cancelled surgery on the patients. All forms were collected at the end of each day and checked for completeness.

In phase two of the study, an interview guide was used as a tool to collect data from health professionals who were involved in the surgical care of patients. This technique was used because it provided respondents the opportunity to provide precise and detailed information on the issue of study. The tool was used as a guide to have an in-depth understanding of their experiences, thoughts and feelings of the professionals in the study area. The interview questions were flexible. In an interview, the interviewer had a face-to-face personal contact with the interviewees in natural setting. This provided the researcher the opportunity to observe, write and record both verbal and non-verbal expressions from respondents. The interviews were conducted at the convenience of the participants.

3.7 Pre-testing

The researcher pre-tested the research instrument through a pilot study conducted with five respondents in Kumasi South Hospital within the Ashanti Region. This helped the researcher to test the validity and reliability of the interview guide before conducting the actual study at the study area and also to make necessary change and corrections on the research data collection instrument. The pilot study ensured that the research can be evaluated according to its credibility.

3.8 Data Management and Analysis

At the end of the data collection; data were checked for completeness and internal consistencies. Thematic analysis was adopted for qualitative data analysis. This was done with the aid of software (Nvivo). All interviews were audio-taped and transcribe verbatim and the researcher

read through all the responses to identify themes that could be used for the study. The responses that were written during interviewing process were typed out by the researchers.

The quantitative data collected were entered, processed and analyzed with SPSS version 25.0 and exported to Microsoft excel 2016 for better presentation. The data entry sheet was designed with appropriate variable definitions and codes and place in order to minimize errors during the entry process. The data were sorted according to alphabets, coded and cleaned in order to ensure accuracy of information. The data were doubly entered which helped in detecting discrepancies to ensure corrections are made where needed. For the purpose of this study, results from the analysis were presented using descriptive statistics while correlation and regression analysis were used to assess the determinant of cancelation.

3.9 Ethical Consideration

Ethical approval was obtained from the Committee on Human Research, Publications and Ethics (CHRPE) of School of Medical Sciences, Kwame Nkrumah University of Science and Technology, as well as Komfo Anokye Teaching Hospital (Research and Development Unit). This study involved human subjects. Every effort was taken to ensure that the right of every participant was respected. A thorough explanation of the intent of the study and the significance of the study was provided to all potential study participants. Those who wished to participate were asked to sign consent forms.

Consent were sought from clients before information was collected from them. In addition to seeking consent, all participants were advised that they could withdraw from the study at any time, and that confidentiality and anonymity were assured at all times. Information that were provided for the study was not to be used against respondents or bring any harm to the respondents.

3.10 Basic Assumptions

For the purpose of this study, it is assumed that;

- The respondents understood the questionnaire and answers proffered were correct, honest and truly reflected their experience and practices and they did not withhold any relevant information.
- The respondents interviewed were a good representative sample of the study population.
- The information obtained from respondents is a true account of what prevails in the area in spite of its limitations.

CHAPTER FOUR
RESULTS

4.0 Introduction

This study sought to assess the cancellation of elective surgery and its impact on the patients and the facility at Komfo Anokye Teaching Hospital (KATH) in Ghana. Data was gathered from 270 patients. A response rate of 97.12% (270/278) was achieved.

4.1 Demographic Characteristics of Study Participants

Table 4.1 shows the demographic characteristics of the ten (10) specialists with a mean±SD (min-max) serviced experienced of 12.1±1.68 (6-22) and were predominantly males.

Table 4.1: Percentage Distribution of Specialists Characteristics

Variables	General Data	Frequency (n=10)	Percent (%)
Age (Years)	Minimum -Maximum	36-60	
Gender	Male	7	70.0
	Female	3	30.0
	Mean ± SD (Min-Max)	12.1±1.68 (6-22)	
Service Experience (Years)	6-10	5	50.0
	11-15	2	20.0
	16 and above	3	30.0
Designation	Anaesthesiologist	1	10.0
	Consultant Plastic Surgeon	1	10.0
	General Surgeon	1	10.0
	Perioperative Nurse	2	20.0
	Neuro Surgeon	1	10.0
	Surgical Specialist	1	10.0
	Consultant Paediatric Surgeon	1	10.0
	Surgical Residents	2	20.0

Source: Authors Field Survey, 2018.

Two hundred and seventy patients were included in this analysis. The average patient age was 33.74 years (3 months–88years). Primary educational level (28.9%) and inpatients (57%) represented the majority (Table 4.2). Also, majority of the patients were unemployed (n=69, 25.6%) while over 40% were single (n=117, 43.3%) as illustrated in table 4.2 below.

Table 4.2: Percentage Distribution of Patient Characteristics

Variables	General Data	Frequency (n=278)	Percent (%)
Age (Years)	Mean ± SD	33.74±22.21	
Employment/Work Status	Government employee	16 26	5.9
	Private employee	40 9	9.6
	Student	42	14.8 3.3
	Farmer		15.6
	Trader		

	Self-employed	36	13.3
	Unemployed	69	25.6
	Retired	17	6.3
	No Responses	23	5.6
Hospital Stay	Inpatient/Outpatient	155/115	57.0/43.0
	Missing	8	
Marital status	Single	117	43.3 38.9
	Married	105	1.1
	Divorced	3	
	Separated	6	2.2
	Widowed	16	5.9
	No Responses	23	8.5
Education	No Formal	50	18.5 1.1
	Pre-school	3	28.9
	Primary	78	
	Secondary	71	26.3
	Tertiary	26	9.6
	No responses	42	15.6

Source: Authors Field Work, 2018

4.2 Cancellation Rate of Elective Surgical Cases

Over a period of 3 months (May-July, 2018), 1078 elective surgical operations were scheduled/booked. A total of 800 elective operations were performed on the planned date as indicated in table 4.3. Cancellation was recorded in 278 cases (25.78%). It was observed that the rate of cancellation varied greatly depending on the type of surgery. The study found different rates of cancellation fluctuating between the lowest rate (15.1%) for plastic surgery and the highest (53.3%) for cardio-thoracic. Table 4.3 illustrates the cancellation rate for KATH from May to July, 2018.

Table 4.3: Surgical Specialty Distribution of Case in KATH from May to July, 2018

Type of Surgery	Booked Surgery	Operations Done	Operations Cancelled	Cancellation Rate	Contribution to Total Cancellation

Trauma Ortho	336	258	78	23.2%	28.1%
General.	203	133	70	34.5%	25.2%
Urology	91	60	31	34.1%	11.2%
Gynaecology	126	95	31	24.6%	11.2%
Paediatrics	138	108	30	21.7%	10.8%
Plastic	112	95	17	15.1%	5.5%
Neuro	57	44	13	22.8%	4.7%
Cardio-thoracic	15	7	8	53.3%	3.0%
Total	1078	800	278	25.78%	100%

Source: KATH Theatre Records 2018**CancellationRate = (**No. of cancellation/ No. of booked per specialty) %, **Contribution to Total Cancellation = (**No. of cancellation per specialty/ total number of cancellati**on) %.**

The total contribution of cancelled surgical cases by each specialty were as follows: 31 (11.2%) urology, 78 (28.1%) trauma/orthopaedics, 17 (5.5%) plastic, 30 (10.8%) paediatric surgery, 31 (11.2%) gynaecology, 13 (4.7%) neurosurgery, 70 (25.2%) general surgery, and 8 (3.0%) cardio thoracic as indicated in Table 4.3.

