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# Challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia.

**Chisoso Ng'andu John.**

A dissertation submitted to the University of Zambia in partial fulfilment of the requirements for the award of the Degree for Master of Public Health

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THE UNIVERSITY OF ZAMBIA

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## Declaration

I declare that this dissertation is my own work. It is being submitted for the Master of Public Health at the University of Zambia, Lusaka. It has not been submitted before for any degree or examination at this or any other University.

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### Certificate of Approval

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I, **Chisoso Ng'andu John**, do hereby certify that this dissertation is product of my own work and, in submitting it for my MPH program further attest that it has not been submitted in part or in whole to another University.

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I, **Prof Seter Siziya**, having read and submitted this dissertation, I am satisfied that this is the original work of the author under whose name it is being presented. I confirm that the work has been completed satisfactorily and is hereby ready for presentation to the examiners.

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## **Dedication**

This work is dedicated to the Almighty God who has been faithful throughout the decades I have lived in this World. I further dedicate it to my wife Shirley and our children Lisa and Linda. It is furthermore dedicated to my dear brother-in law Pastor W. Sichilima and his wife Elizabeth whom when the education world curved on me they took me and made it possible that I got firm foundation I needed in education.

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## List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome.
CHAZ	Churches Health Association of Zambia
CO	Clinical Officer
CS	Caesarean Section
DALYs	Daily Adjusted Life Years.
GBD	Global Burden of Disease
GRZ	Government of the Republic of Zambia
HIV	Human Immunodeficiency Virus
LMICs	Low and Medium Income Countries
MD	Medical Director.
ML	Medical Licentiate
MoH	Ministry of Health
NPCs	Non Physician Clinicians
SPSS	Statistical Package for Social Sciences
SOP	Standard Operating Procedure
UNZA	University of Zambia
WHO	World Health Organisation

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## **ABSTRACT**

Challenges faced by hospitals in providing surgical care are many and important to public health. These challenges have long been neglected hence posing a lot of threat to the very existence and development of surgical work in Zambia. These challenges arise from shortage of human resources, infrastructure, shortage of supplies and equipment.

The aim of this study was to establish challenges faced by hospitals in providing surgical care and handling surgical needs. The objectives were to determine challenges faced by hospitals in providing surgical care. Specifically to determine the qualification and needs of the theatre personnel, to determine the hospital needs in relation to challenges that come about with surgical care. Also to determine the capacity that the hospital has in carrying out surgical procedures and to comparing surgical procedures that General, Mission and District hospitals offer and to determine the adequacy and completeness of surgical equipment and instrument found in the hospitals.

This was a cross-section non-intervention descriptive study. The study was carried out in 52 hospitals in 9 Provinces of Zambia. Data was collected using a self-administered questionnaire and analysed using SPSS version 17.0 for windows.

The challenges were found to be mostly in staffing of qualified personnel, shortage and incomplete surgical equipment, poor infrastructure, erratic supply of both water and electricity, lack of oxygen, blood and histopathological services. Therefore, there is need for the government to step up meaningful interventions.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

The burden of surgical conditions and diseases is increasing in low-income and middle-income countries, but the capacity to meet the demands they present is not following pace. On-going initiatives such as brief visits by Surgeons from advantaged countries, sending surgical residents to spend time in a developing country as part of their training, or ships weighing anchor offshore or on-board services, have not proven successful. More comprehensive and sustainable solutions include the development of local training programmes, better retention of trainees with adequate incentives particularly in rural areas, and engaging Government and Professional Associations as well as academic institutions, to develop and implement policies to address local training needs (Gosselin, 2011).

The poor availability of surgical services in developing countries is a long neglected public health problem that has recently gained attention (Chu, 2009). The surgical need in low-income countries is an issue generally neglected within the global public health arena, though this is slowly changing. Over the past several years; a group of individuals interested in surgical care in the developing world has been informally comparing ideas and experiences. The overwhelming concept to come from the meeting is that there is critical lack of data concerning the true amount of global ill health which could be alleviated by surgical expertise. Trying to get better data is critical to garnering more support and funding for these services.

The number often quoted, that of 11% of global burden of disease being related to surgical conditions is based on very limited data. Truly it is based on best guesses from 14 Surgeons around the world. Yet at the moment, it appears there is no better source of data. Most participants agree that there are large numbers of people in need of surgical intervention who never show up to health facilities because they know there is any available to provide the service. So there is a large undercount of the potential impact of surgical services (Riviello, 2010). Violence, injury, and obstetric emergencies are among leading causes of morbidity and mortality that can be mitigated through surgical interventions. Surgically treatable diseases are estimated to account for up to 11% of the world's disability-adjusted life years. In addition to this massive disease burden there are problems that are seriously debilitating such as cataract or stigmatising such as fistula (Chu, 2009).