Among the cancelled cases, 139 patients (50.0%) experienced their first ever surgery cancellation with most of the patients (n=25, 18.0%) between the ages of 20-29 years and 4049 years. 76 males (54.7%) and 63 females (45.3%) indicated that this is their first time their surgery had been cancelled. Also, more Christian patients (n=110, 79.1%) had their surgery cancelled for the first time (Table 4.4). In the study, the patient's demographic characteristics is found to be significant if $p<0.05$. The table shows a p-value of 0.034 and 0.02 for educational level and hospital stay respectively which indicates that they are significant to cancellation of elective cases. However, there were no significant found in cancellation elective cases for age, gender and religion as illustrated in table 4.4 below.

Table 4.4: Scheduled Surgery and Cancellations according to Demographic data

Demographic Data	**No. of Patients**	**Surgery at first Cancellation (n=139)**		**P – Value**
	N (%)	**Freq. (n)**	**Percent (%)**	

Age (Years)	< 10	46 (17.0)	22	15.8	0.235
	10-19	37 (13.7)	18	12.9	
	20-29	41 (15.2)	25	18.0	
	30-39	35 (13.0)	15	10.8	
	40-49	49 (18.1)	25	18.0	
	50-59	24 (8.9)	10	7.2	
	60-69	17 (6.3)	11	7.9	
	> 69	21 (7.8)	13	9.4	
Gender	Male	152 (56.3)	76	54.7	0.142
	Female	118 (43.7)	63	45.3	
Religion	Christianity	217 (80.4)	110	79.1	0.328
	Muslim	36 (13.3)	24	17.3	
	Traditional	1 (0.4)	-	-	
	No responses	16 (5.9)	5	3.6	
Education	No Formal	50 (18.5)	34	24.5	0.034
	Pre-school	3 (1.1)	1	0.7	
	Primary	78 (28.9)	37	26.6	
	Secondary	71 (26.3)	29	20.8	
	Tertiary	26 (9.6)	15	10.8	
	No responses	42 (15.6)	23	16.5	
Hospital Stay	Impatient	155 (57)	104	74.8	0.02
	Outpatient	115 (43)	35	25.2	

Source: Authors Field Work, 2018 *There is significant difference (*p <0.05)

Table 4.5 shows the qualitative data on the type of surgery and rate of cancellations according to surgical specialists. Cancellations among specialists for field of cardiothoracic accounted for 50% of all cardiothoracic cases while paediatric surgery cancellations accounted for 15.7% of all general surgery cases (table 4.5).

Table 4.5: Types of Surgery and Rates of Cancellations by Specialty

Type of Surgery	Booked Surgery	Operations Cancelled	Cancellation Rate
Cardio-thoracic	2/day	1 day	50.0%

Neuro-	3/day	1/day	33.3%
Plastic	4/day	1/day	25.0%
Trauma	8/day	2/day	25.0%
Urology	4/day	1/day	25.0%
Gynae	4/day	1/day	25.0%
General.	10/day	2/day	20.0%
Paediatrics	10/day	1-2/day	15.0%
Total	**40/day**	**8/day**	**20.0%**

Source: Authors Field Work, 2018

4.3 Reason for Cancellation of Elective Surgical Cases

Outpatients' cancellations accounted for 43.0% of all cancelled elective surgeries and inpatient cancellations accounted for 57.0%. Table 4.6 shows the reasons for cancellation according to the patients' status (inpatients and outpatients).

Medical-related, patient-related, administrative-related and others reasons accounted for 15.5%, 50.4%, 30.7% and 18.9% of the cancelled operations respectively. Unavailability of blood was the most common medical/work up related reasons for cancellations (n=13, 4.8%) and accounted for 30.95% in this category. The most common patient-related reason for cancellation was patient non-attendance which accounted for 40.7% of all cancellations and 80.88% within the category. The most common administrative reason for cancellations was unavailability or failure of hospital equipment such as faulty anaesthestic machine, power drill, unavailability of surgical implant, air condition malfunctioning among others. This accounted for 11.5% of all cancellations and 37.35% within the category.

Table 4.6: Reasons for Cancellation on the day of Intended Surgery

Cause related	Specific Causes	Reasons Inpatient	Outpat	Within	Within	Percent N	N Total Category
	High Blood pressure	3	3	6 (2.2)	14.29		
	Hyperglycemia	2	-	2	2(0.74)	4.76	
Medical/	Upper respiratory tract infection	1	-		3(1.1)	7.14	
Work up	Acute Change in medical status	3	-	2	3(1.1)	7.14	
(n=42,	Low Heamoglobin level	8			8(3.0)	19.05	
15.5%)	Patient Eaten/ not fasted	5			7(2.6)	16.67	
	Patient refusal/non-attendance	38		72		80.88	
Patients	Financial problems	12		9	21 (7.8)	15.4	
(n=136,	Spiritual beliefs	2		1	3(1.1)	2.21	
50.4%)	Lack of confidence in the system	-		2	2(0.74)	1.47	
	Equipment failure/ unavailable	25		6	31(11.5)	37.35	
	No ventilator at the ICU	2		-	2 (0.74)	2.41	
Administra	No water/ electricity supply	-	1	-	-	-	
tive	Lack of linen/ surgical drapes	5		-	1(0.37)	1.20	
/Logistics	Lack of theatre space	-	4	6	11(4.1)	13.25	
(n=83,	No bed			2	2(0.74)	2.41	
30.7%)	Overbooked list			2	6(2.2)	7.23	
	Staff not available	19		11	30(11.1)	36.14	
	Biomedical Scientist on strike	7		4	11(4.1)	21.57	
	Blood bank not functioning	4		4	8(3.0)	15.69	
	CSSD not working	6		1	7(2.6)	13.73	
Others	Family issues	2		6	8(3.0)	15.69	
(n=51,	Inconvenient appointment date	2		2	4(1.5)	7.84	
18.9%)	Medical school examination	3		3	6(2.2)	11.76	
	Patient inadequately prepared	4		-	4(1.5)	7.84	
	Some investigations need to be done	3		-	3(1.1)	5.88	
	Blood not available/ arranged	8		5	13(4.8) 110 (40.7)	30.95	

Source: Authors Field Work, 2018 Multiple choice

Concerning reason for cancellations among health professionals (qualitative data), Table 4.7 below shows the causes of cancellation by the specialists. Cancellation among specialist is mostly caused by administrative related issues such as lack of logistics and breakdown of equipment, lack of personnel, Inadequate sterile packs among others. This is then followed by medical related issues, patients related and other reasons such as unexpected non-medical activities eg. medical school exams (table 4.7).

Table 4.7: Causes of Cancellation on the day of Intended Surgery by Specialist.

Specialists	**Medical**	**Administrative**	**Patients/ Others**
1st Respondent Anaesthesiologist 9 years' exp.	Inadequate preparation of patient by Surgeons	Patients are not called on time	Patient failure to turn up, Financial constraints
2nd Respondent Consultant Plastic Surgeon 16 years' exp.	Undiagnosed hypertension High blood pressure	Lack of beds in theatre, Blood issues, Delayed change over-time between cases, Failure and breakdown equipment (CSSD) and Attitude of staff	Financial reason. Patients without health insurance
3rd Respondent General surgeon 17 years' experience	Co-morbidities Diabetics, hypertension	Non-readiness of operating theatres, defective equipment, Insufficient numbers of pieces of sterile packs, Electricity problems, Breakdown of CSSD and Attitude of Staff	
4th Respondent Perioperative nurse (theatre) 22 years' exp.		Equipment failure, shortage of staff (health professionals), Lack of motivation for the staff. and lack of appropriate instruments to work with.	Unexpected non-medical activities Eg. Medical school exams.
5th Respondent Neuro Surgeon 7 years' experience		Lack of personnel (Neuro-surgeon), Non-readiness of equipment, Delayed change over-time between cases, no beds and no ventilators at ICU	
6th Respondent Surgical specialist 8 years' exp.	Inadequate preparation of patient	Delay start of surgeries, Lack of equipment from CSSD, Inadequacy of instruments and Attitude of staff	

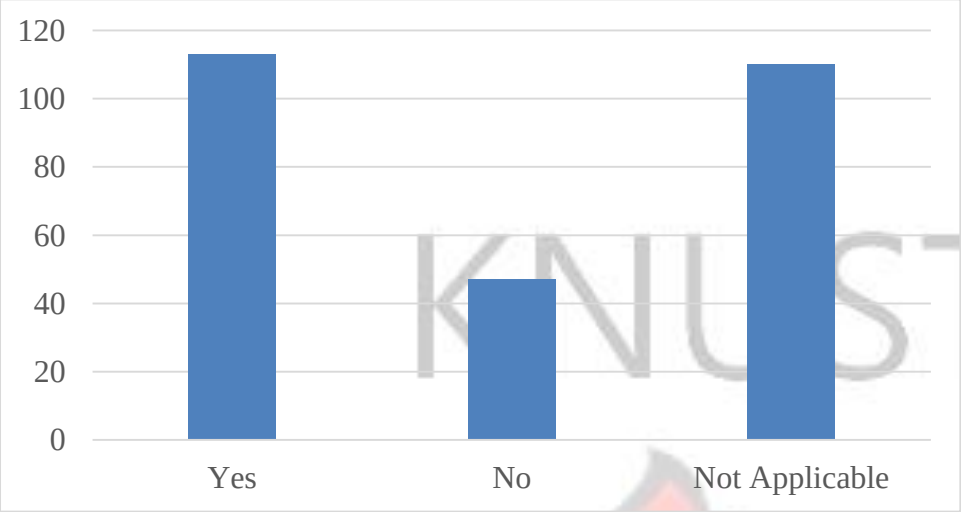
7th Respondent Consultant Paediatric surgeon 15 years' experience		Inadequacy sterile packs, staff mostly not enough anaesthetists, Water shortage and plumbing fittings having problems, Non-functional theatre operative beds and CSSD not functioning optimally.	Patient not turning up for surgical appointment
8th Respondent Perioperative nurse 15 years' exp.	Medical / inadequate patient preparation	Logistics and space, shortage of resources; like power tool. the hand drills	Medical school exams and strike by professional group
9thRespondent Resident 6 years' experience		Lack of resources or non-functional equipment eg. anaesthetic machine, C.S.SD not functioning optimally and Inadequate theatre space	Patient Failure to turn up for surgery
10th Respondent Resident 6 years' experience	Medical condition eg. BP or diabetes	Inadequate sterile packs, inadequate staff eg. Anaesthetists	Patient's failure to turn up, and emergencies cases

Source: Authors Field Work, 2018

4.4 Effects for Cancellation of Elective Surgical Cases

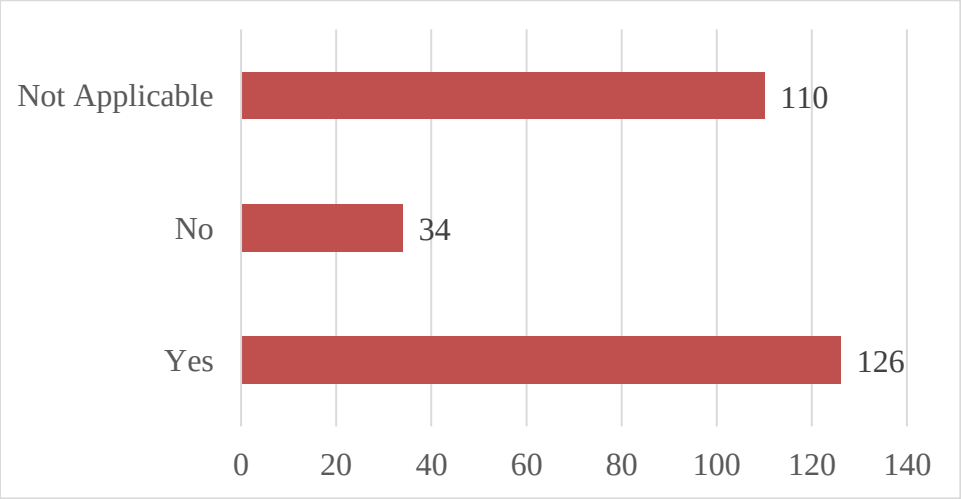
Regarding surgical team explaining to patients the reasons for cancellation, majority of the patients (n=113, 41.85%) indicated that the surgical team explained the reasons to them. 17.4% (n=47) indicated that nothing was communicated to them (figure 4.1). Also, majority of the patients (n=126, 46.67%) indicated that their surgery had been rescheduled (figure 4.2).

Figure 4.1: Distribution of Patients whose Cancellation were explained to them.



Source: Authors Field Work, 2018

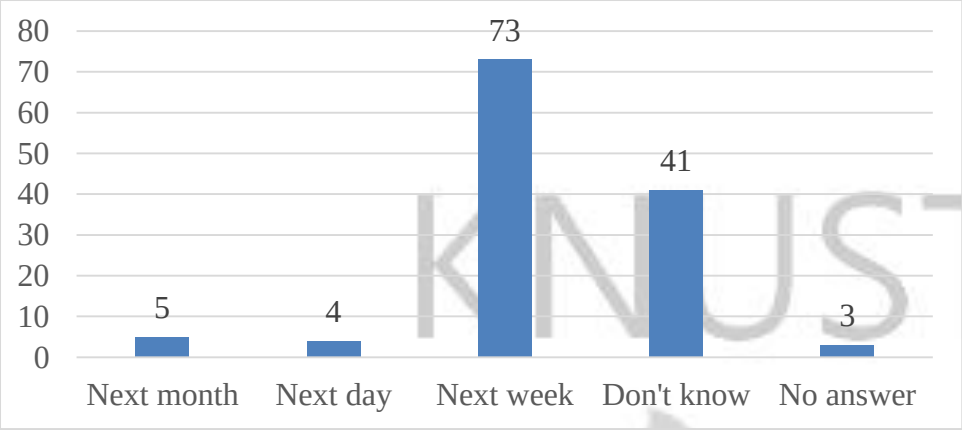
Figure 4.2: Distribution of Patients whose Surgery were Rescheduled



Source: Authors Field Work, 2018

Among the rescheduled patients, 27.0% (n=73) indicated that they had been rescheduled for next week or the following week while over 15% (n=41) indicated they do not know the rescheduled date as illustrated in figure 4.3.