Surgical interventions are often viewed as expensive and complex, but many common problems amenable to surgery in resource-limited settings are cost-effective and do not require specialised staff and equipment. The World health Organisation has prioritised a list of co-effective surgical interventions for developing countries including emergency care of trauma, obstetrical complications, and acute abdomens as well as elective care of hernias, clubfoot, cataracts, hydroceles, and otitis media (Haynes, 2009).

According to World Health Organisation report of 2006, one of the main barriers to surgical care defined as the safe provision of pre/post-operative surgical and anaesthesia services in resource-limited settings is shortage of trained health workers. The report further says Africa accounts for 24% of the global disease burden but only



3% of the global health workforce. The reason why there are major challenges in dealing with global disease burden includes inadequate salaries and poor working conditions leading to staff attrition, unwillingness of the international donors to support financing for human resources, an insufficiency of medical schools, and the brain drain of health staff to resource-rich countries (Medicine San Frontier, 2007). According to Hodges' report, the human resource crisis is most acute at the level of specialists, including surgeons and anaesthesiologists (Hodges, 2007).

In East Africa, there are 0.25 fully trained surgeons per 100,000 persons compared to 5.69 per 100,000 in the United States (Lynge, 2008). Given the unlikelihood of even a modest increase in the number of surgeons and anaesthesiologists working in Africa in the near future, a number of approaches are being piloted to overcome the skills shortage. These include surgical camps and specialist outreach programs and the mobilisation of non-physician clinicians NPCs to perform surgical and anaesthetic tasks.

This task shifting has been thought to be the solution to the critical shortage of specialised human resource. According to WHO, task shifting has recently been promoted and formalised in Sub-Saharan Africa to help address the HIV/AIDS pandemic, and experiences are being borrowed from HIV/AIDS to surgical task shifting (WHO, 2007).

The concept of a surgeon as a University-trained physician is a relatively modern one and has contributed to the shortage of specialised surgeons. Prior to 1745 surgeons

were still part of the company of Barbers but today surgery has become a highly specialised profession. Because of this shortage much of the global surgical workforce is comprised of non-specialist physicians whose only formal surgical training is during medical school. A study involving five general hospitals conducted in Uganda reported that over 5,000 surgical procedures were performed annually by non-specialist physicians (Ozegediz, 2008). Almost half of all countries in Sub-Sahara Africa use non-physician clinicians to perform minor surgical procedures due to shortage of or scarcity of surgical doctors (Mullan, 2007).

In Tanzania and Mozambique, 84% and 92% respectively of caesarean sections, obstetric hysterectomies, and laparotomies for ectopic pregnancy are performed by non-physician-clinicians (Perera, 2007). In Malawi, 90% of caesarean sections at district hospital level are performed by surgical clinical officers with low morbidity and mortality (Chilopora, 2007).

Chu, in 2009 reported that despite the task shifting; however, there has been resistance to delegating surgical procedures to lower carders in some parts for a number of reasons. Surgery is considered a highly specialised field that requires long years of training. For example in the United States, surgeons complete a five-year surgical residency before operating independently. The following considerations are looked at; indications for surgery are not always straightforward, patient management decision can be complex, and learning the technical skills required to perform major surgery requires

committed trainers. All this leads to a concern that such complex skills and knowledge cannot be adequately transferred in a shortened training course.

Levy in his 2007 article entitled; “Surgery in Malawi-A national survey of activity in rural and urban hospitals”, writes that, while epidemiology of surgical disease in the developing World is relatively unknown, simple procedures can be life-saving.

This study will look at the surgical care and handling of needs in Zambia’s hospitals such as equipment used in operating theatres, the common conditions that require operations most of the times and the level of training for the physicians, surgeons, nurses and anaesthetics.

## **1.2 Statement of the problem**

The ability of a patient to access a surgical care is dependent on the availability of services, location that is rural or urban, personal or family choice, voluntary or involuntary and the government policy.

In developed countries access to essential surgical services is regarded as a basic human right although not included in the millennium development goals.

In sub-Sahara Africa the high burden of disease such as HIV/AIDS, Malaria and others have led to decreased attention towards surgical care provision and needs. Donor funding in these countries is focused on communicable and other infection diseases leaving out surgical needs.

In Zambia the government through Ministry of Health upholds the principle that every citizen should have access to better health care. Despite the attention devoted to other disease burden in low-middle income countries such as Zambia, surgical needs still remain a very big challenge to be met. Some of the contributing factors to this is that high burden of surgical needs remain undocumented in Zambia. Other challenges or constraints in meeting surgical needs in Zambia are inadequate human resources, infrastructure needs, patient related transport to the hospital and rural/urban challenges such as supplies, water and electricity.