Figure 4.3: Reschedule Date discussed with Patients



Source: Authors Field Work, 2018

In regards to cancellation being explained to patients, health professionals reported that they communicated the reasons to patients but sometime not in details while few insisted that they adequately informed patients for rescheduling. As some health professionals recalled:

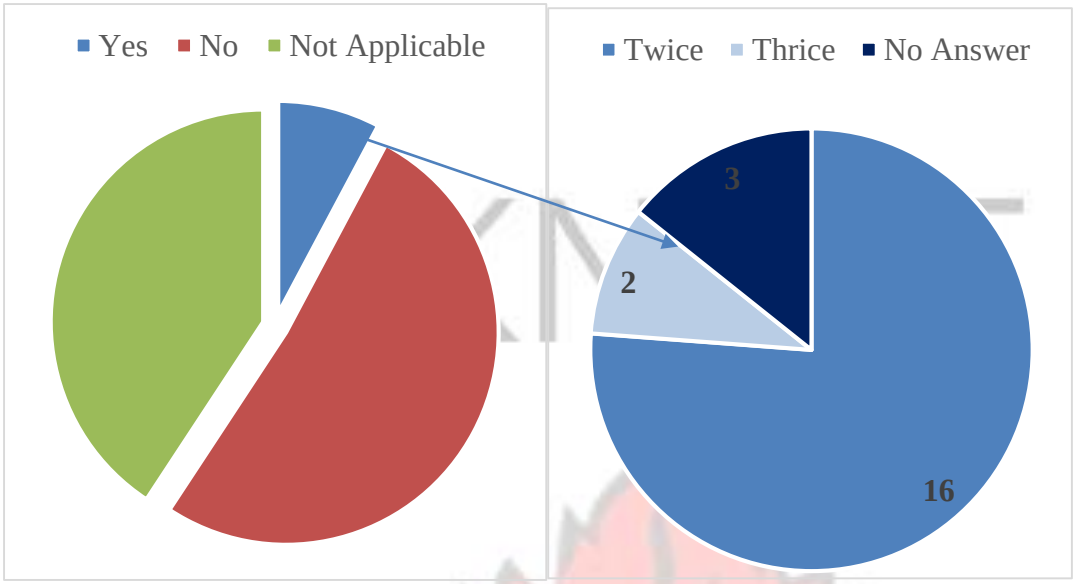
*"Yes, anytime there is a cancellation of a case, we do communicate to the patients and the relatives but we do not go into details probably due to language barrier. Sometimes they don't really understand the reasons. I agree with you that sometimes communication is a problem but we try as much as possible to explain to them" (*Resident in surgery, 6 years' experience).

*"It has to be, for me I always communicate: the patients are staved so I get them to know that they can eat and let them know when we can get them back to the theatre and how they will get back to the ward. I know some patients are even left in the theatre with no plan of even sending them back to the ward" (*Surgical specialist with 8 years' experience).

"Mostly No. we do not tell them the exact reasons for the cancellation to the patients" (Perioperative theatre nurse, 22 years' experience).

From figure 4.4 below, patients who had encountered previous cancellation (n=21, 7.8%) indicated that this current cancellation is their second (n=16) and third (n=2).

Figure 4.4: Number of Cancellation of Recent Surgeries



Source: Authors Field Work, 2018

As illustrated in table 4.8below, patients were asked to indicate whether they were emotionally, psychologically and physically affected. Out of all the patients (n=160) who showed up for surgery, majority (n=129, 47.8%) were disappointed and felt bad. Concerning other effects, 23.7% (n=64) expressed worries about the pre-operative fasting while 23.7% (n=64) indicated that it has prolong their hospital stay thereby increasing their bill. Regarding, hospital related effects, 25.2% (n=68) indicated that they have lost confidence in the hospital.

Table 4.8: Effects of Cancellation on Patients

Effects	**Freq. (n)**	**Per (%)**
PATIENTS RELATED		
Psychological and emotional		
Sad	83	30.7
Angry	12	4.4
Disappointed	129	47.8
Discouraged	20	7.4

Stress	9	3.3
Frustrated	20	7.4
Confused	16	5.9
Disrespect	5	1.9
Economic and Physical		
Prolong hospital stay	64	23.7
Increased hospital bill	56	20.7
Pre-op fasting	64	23.7
Cannot go to school	21	7.8
Disrupt my social life	14	5.2
Worsen my condition	30	11.1
Time wasting	7	2.6
HOSPITAL RELATED		
Loss of confidence	68	25.2
Not Applicable	110	40.7

Source: Authors Field Work, 2018 Multiple response

The effects of cancellation of elective surgeries by health professional included patient related; professional related and hospital related. The patient related effect included psychological stress on patient, the inconvenience of going up and down and revenue loss and cost implication-(incurring higher hospital bills for inpatients prolong stay on the ward). This was summarized by two health professionals as follows:

"*Psychological stress on patient, fasting prior to surgery and Cost implication –this patient may be a private business person and they come and stay here the whole time for surgery only to be told due to some reason your surgery is cancelled. They are not working and have lost revenue, some have to do some form of arrangement like taken leave off work to come for the surgery and then some of the things they pay for cannot be refunded*" (Anaesthesiologist, 9 years' experience).

Another health professional described the Patient Related effects as:

*"Patient may go to other places to have the surgery done which may not be the optimal place to have that type of procedure, some will not do anything at all or resort to herbal medicine and come back in a worse condition, the inconvenience of going up and down. Unnecessary expenditure to patient and inpatients prolongs stay on the ward" (*Consultant Plastic Surgeon, 16 years' experience*).*

Other health professionals described the effect as professional/staff related. These include psychological stress on the team i.e. you have to go back and explain to patients, it disturbs the training process for health professionals and it leads to increase burden on the staff i.e. more work overload, waste of time and staff has to provide extra pre-op care to patient instead of providing post-operative care.

"To health professionals, is a waste of time to all, you end up doing nothing. We lose the opportunity of learning from rear or interesting cases" (Anaesthesiologist, 9 years' experience).

One of the professionals expressed that:

*"Some of us are specialist, resident in training, medical or nursing students. The case may be a rear case, so if it's not done, all the above will loss the opportunity to learn. It disturbs the training process for health professionals. Students lose the opportunity to learn"(*Consultant Plastic Surgeon, 16 years' experience*).*

While the other indicated that:

"*because the expertise that is developed by Health professionals' overtime in the care of a particular patient and the learning curved (generally stating) in the management of cases is affected in a way if cases to be done are cancelled. So, where e.g. In a specify period of time say in a year, one could do a number of cases upon which one's proficiency in terms of health*

care staff performance is concerned, proficiency levels could reduce. E.g.if an anaesthesia trainee has less and a smaller number of cases to practice anaesthesia on you will definitely not be proficient as it should be. In summary, it has effect on the training and proficiency of the individual (General surgeon, 17 years' experience).

It was also indicated by these professionals that the image of the hospital is affected as patients are not been treated on time and bad scheduling, it also affects the hospital finances; revenue loss and prolong stay on the hospital wards leads to a drain on the bed capacity of the hospital:

"*Yes, it has effect on the hospital. The image of the hospital is affected, patient get displaced as they are not been treated on time and on scheduled, it also affects the hospital financially because revenue supposed to be generated from these procedures are lost and data that could be generated from these procedures for research purposes are lost because cancelled cases are not included in the body of data in conducting a particular kind of research*"(General surgeon, 17 years' experience).

"*Yes, it does, it gives the hospital a bad name, it affects the revenue generation of the hospital too. Because the patient will go out and will be like this hospital even if you go, you won't have the best of services been done, if you are book for surgery; it will end up been cancelled. So, you better seek medical attention somewhere else. Thus" loss of confidence in the health facility*" (Neuro Surgeon, 7 years' experience)

"*It affects revenue mobilization and affects the image of the hospital negatively and if there were other tertiary hospital or facility, patient can. switch to these facilities*" (Consultant Pediatric surgeon 15 years' experiences).