In most LMCs, access to basic surgical and anaesthesia care is restricted, particularly for the poor and vulnerable populations in both urban and rural settings. Only a small percentage of patients who require operations are treated because of various constraints, including the death of human resources and capacities, inadequate logistics, inability to pay, obsolete infrastructure, lack of transportation and late presentation, unavailability of basic materials and supplies, lack of electricity and erratic water supply system (Gosselin, 2011). While this is so, Zambia seems to have facilities for performing operations and surgeons concentrated in the cities making it even more difficult to meet even basic surgical needs in hospitals (Watters, 1987).

Recently the government of Zambia acquired mobile hospitals that are being used to attend to health care challenges including surgical challenges in rural communities. Nevertheless the capacity of mobile hospitals in relation to surgical care provision has not been assessed nor compared with that of static hospitals, as a result there is no

documentation on whether the mobile hospitals fit in the vision of the ministry of health which says; “Equity of access to assured quality, cost-effective and affordable health services as close to the family as possible.” While the mission statement is “To provide cost effective quality health services as close to the family as possible in order to ensure equity of access in health service delivery and contribute to the human and socio-economic development of the nation” (MoH, 2005).

### **Justification**

Studies concerning challenges faced by hospitals in providing surgical care and handling surgical needs have not been conducted at national level. It is envisaged that this study would provide information about challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia. Furthermore the study is likely to influence the development of surgical care management in Zambian hospitals by policy makers. Zambia like many other LMICs have no accurate documented information on the topic of unmet surgical needs, apart from the generalised shortage of human resource in health sector, therefore this study will bring out information based on what is obtaining in the hospitals concerning surgical care provision challenges.

## **Research questions**

1. What are some of the challenges that hospitals in Zambia face in providing surgical care and handling surgical needs?
2. What views do theatre staffs have towards surgical needs in their respective hospitals?

## **Objectives**

### **General Objective**

- 1.5.1.1 To determine the challenges that hospitals face in providing surgical care in Zambia.

### **Specific Objectives**

- 1.5.2.1 To determine the training qualification and needs of Surgeons, Anaesthesiologist and Theatre Nurses in the hospitals.
- 1.5.2.2 To determine the needs of hospitals in relation to surgical care challenges.
- 1.5.2.3 To determine the common surgical conditions being presented to hospitals.
- 1.5.2.4 To inform policy makers about the capacities that mobile and static hospitals have in providing surgical care and handling surgical needs in Zambia.

### **1.5.3 Hypothesis**

- 1.5.3.1 In this cross-section descriptive study there was no hypothesis.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

Although there is increasing awareness of the importance of unmet needs for surgical care worldwide, data for resource-poor environments remain woefully scarce (Contini, 2007). It is estimated that up to half the world's population lacks access to basic surgical care (King, 2003). In most low-income middle-income countries, access to basic surgical and anesthesia care is restricted, particularly for the poor and vulnerable populations in both urban and rural settings.

Only a small percentage of patients that require operations are treated because various constraints, including the death of human resources and capacities, inadequate logistics, inability to pay, obsolete infrastructure, lack of transportation and late presentation, unavailability of basic materials and supplies, lack of electricity, and erratic water systems (Gosselin, 2011).

According to recent studies done by Contini and Kushner on provision of surgical care in LMICs they confirmed that there is an enormous shortfall in infrastructure, supplies, and procedures at district-level health facilities (Contini, 2010 and Kushner, 2010). Evaluation of trauma care resources in the LMICs has highlighted the gap between resource allocation and needs, which should be addressed through clear policies to

prioritise remote areas and allocate resources based on reliable injury data (Nakahara, 2009).

## **2.1 Magnitude of Surgical Needs**

### **2.1.1 Global Problem**

The global volume of surgery has recently been estimated at 234 million operations annually (Weiser, 2008). Unsurprisingly, services were unequally distributed, with 26% of these operations occurring in developing countries that account for 70% of the world's population. Poor access to surgical care results in excessive morbidity and mortality from treatable conditions, injuries, infectious diseases, complications of pregnancy, congenital anomalies, acute abnormal disorders yet the provision of essential surgery as a population based health strategy has yet to be embraced by the global public health community (Debas, 2006). There is a suggestion that says deficiencies in surgical capacity result from limitations in infrastructure and physical and human resources, strengthening surgical care require improvements at the health system level.

The initial global burden of disease (GBD) study evaluates the causes and consequences of 109 conditions and was unique in estimating not only mortality, but also morbidity for designated conditions in disability-adjusted life years (DALYs). The GBD study has been updated to over 140 conditions (WHO, 2007).



Surgery represents one of the many possible interventions such as vaccination, or antimalarial and antiretroviral chemotherapy. The study reveals that estimates of disease burden addressable by vaccination are coincidentally similar to current estimates for surgery. If the burden of disease avertable by surgery were quantified it may allow for comparison with other priority health interventions in LMICs (WHO, 2007).

According to WHO (2007) it is estimated that 11% of GBD can be treated with surgery. This total is composed of injuries (38%), malignancies (19%), and congenital anomalies (9%), complications of pregnancy (6%), cataracts (5%) and perinatal conditions (4%).

### **2.1.2 Regional Problem**

By region the most surgical DALYs are in South-East Asia (48 million); however, Africa has the highest ratio of surgical DALYs per 1000 people. While this is useful as an estimate, more formal evaluation is necessary. Future projections suggest a rapid rise in non-communicable disease; already, 80% of deaths from these conditions-at least partially treatable with surgery-occur in LMICs (Daar, 2007).

In order to meet the highly demanding burden of surgical needs Malawi, Mozambique and other countries have trained non-physicians in surgery, but only part of the need can be met in this fashion (Chilopora, 2007). Duda (2007) reveals in the study done in Ghana that mortality alone from preventable or treatable surgical conditions accounted for 10.9% of all DALYs. An important component of the gap between need and provision of care especially in sub-Saharan Africa is insufficient human capacity at all levels: doctors, nurses, technicians, administrators. This problem in Sub-Saharan Africa

has been accentuated by a significant brain drain not only from developing to developed countries but also within the countries themselves from rural to urban settings because of better financial, professional, and social incentives (Johna, 2006). Hogopian (2004) in his study reports that of the 47 countries in Sub-Saharan Africa, 38 do not meet the WHO recommended minimum of 20 doctors and 100 nurses per 100,000 population and this does not address the lack of specialties mix that is required to deal with the burden of disease in sub-Saharan Africa or meet the needs for surgical care (Gosselin, 2011).

### 2.1.3 **Zambian Problem**

Zambia's **vision** in terms of health delivery is to have "Equity of access to assured quality, cost-effective and affordable health services as close to the family as possible." While the mission statement is "To provide cost effective quality health services as close to the family as possible in order to ensure equity of access in health service delivery and contribute to the human and socio-economic development of the nation." (MoH, 2005).

Recently the Zambian Government through Ministry of Health acquired mobile hospitals to help alleviate the shortage of hospitals and manpower in health sector. These facilities are meant to go in communities and offer the most needed healthcare services to people. In this study the mobile hospitals will only be assessed in surgical care delivery. However, despite the improvements done to health sector, the disease burden has continued to increase and health care delivery continued to be constrained by lack

of sufficient human, material and financial resources. The high disease burden is compounded by the high prevalence of HIV/AIDS, high poverty levels and poor macroeconomic situation (MoH, 2005).

According to Ministry of Health report of 2005, a number of factors have adversely affected the performance of the health sector in Zambia. These include a critical shortage of essential health workers, inadequate funding, poor state of health facilities and equipment, inadequate development of social support systems for fostering health development programmes, insufficient empowerment of communities to improve their health, poor geographical access, especially in rural areas, and inadequate systematic research in alternative and traditional medicines. As a result, health services were not fully appreciated by the public. These problems have led to high burden on surgical care services which seem to have lagged behind for so long.

Like many other low-middle income countries Zambia has been facing similar challenges in surgical needs such as shortage of qualified human resource in both surgery and anaesthesia. This same survey done in 87 hospitals in Zambia in 2006 listed obstetric surgery (including caesarean), laparotomy, gynaecological survey, herniopathy, and incision and drainage abscesses as the five most common surgical interventions in the country (Robertson, 2010). This study pointed out one challenge of surgical needs in paediatric population which are as high as 85% that require some surgical interventions by 15 years of age in many developing countries such as Zambia. The study alluded to the fact that many developing countries have young populations

with children under the age of 18 years accounting for greater than 50% of the population. According to Hodges (2007) the common surgical indicators in this group include trauma, abdominal emergencies, congenital abnormalities (such as inguinal hernias and anorectal malformations), and infections (such as abscesses and osteomyelitis). In many developed countries, anaesthetic services are provided by anaesthetists who are medical doctors that have undergone many years of post-graduate training to become qualified in the field. This high level of training provides the anaesthetist with practical skills and an intimate knowledge of physiology and pharmacology that enable them to provide safe and effective anaesthesia. In contrast most anaesthetics in developing countries including Zambia are delivered by non-physicians, nurses or unqualified personnel (Nambiar, 2007).