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This research seeks to assess the cancellation of elective surgery and its implication on the patient, professional and facility at KATH. The aim of this chapter is to discuss the findings of the study and make recommendations in line with the objectives of the study. In relation to previous literature and the objectives, explanations for certain patterns, trends, and special cases are presented.

5.1 Response Rate and Demographics Characteristics of Study Participants

Achieving an appropriate response rate is an important aspect to any research study which will enable the results to be an indicative interpretation of the target population. Low response rates to surveys are not uncommon but may introduce bias and errors in the results. It is difficult to assert and identify an acceptable response rate; however, researchers may make comparisons between the response rates in their study with comparable studies to determine whether the response rate achieved is within the normal limits for that particular investigation.

In the quantitative study, the response rate obtained and/or number of patients (n=270, 97.12%) in this current study was a little lower than a study on bed crisis and elective surgery late cancellations by Sahraoui and Elarref (2014) who had 100% response rate. The difference in response rate is as a matter of research design used in both study. However, this study is an improvement over previous research studies that used the same research design and methodology but different time duration (August, 2005 to July, 2006) and study area (Jordan) by Mesmar et al., (2016). They observed a response rate of 72.25% (n=276/382). Therefore, it can be assumed that the response rate achieved for this current study is satisfactory and an approximation of a true reflection of the cancellation of elective surgery in KATH.

The findings from this study found, the average age of patients of cancelled scheduled elective surgical cases was 33.74±22.21 which was higher than the study in Qatar by Sahraoui and Elarref (2014) who observed an average age of 39.6 ±17.67.

However, majority of the patients were inpatients. This is unrelated to the study on cancellation of elective surgical procedures in Burkina Faso by Lankoande et al. (2016) but similar to the study in Qatar by Sahraoui and Elarref (2014).

5.2 Cancellation Rate of Elective Surgical Cases

Booking elective surgery is considered a contract between the patient and healthcare institution. From the perspective of healthcare providers, booking determines the day of service delivery when appropriate resources become available and surgeon's schedules permit. In essence, the process of scheduling elective surgery consists of allocating operating time to various surgical services, assigning blocks of operating time to designated surgeons and anaesthetist, and finally, booking patients into the operating room slots available with the respective surgeons (Sahraoui and Elarref, 2014).

Any cancellation of the booking without prior notice or arrangements from either the patient or the healthcare provider, have far-reaching implications for both (Perroca et al. 2007). Therefore, cancellation was defined as any surgery scheduled on a given date that did not occur on that date. So, determining the cancellation rate of scheduled surgeries is an important standard of quality of care and management assessment (Lankoande et al., 2016).

The first objective was to determine the cancellation rate of elective surgical cases on the day of surgery in Komfo Anokye Teaching Hospital (KATH) within the period of study. During this study, 1078 surgical interventions were booked and of which 25.78% (n = 278) were cancelled. The cancellation rate was lower than the studies conducted in some African countries, such as Ojo and Ihezue (2008) in Nigeria, Sanjay et al., (2007), Kingham et al., (2009) in Sierra Leone, Lavy et al., (2011) in tropical countries in Africa, Notrica et al. (2011) in Rwanda and Lankoande et al., (2016) in Burkina reported that 28.5%, 26.3%, 28.5%, 30% to 55%, 35% and 36.9% of surgeries were cancelled respectively, while in developed countries the rate is much lower. In the United Kingdom (El Mahalli et al. 2013),
8% of scheduled interventions were cancelled compared to 11.8% in U.S (Schuster et al., 2011), 7.6% in Saudi Arabia (Dhafar et al., 2015) and 21% in Tanzania (Chalya et al., 2011).

Nevertheless, the incidence of cancelled scheduled surgery can reach 20 to 40% (Lankoande et al. 2016). Likewise, the rate of elective surgery cancellations is dissimilar to the rates reported in a Ghanaian study at other hospital (Orthopaedic Hospital in Effiduase-Koforidua-St. John of God Hospital) by Timmers, et al. (2016) who observed a cancellation rate of 32%. Insufficient organisation and the role of the studied facility (Referral and Teaching Hospital) may be the main cause of the variation. Also, another source of variation in the reported rates of cancellations is the approach to data collection, whether it is prospective or retrospective (Mesmar et al., 2016). In this study, data on cancellation were collected prospectively; therefore, under-reporting of cancellations is expected to be minimal. The low cancellation rate at this hospital might be related to the monitoring of cancellation as a quality indicator in the hospital quality improvement programme (Lankoande et al., 2016).

The majority of surgeries per each booked subspecialty were cardio thoracic (53.3%), general surgery (34.5%), urology (34.1%), gynaecology (24.6%), Trauma (23.2%), neuro (22.8%) and Paediatric (21.7%). However, for the overall cancellation rate of elective surgical cases, the findings show that majority were with trauma orthopaedics (28.1%) and the least being cardio thoracic (3.0%). This is also similar to the studies of Sahraoui and Elarref (2014) which indicated a highest surgery cancellation among orthopaedics and contrary to the studies of Mesmar et al. (2016) which indicated a highest surgery cancellation among general surgery respectively. The reduction of cardio thoracic rates of cancellations in this study will not have a significant effect on the overall number of cancellations due to their small proportion among other types of surgery.

The prevalence of cancellation rate varies in the literature (Sahraoui and Elarref, 2014). Most inpatients (74.8%) were cancelled on at their first appointment compared to 25.2% of outpatients. This is dissimilar to the study by Lankonade et al. (2016) who observed 67.7% and

32.3% cancellation rate for inpatients and outpatients respectively. The variation is that, in Burkina, there is the need to hospitalise patients the day before surgery in order to decrease cancellations. However, in our context, the proportion of outpatients is not negligible. This may be due to a lot of factors; the facility serves as a referral and teaching hospital, a search for quality health care and the diversity of interventions practised in the study hospital.

From the view point of health professionals, averagely, over forty cases are booked daily at the studied facility. However, health specialists indicated that eight of the elective surgical cases are cancelled. This shows a cancellation rate of 20% per day. Also, the health specialists indicated that there are about two cases booked daily for cardiothoracic however, the operation of cancellation stands at one case. This means that, the rate of cancellation rate is 50%. Also, health specialists opined that, neuro surgery is the second subspecialty which easily cancelled cases (cancellation rate of 33.3%).

5.3 Reason and Causes of Cancellation of Elective Surgical Cases

The classical and simplistic approach to solving the problem of cancellations focuses on finding the causes of these cancellations, and then to provide a solution for each cause individually or collectively for all identified causes (Dexter et al., 2009: Tung et al., 2010: Dexter et al., 2012). As the rates and causes of cancellations are diverse and differ from one hospital to another (Seim et al., 2009: Sahraoui and Elarref, 2014), this classic and simplistic approach is likely to provide only limited solutions to the problem (Sahraoui and Elarref, 2014). Statistical methods to compare rates of cancellations have been suggested. Some of them are valid to compare and to evaluate the different cancellation rates but they are not able to identify indirect causes of cancellation (Dexter et al., 2005).

This study reported reasons for cancellations including patient-related, administrative-related, medical-related reasons and other related issues. According to Pareto's Principle, the minority of causes is always responsible for the majority of effects (Sahraoui and Elarref, 2014). Contrarily, not applying Pareto's Principle on the causes of cancellations for a multidimensional problem such as surgical cancellations, it is important to address major reasons/causes that result in cancellations.