In another survey done in Zambia it was found that the presence of a physician anaesthetist markedly increased the rate of endotracheal intubation for general anaesthesia (Jochberger, 2008). In this survey 80% of anaesthetics were carried out by non-physicians and greater than half of all anaesthetics were carried out using ketamine. This high rate of ketamine anaesthesia without airway protection was thought to have contributed to the high incidence of respiratory complications (Jochberger, 2008). In 1997 a study was done to determine what proportion of operations required full surgical training and to collect information on which recommendations for training surgeons in central Africa could be based. This survey shows the need of training surgeons and anaesthetists in Zambia if the surgical needs are to be met. But the question is, do we have a recent survey that shows how many qualified surgeons and

anaesthetics we have in Zambia. From the literature reviewed in this proposal Zambia seems to have scanty or no written data to show the magnitude of surgical needs that need to be addressed by policy makers and training institutions. Hence this survey which was carried out to examine the capacity that both mobile and static hospitals have in handling surgical care needs.

## **CHAPTER THREE**

### **3.0 METHODOLOGY**

This chapter presents the methodology of a study. It gives the description of the study design, setting, sites and population inclusion and exclusion criteria, sample size, sampling methods, study variables, data collection, data analysis and ethical consideration.

#### **3.1 Study Design**

A non-intervention cross sectional descriptive study was conducted.

#### **3.2 Research Setting**

The study was conducted in public and faith-based hospitals in the nine provinces of Zambia.

### 3.3 Study Population

This study intended to include all the 58 GRZ and 39 Faith based hospitals found in Zambia. However, due to time limit of the study and transport logistics only a total number of 52 hospitals were included in this study from the 9 Provinces of Zambia.

### 3.4 Criteria

#### 3.4.1 Inclusion Criteria

This included all hospitals that where willing to participate in the study.

#### 3.4.2 Exclusion Criteria

All hospitals that would not want to take part.

All mobile hospitals not found at the station.

### 3.5 Sample Size

According to Ministry of Health and Churches Health Association of Zambia, 2007 report, there were 58 public or Government Hospitals, 39 faith-based/mission hospitals and 17 private hospitals (Table 1). This study was based on public and mission hospitals making a population size of 97.

**Table 1: Summary of existing health facilities in Zambia**

Type of Provider	Hospitals Number	Health Centres Number	Health Posts Number	Total Number
Public/Government	58	1,052	19	1,129

Faith-based/CHAZ	39	69	25	133
Private	17	97	1	115
Total	114	1,218	45	1,377

**Source: Ministry of Health and Churches Health Association of Zambia, 2007**

Using the formulae:

$n = Z^2 PQ/d^2$ ; where  $P=50\%$  (since the surgical needs proportion is unknown),  $Q=5\%$ ,  
and  $Z=1.96$

$$n = 1.96^2 \times 0.5(1-0.5)/0.05^2$$

$$n = 384.16 \text{ (for infinite population)}$$

Adjusting sample size to finite population of 97, required sample size (S) is:

$$S = n/[1+(n/\text{population})]$$

$$S = 384.16/[1+(384.16/97)]$$

$$S = 77.45 = 78$$

There were 9 provinces in Zambia at the time of the study. The population size of 97 hospitals was distributed as follows: Northern 12, Luapula 9, Eastern 12, Southern 14,

Western 10, North-western 10, Copperbelt 15, Central 9 and Lusaka 6. Proportionally the sample size was allocated as follows: Northern 10, Luapula 7, Eastern 10, Southern 11, Western 8, North-Western 8, Copperbelt 12, Central 7 and Lusaka 5.

### 3.6 Sampling

Stratified sampling technique was used to select the sample, considering a province as a stratum. All nine provinces were selected for the study. From each stratum, hospitals were randomly selected using a simple random sampling technique.

Table 2 shows definitions of variables, their indicators and scales of measurement.

Availability of equipment would be determined as either adequate or inadequate.