This study found two main causes that are responsible for almost half of the cancellation rate (48.5%). These causes are patient not turning up for surgical appointment and financial constraints of patients. This is higher than the studies by Rajender and Ritika (2012), Elrahman et al. (2014) and Dhafar et al. (2015), who observed 19%, 19.7% and 20.7% for failure on the part of patients to turning up for surgery respectively. These major causes are patients related issues.

However, the overall patients related issues accounted for 50.4% of all cancellation during the study period. Any reductions for the causes of those cancellations will significantly affect the overall rate of cancellations. This is higher than the 42.8%, 31.6% and 24.9% reported respectively by Dhafar et al.(2015), Lankoande et al. (2016) and Elrahman et al. (2014). In Saudi Arabia, Dhafar et al. (2015) reported 50% of cancellations being due to financial reasons. In the present study, the lack of finances coupled with health insurance system is the main reason. Poverty prevents access to basic health care according to the World Health Organization (WHO) (WHO, 2005).

Administrative-related reasons accounted for 30.7% of all cancellations, with equipment failure and or unavailability being the most common reason, followed by unavailability of staff. All administrative reasons were basically a result of unavailability and failure of equipment, surgical drapes, bed and theatre space, which are avoidable Administrative reasons. Such

problems can be solved by improving the management of patient beds and prompt maintenance and replacement of defective equipments.

More than 30% of the cancelled surgeries were related to equipment. This is lower than the studies by Lankoande et al., (2016) who found that 47.4% of the cancellation is due to equipment in Burkina Faso. Also, in Saudi Arabia, the equipment problems contributed to 20.3% of cancellations (Jonnalagadda et al., 2005). The unavailability of surgical specialists accounted for 11.1%. Lack of available surgical specialists associated with routine problems is a major cause of cancellations. A reasonable investment in equipment and drapes will also be necessary to ensure better continuity of service.

Medical-related reasons contributed to 16.3% of cancellations. This is lower than the studies by Mesmar et al. (2016) and Smith et al. (2014), who observed 36.2% and 51% respectively. However, it is higher than the study by Rajender and Ritika (2012) who found that 11.6% surgical cases are cancellations because of medical reasons. Among the medical reasons, blood not available or arranged contributed the most, low haemoglobin level, patient eaten or not fasted, high blood pressure and acute change in medical ill status, with acute upper respiratory tract infection as the most common reason. These cancellations are considered unavoidable; no one would wish to risk the patient's life for an elective surgery.

Others factors mentioned by patients were frequent strike actions by health professional, inconvenient appointment date, patient inadequately prepared and programmes of the hospital such as medical school examination

The qualitative study performed shows that administrative and logistic related issues such as patients not called on time, lack of beds in theatre, blood issues, delayed start and change over-time in between cases, failure and breakdown equipment (CSSD), attitude of staff,

nonreadiness of operating theatres, defective equipment, insufficient numbers of pieces of sterile packs, electricity problems, breakdown of CSSD, shortage of staff (health professionals), lack of motivation for the staff, lack of appropriate instruments, no beds and no ventilators at ICU for post-operative care, inadequacy of instruments, water shortage and plumbing fittings having problems, logistics, space and shortage of resources; like power tools and hand drills.

However, the two patients' related issues mention by specialist were patient not turning up for surgical appointment, financial reason and lack of health insurance. It was apparent that many specialists indicated that medical factors such as inadequate preparation of patient by surgeons, undiagnosed hypertension, high blood pressure and co-morbidities are the causes of most cancellations. One specialist indicated other factors such as medical school examination.

5.4 Implication of Cancelled Surgery

Studies have shown that cancellation of booked surgery have far negative implications to patients and health facilities (Fizan et al., 2010: Meara and Greenberg, 2015).

5.4.1 Effects of Cancelled Surgery on Patients

In this study, patients indicated that, cancellation of elective surgery affects them psychologically, emotional, economically and physically. In a study by Jamieson (2008) it was found that cancellation of booked surgery can lead to depressive effect on patients. It further reported that most patients who have ever experience same day cancellation of surgery cases have high level of emotional involvement before the next booked surgery date.

However, in this study majority of the patient indicated that they felt disappointed when told their surgeries had been cancelled. This is opined in the study of Hanns et al. (2005) who

reported that cancellations of booked surgery on the day of surgery can have implications for patient satisfaction.

The findings from this study found that other patients felt discouraged, sad, frustrated, confused, disrespected, angry and stressed. In the views of Smith et al, (2014), cancellation of booked surgery is potentially stressful and costly to patients. When patients attend hospitals only to be told that their cases have been cancelled, it can be stressful to patients in terms of the working days lost by going to hospital and the manner going to hospital can be disruptive in their daily life (Rajender and Ritika, 2012).

Moreover, Farasatkish et al., 2009 noted the economic implication on patients. This is similar to the present study which indicated that over one fifth of the patients interviewed (20.7%) mentioning increased hospital bills. Also, about 23.7% indicated that other factors such as prolong hospital stay and pre-operative fasting are the effect of cancellation of elective surgeries on patients.

Other patients indicated that cancellation of surgical cases is waste of time. This is consistence with the study by El-Dawlatly et al, (2008), who noted that the cancellation of elective surgeries is waste of time on behalf of patients.

Likewise, the qualitative study indicated patients related effects such as psychological stress, medically – patient's condition can worsen and fasting prior to surgery, financially -revenue loss orloss of income and cost implication especially incurring higher hospital bills for inpatients prolong stay on the ward and spiritually-patients believe that once the case is booked and is not done, then it means is a bad omen.

5.4.2 Effects of Cancelled Surgery on Hospital

According to a study by Pandit and Carey (2006) it was noted that cancellation of elective surgical cases does not only affect patients but affect the staff morale and the hospital. A study by Vinukondaiah et al. (2000) revealed that same day cancellation of elective surgery affects hospital and the patient relationships and may lead to situation when the public will lose trust in the health facility in meeting the surgical care needs of the public. This is similar to the present study which found that over 25% of the patients have lost confidence in the facility.

Also, Paschoal and Gatto (2006), cancellation of surgery has negative effect on hospital's resources. It drains on health resources and waste time. This is consistent to the qualitative study which specialist preached that cancellation affects the hospital financially in the form of revenue loss from procedures cancelled and the prolong stay on the hospital wards leads to a drain on the bed capacity of the hospital. Likewise, although cancellation of elective surgical cases is a cost to hospital operation cost the persistent problem in most hospitals can lead to great loss of skills (Vinukondaiah et al. 2000).

The qualitative study is in consistence as almost all specialists interviewed indicated that elective surgical cancellation drains on human resources. This is similar to the studies by Farasatkish et al. (2009), Miller (2004), Kolawole and Bolaji (2012), and Troung et al. (2016). Who noted that patient's failure to turn up for appointed surgery may not directly affect the patients alone but hospital resources. Also, Farasatkish et al. (2009) reported that the cancellation of booked surgery has a momentous drain on both health resources and patients' health. And since most referral hospitals invest heavily on medical resources in maintaining surgery operating theatres and having theatre staff on schedule to meet patients' health needs.

Similarly, cancellation of booked surgery is a major cause of the unproductive utilization of operating room time in most hospital leading to waste of hospital resources. According to Joseph (2014), cancellation of elective surgeries leads to waste of resources within health facilities.

The specialists again, were of the view that cancellation of surgical cases can lead to loss of confidence in the hospital, waste of time and resources leading to low productivity. They discussed that elective surgery cancellation has negative implication on hospital resources because the patient may be booked and may default surgical appointment but the theatre list has already been distributed, which means no new cases can be booked on that date. The end result is that the hospital losses the resource committed for the surgery which leads to underutilization of staff and theatre time.