**Table 2: Definitions of variables, indicators and scales of measurement**

Definition of variable	Indicator	Scale of Measurement
Challenge in provision and handling of surgical care and needs	As reported by the respondent	1.Having 2.Not having 3.Doing 4.Not doing
Qualification	As attained by respondent	Nominal 1.Doctor 2.Medical Licentiate 3.Clinical Officer 4. Surgeon 5.Theatre nurse 6.Anaesthetist
Age of Theatre staff	Age last birth day	Continuous in years
Gender of Theatre staff	As observed by researcher	Nominal 1.Male 2.Female



Availability of qualified theatre workers.	Number of trained workers in theatre.(surgeons, anaesthetist, theatre nurses)	Discrete
Availability of equipment.	As observed by researcher	Ordinal 1.Adequate 2. Inadequate
Availability of surgical wards	Availability of surgical wards for both sexes and children	1. Yes 2. No
Surgical procedures offered by the hospital	As observed by researcher	Nominal A list of surgical procedures expected to be done where provided eg. Mastectomy, Laparotomy.
Surgical procedures done	Number of surgical procedures done in 6 months	Discrete

### 3.7 Data Collection

Data was collected both qualitatively and quantitatively from the In-charge Theatre Nurses, Anaesthetists, Senior Surgeons and the Hospital Medical Superintendents if available. Data was collected using an interviewer administered questionnaire to collect data on a number of variables. Furthermore the register audit was done to collect the number of cases done in the past 6 months.

### 3.8 Data Analysis

Data was entered in the computer using a spread sheet. The hospital records were inspected to correlate the information to ensure accurate data collection.

Analysis of data was done using SPSS version 20. SPSS was used to provide frequency counts for a specified categorical variables for example gender, the percentage of the total, and the cumulative percentage. Means were used to examine continuous variables, while providing descriptive statistics such as mean, median, mode

and minimum/maximum values. Tables were used to analyse categorical data such as gender to produce cross tabulations. And in order to establish the relationship between two or more variables the 2x2 tables were produced together with row percentage, and other statistical outputs. In Nvivo data was organised into themes by coding which was later transcribed and quantified.

### 3.9 Ethical Consideration

All study participants were required to sign an informed consent form prior to their participation. Participants were **at liberty** to withdraw from the study at any time they wished and no further contact was made. Confidentiality of participants was highly maintained and no link was made to them. Participation in this study did not endanger the lives of the people as it did not involve human participants' physical participation and no monetary gain was involved in the study. Permission to carryout the study was sought from the ERES Converge IRB and Ministry of Health.

## CHAPTER FOUR

### 4.0 RESULTS

A total of 52 out of 78 hospitals participated in the survey, giving a response rate of 66.7%. The following hospitals participated in the survey:

**Table 3: Hospitals that participated in the study.**

Province	Hospital Type			
	General	District	Mission/Faith Based	Mobile
Northern	1.Kasama 2.Mbala	1.Mporokoso 2.Chinsali	1.Chilonga	1.Mobile
Southern	1.Livingstone 2.Monze	1.Choma 2.Mazabuka	1. Chikankata	1. Mobile
Eastern	1.Chipata	1.Lundazi 2.Petauke	1. Mwami 2. St. Francis	1. Mobile
Western	1.Lewanika	1. Senanga 2. Kalabo 3.Yeta	1.Yuka	1.Mobile
North- Western	1.Solwezi	1. Zambezi	1.Chitokoloki 2. Mukinge 3.Kalene	1.Mobile
Central	1.Kabwe	1. Mumbwa 2. Serenje	1. Chitambo	1. Mobile

		3.Liteta		
Luapula	1.Mansa	1.Kawambwa	1.St. Pauls 2. Lubwe 3. St. Margaret's	1.Mobile
Lusaka		1.Kafue	1.Katondwe 2.St. Luke	1.Mobile
Copper Belt	1. Kitwe 2. Ndola	1.Thompsons 2.Nchanga North	1.Mpongwe	1.Mobile

#### **4.1 Demographic details theatre staff**

Like most of the fields in Zambia, the representation of women is low. Table 3 below shows the cross tabulation of staff by gender and qualification for all personnel responsible for conduction surgical operations in the hospitals that were surveyed.

About 1 in 10 of the respondents was a female (12.7%).

Qualifications	Gender		Total (%)
	Male	Female	
General Doctor	26	3	29 (23.0)
Anaesthetic CO	29	1	30 (23.8)
Anaesthetic Nurse	8	3	11 (8.7)
Medical Licenciate	5	0	5 (4.0)
General Nurse	7	3	10 (7.9)
Surgeon	11	1	12 (9.5)
Theater Nurse	24	5	29 (23.0)
Total (%)	110 (87.3)	16 (12.7)	126 (100)

**Table 4:  
Qualification  
and Gender  
Distribution.**



#### 4.2 Age of surgical staff

As can be seen from table 4, the majority of the surgical services in hospitals were managed by relatively young cadres. Majority of the General doctors practicing in theatres were in the 31-40 years age group (22/29), Anaesthetic Clinical Officer 41-50 years of age (10/30), Anaesthetic Nurse below 30 years of age (5/11), Medical Licentiate 31-40 years of age (3/5), General Nurse 31-40 years of age (5/10), surgeon 31-40 years of age (7/12) and for Theatre Nurse were below 30 years of age 12/29. A total of 60 (47.6%) of respondents were of age 31-40 years. About 1 in 5 of the respondents was a General doctor (23.0%), Anaesthetic CO (23.8%) and Theatre Nurse (23.0%).