Moreover, the specialists indicated that cancellation of surgery have some effects on the professional. They declared the psychological stress on the team i.e. communicating to the patients, the disturbing act on the training process for health professionals, losing of learning opportunities for students and residents and the increasing burden on the staff i.e. more work overload, waste of time and staff has to provide extra pre-operative care to patient instead of providing post-operative care.

5.5 Limitations of the Study

It was difficult for the researcher to contact the study participants (health professionals and patients) to collect information on reasons and effect of cancellation of elective surgery, due to their busy schedules (health professionals) and patients not turning up for surgeries. However, the researcher arranged with staff and conduct interview at their convenience and some patient

were called to find out the reason for not turning up. Caregivers responded on behalf of children below the 18 years,

Also, some patients usually felt reluctant to respond to research questionnaires without any apparent reasons. Time was another contributing factor since the sample was small. Cost in terms of printing, photocopying, binding, calling patients and other costs incurred without the requisite bursary from government or sponsorship.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.0 Introduction

This chapter presents the author's conclusions and recommendations based on the results and discussions made in the previous chapters. The chapter draws conclusions based on the objectives of the study and proffers recommendations for further research.

6.1 Conclusion

The following conclusion can be made about the cancellation of elective surgery at KATH from the foregoing discussion.

- The study shows a high response rate (97.12%) and demonstrates a low cancellation rate compared to reported rates in Africa. However, a major reduction in the cancellation rate could be achieved by adopting a few important interventions. The study showed that among the surgical specialties, trauma orthopaedics experienced the highest cancellation as (28.1%) of the overall surgical cancellations were trauma cases. Likewise, cardio thoracic specialty experienced the lowest cancellation with less than 3% of the overall surgical cancellation in KATH.

- Also, based on the results, it was found that patient related reason accounted for majority of the elective surgical case cancellations in KATH with more patients refusing to make themselves available for surgery. Besides, administrative/logistics related issues/reasons accounted for more than 30% of the elective surgery cancellation in KATH. Lack, failure and unavailability of equipment, electricity and water (utilities) problem, unavailability of staff and lack of bed, theatre space, surgical drapes and lack of ventilators at the ICU were some of the administrative/logistics related cause of surgical case cancellations in KATH. However, medical and others related causes such as biomedical scientist on strike, blood bank not functioning/ blood not available, medical school examination, other co-morbidities etc. accounted for over one third of the overall surgical cancellations. The vast majority of cancellations could be avoided by improving the hospital administrative procedures and protocols. Also, cancellations can be minimized if the patients with medical problems were detected early and referred for a spectialist assessment before they are scheduled for surgery.

- Moreover, it was found that surgical cancellations have much negative effects on the patient, the health professional and the facility (hospital). The patient related effect included psychological stress on patient, the inconvenience of going up and down and

revenue loss or loss of income and incurring higher hospital bills for inpatients prolong stay on the ward. Furthermore, the health professional related effects were psychological stress on the surgical team, disturbs the training process for health professionals and leads to increase burden on the staff i.e. more work overload, waste of time and staff has to provide extra pre-op care to patient instead of providing postoperative care. Lastly, the image of the hospital is affected as patients are not been treated on time, it also affects the hospital finances or revenue loss and prolong stay on the hospital wards leads to a drain on the bed capacity of the hospital were also some of the effect on the facility.

6.2 Recommendations

After a careful analysis of the literature and the results of the study, the researcher proposed these recommendations relating to implications for policy making in the study facility and directions for future research.

6.2.1 Implications for Policy Making

KATH: This audit highlight that most causes of cancellation of surgeries are avoidable, efforts should be made to prevent cancellation of surgery by careful planning, bearing in mind the local constraints in human and material resources. The management of the hospital should promptly deliver, maintain, fix and repair the needed equipment, instrumentation and logistics support. The management should also fix all the problems with CSSD, equip the CSSD to function very well and improved on the maintenance culture of the hospital. Again, adequate and instant supply of water and electricity will aid reduce the surgical cancellations in the hospital.

Besides, ensuring the availability of necessary instrument and tools such as implants and drills before preparing the surgical list, training of more human resource i.e Peri-Operative nurses, Specialists and Anaesthetist, motivation of staff can reduce the cancellation rate of the hospital.Also, in order to enhance cost – effectiveness and efficiency; efforts should be made to prevent unnecessary postponement through careful planning aimed at increasing operation theatre spaces and efficient utilization of few available hospital resources. Likewise, improving the scheduling and admission procedure is required for better use of hospital resources.

Moreover, there are some measures that are needed to reduce the case cancellation rate and to improve utilisation, including creation of pre-admission centre which will make comprehensive assessment of patients prior to booking, making patients more aware about the planned surgical procedure and preparing them prior to operation, making sure that all surgical patients have been examined and their cases discussed with the consultant ahead of booking to reduce cancellation.

Besides, management should ensure that effective communication systems are available to promote proper communication with patients or their relatives and hospital. There should be a monthly or bimonthly audit to review the cancelled cases, investigate the reasons of cancellation and regularly update the hospital protocols can prevent future cancellations.

Also, pre-operative protocols should be adhered to and patient should be declared fit by an Anaesthetist before booking for surgery and a strict anaesthetic protocol especially preoperative protocol should be drawn so that before theatre list are made there will be a checklist to confirm 100% possibility of carrying out the surgery. This will also define the parameters which will render patients as unfit for elective surgery needs to be communicated to surgical team in the various departments.

Again, there should be a theater manager, who will collaborate and coordinate surgical affairs, ensure proper supervision and monitoring and will be vested with appropriate power to sanction where necessary.

Ministry of Health: Since financial constraints was the major reason for refusal of patients making themselves available for surgeries, subsidising the cost of elective surgeries for patients would better reduce cancellation or better still, the National Health Insurance should absorb such expenses or more of the patient bills.

Providers and Caregivers: On the part of staff, prompt attendance to the operating theatre at all levels of staff, prompt commencement of the surgery without delay and working together as a team to make sure the cases are done as scheduled. These can help reduce the cancellation rate of the hospital. Also, the medical problems can be identified in time and the number of cancellations on medical grounds can be avoided by establishing a formal liason with the physicians, proper communication among surgical team (surgeons, anaesthetists and nurses) and proper preoperative medical assessment.

6.2.2 Directions for Further and Future Research

The way forward would be to further study in the patients related causes of the cancellation of elective surgery on the day of operation and its economic effect on the hospital at KATH, Kumasi. This survey should be undertaken by the hospital management every year and all cancelled patient should be encouraged to participate in the survey while the outcomes is made known to all staff who are involved in surgical care of patient.

Lastly, it is suggested that repeating this study at all tertiary hospitals with a larger sample size would be necessary to enhance the generalization of the findings.

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APPENDICES

Appendix A: Questionnaires for Patients

The principal investigator is a Master's student from Kwame Nkrumah University of Science and Technology, Kumasi. This questionnaire is designed to complete a research study on the topic; "assessing cancellation of elective surgery in the Komfo Anokye Teaching Hospital (KATH)". The research is for academic purpose and any information you provide will be treated with the utmost confidentiality

SECTION A: A SOCIO – DEMOGRAPHIC DATA.