**Table 5: Qualification and Age Distribution.**

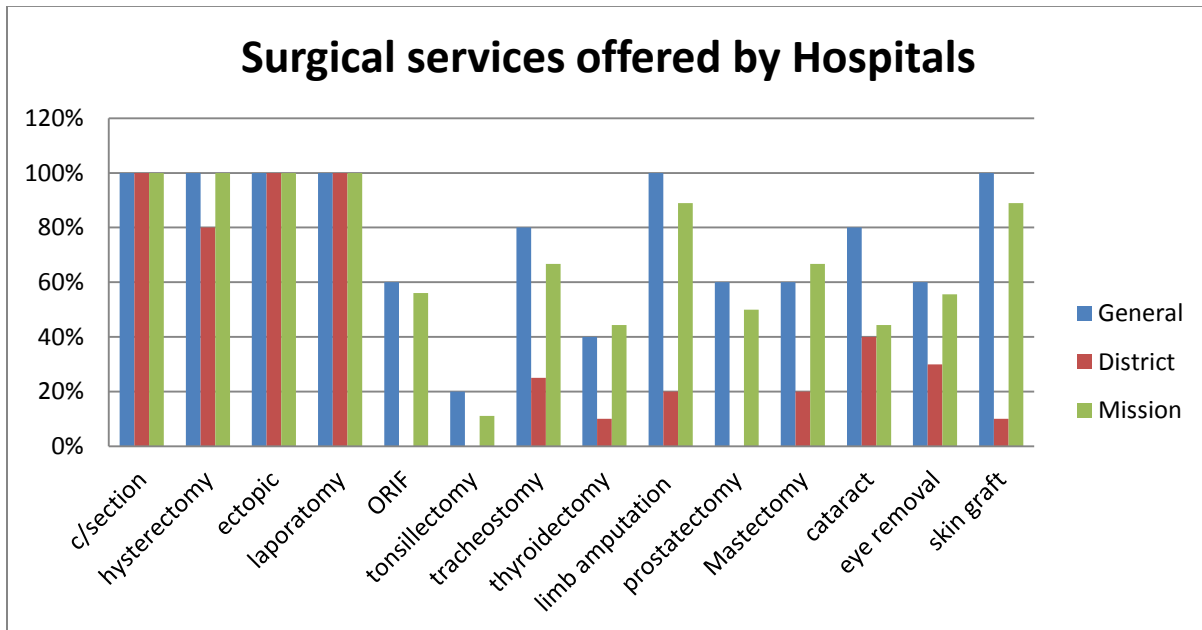
Qualifications	Age (years)					Total (%)
	=< 30	31 - 40	41 - 50	51 - 60	> 60	
General Doctor	1	22	3	3	0	29 (23.0)
Anaesthetic CO	2	9	10	8	1	30 (23.8)
Anaesthetic Nurse	5	3	2	1	0	11 (8.7)
Medical Licenciate	0	3	2	0	0	5 (4.0)
General Nurse	3	5	1	1	0	10 (7.9)
Surgeon	0	7	1	4	0	12 (9.5)
Theater Nurse	12	11	4	2	0	29 (23.0)
Total (%)	23 (18.3)	60 (47.6)	23 (18.3)	19 (15.1)	1 (0.8)	126 (100)



### 4.3 Surgical services offered by hospitals

Figure 1 below showed that a number of general and mission hospitals are able to offer many surgical services. However, district hospitals still lagged behind in surgical services they can offer. It was interesting to note that almost all the hospitals surveyed were able to offer caesarean sections, ectopic pregnancies and laparotomy. However, ORIF, tonsillectomy and prostatectomy were not offered by district hospitals this could be attributed to the fact that most district hospitals had no surgeons or specialised staff to perform such procedures.