INSTRUCTION: For this section, please tick the appropriate response.**Interview code……**

1. **Sex of Respondent** a. Male [ ]
   b. Female [ ]
2. **Age (completed years) ……..**
3. **What is your Religious affiliation?**
   a. Christianity [ ]
   b. Muslim [ ]
   c. Others (specify).....
4. **Employment/work status**
   a. Government employee [ ]
   b. Private employee [ ]
   c. Student [ ]
   d. Farmer []
   e. Trader [ ]
   f. Self-employed [ ]
   g. Unemployed [ ]
   h. Retired [ ]
5. **Patient status**

a. Inpatient [ ]b. outpatient [ ]

6. **Marital status of Respondent**
   a. Single [ ]
   b. Married [ ]
   c. Divorced [ ]
   d. Separated [ ]
   e. Widowed [ ]
7. **Educational level**
   a. No formal education [ ]
   b. Non-formal education [ ]
   c. Primary [ ]
   d. Secondary [ ]
   e. Tertiary [ ]
   f. Others…….....
8. **Diagnosis**.....
9. **Procedure**.....
10. **Specialty**.....
11. **Place of residence**……..

SECTION B: REASONS FOR CANCELLATION OR POSTPONEMENT OF ELECTIVE SURGERY.

12. Did you turn up for surgery **YES** [ ] **NO** [ ]

13. If yes, why was the surgery cancelled

INSTRUCTION: For this section, please tick appropriate response.

	REASONS	**YES/NO**	
I.	**MEDICAL/ WORKUP**	YES	NO
a.	High blood pressure	[ ]	[ ]
b.	Hyperglycemia	[ ]	[ ]

c.	Upper respiratory tract infection	[ ]	[ ]
d.	Acute Change in medical status	[ ]	[ ]
e.	Low Heamoglobin level	[ ]	[ ]
f.	Patient Eaten/ not fasted	[ ]	[ ]
g.	Blood not available/ arranged	[ ]	[ ]

II. PATIENT RELATED

a.	Patient refusal	[ ]	[ ]
b.	Financial problems	[ ]	[ ]
c.	Spiritual beliefs	[ ]	[ ]
d.	Lack of confidence in the system	[ ]	[ ]

III. ADMINISTRATIVE/ LOGISTICS

a.	Equipment failure / unavailable	[ ]	[ ]
b.	If YES, Specify	……..	
c.	No ventilator at the ICU	[ ]	[ ]
d.	No water/ electricity supply	[ ]	[ ]
e.	Lack of linen/ surgical drapes	[ ]	[ ]
f.	Lack of theatre space	[ ]	[ ]
g.	No bed	[ ]	[ ]
h.	Overbooked list	[ ]	[ ]

i. Staff not available (please specify).....

14. State other reasons apart from what is stated above.....

SECTION C; THE EFFECT OF CANCELLATION ON PATIENTS

15. With regards to this particular surgery, is this the first time the surgery has been cancelled or postponed?

    a. YES [ ] b. NO [ ]

16. If NO, how many times has it been cancelled or postponed

    ……

17. Did the surgical team explained the reason for cancellation to you

a. YES [ ] b. NO [ ]

18. If YES what reasons were explained to you?

a. High blood pressure	YES[ ]	NO[ ]
b. Hyperglycemia	YES[ ]	NO[ ]
c. Upper respiratory tract infection	YES[ ]	NO[ ]
d. Low Heamoglobin	YES[ ]	NO[ ]
e. Lack of theatre space	YES[ ]	NO[ ]
f. Lack of linen/ surgical drapes	YES[ ]	NO[ ]

g. Others, please specify……

19. Has your surgery/ operation being rescheduled

a. YES [ ] b. NO [ ]

20. If YES, When?

a. Next day [ ]
b. Next week [ ]
c. Next month [ ]
d. Don't know [ ]

21. Psychological and emotional effect of cancellation on the patient? (select all that apply)

a. I am sad [ ]
b. I am angry [ ]
c. I feel disappointed [ ]
d. I am discouraged [ ]
e. I am stressed [ ]
f. I feel frustrated [ ]
g. I am confused [ ]
h. I feel disrespected [ ]
i. Others (specify) .....

22. How has the cancellation of your surgery inconvenienced you?(select all that apply)

a. Prolong hospital stay [ ]
b. Increase my hospital bill [ ]
c. Pre-op fasting [ ]
d. Cannot go to work [ ]
e. Disrupt my social life [ ]
f. Worsen my condition [ ]

g. None [ ]

h. Others (specify) ……

23. Based on your experienced, would you recommend Kath to someone for their surgical procedures?

a. Yes [ ] b. No [ ]

24. If YES, why?……

Thank you.

Appendix B: Interview Guide for Health Professionals

The principal investigator is a Master's student from Kwame Nkrumah University of Science and Technology, Kumasi. This interview guide is designed to complete an Academic exercise on the study topic; "assessing cancellation of elective surgery in the Komfo Anokye Teaching Hospital (KATH)". Any information you provide will be treated with the utmost confidentiality.

The researcher will be grateful if you could devote some time to answer the questions. You can decide to discontinue with the interview at any point in time.

SECTION A: A SOCIO – DEMOGRAPHIC DATA.

1. Sex of respondent. …… **2.**

Age (completed years) ……. **3.**

Designation …….

4. Duration of work at present position …….

5. Interview code ……..

SECTION B; NUMBER OF ELECTIVE SURGERIES BOOKED AND CANCELLED.

1. Can you please give an estimate of the number of elective surgical cases that are booked daily in your team/ department as well as in a week and in a month?
2. I believe you are familiar with cancellation of surgeries especially patients that were scheduled in the theatre operative list but did not have the planned surgery on the intended date, how is cancellation rate in your department/kath
3. In your estimation, what is the average number of cancellation of elective surgical cases in a day, week and in month here in kath

SECTION C; REASONS FOR CANCELLATION OR POSTPONEMENT OF ELECTIVE SURGERY

4. What factors or reasons account for cancellation of elective surgery in KATH?
5. In what way can the health professional be held responsible for cancellation of elective surgeries?
6. In what way can the patients be held responsible for cancellation of surgery cases?

SECTION D; IMPLICATION OR EFFECTS OF CANCELLATION

7. Do health professionals communicate the reasons why elective surgeries are cancelled to patients
8. Booked surgery cancellation; what are the implications for patient, health facility, health professionals and hospital management

SECTION E; MEASURES TO REDUCE CANCELLATION

9. What measures can be put in place by health professionals, and hospital management to reduce elective surgical case cancellation

THANK YOU FOR YOUR TIME

Appendix C: Ethical Approval

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDICAL SCIENCES / KOMFO ANOKYE TEACHING HOSPITAL
COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS

Ref: CHRPE/AP/579/18

17th October, 2018.

Mr. Nicholas Anarfi
Komfo Anokye Teaching Hospital
Post Office Box 1934
KUMASI.

Dear Sir,

LETTER OF APPROVAL

Protocol Title: ***"Assessing Cancellation of Elective Surgeries and it Impact on the Patient and the Facility at Komfo Anokye Teaching Hospital."***

Proposed Site: ***Komfo Anokye Teaching Hospital, Kumasi.***

Sponsor: ***Principal Investigator.***

Your submission to the Committee on Human Research, Publications and Ethics on the above-named protocol refers.

The Committee reviewed the following documents:

- A Completed CHRPE Application Form.
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning 17th October, 2018 to 16th October, 2019 renewable thereafter. The Committee may however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Yours faithfully,

Rev. Prof. John Appiah-Poku.
Honorary Secretary
FOR: CHAIRMAN

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