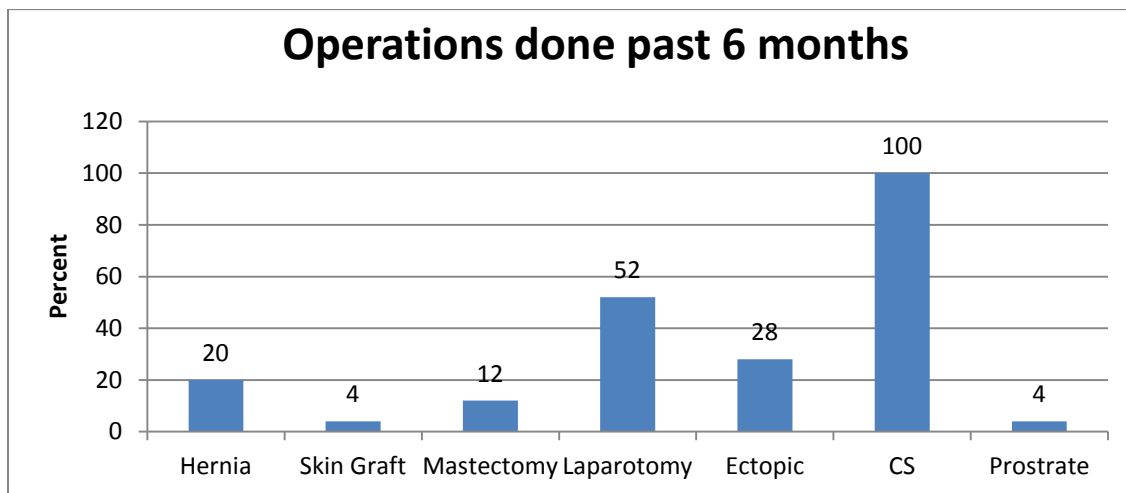
**Figure 1: Surgical Services Offered by Hospitals**



#### 4.4 Operations done in the past 6 months

Figure 2 represents the most frequent surgical procedures performed in the sample hospital. Caesarean section was by far the most frequent surgical procedure performed with all the facilities reporting having conducted CS. About half (52%) of the facilities reported conducting Laparotomy.

**Figure 2: Operations done in the past 6 months.**

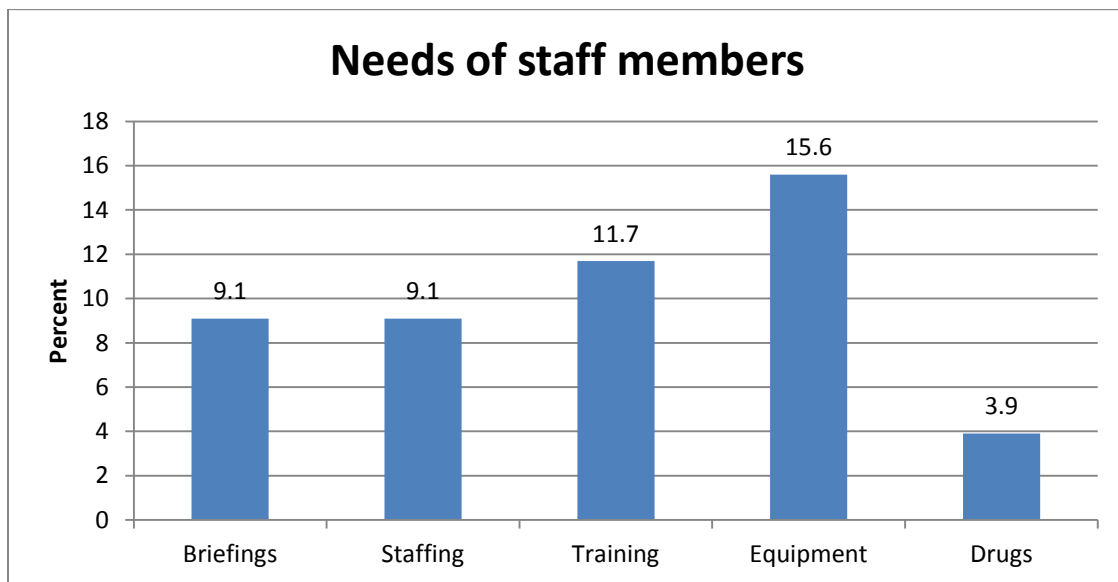


#### 4.5 Surgical needs suggested by the staff

In the hospitals surveyed, staff raised a number of challenges that hinder them in offering adequate surgical services to their clients. Figure 3 shows the needs that staff themselves identified to be lacking in order for them to offer surgical services to clients. 9.1% of the personnel surveyed felt that lack of briefings about surgical services affects their performance. They felt that medical personnel involved in surgical services could perform better if they were to be having frequent medical education workshops and morning briefings thereby exchanging knowledge and new ideas required to deliver

successful surgical services. 11.7% also attributed the low surgical offerings to the lack of training by personnel involved, 9.1% of staff surveyed said the main challenge they face was low staffing levels. 15.7% of staff suggested lack of specialised equipment was also a major problem and lastly but not the least the lack of drugs required to conduct a successful operation was named as a big hindering factor.

**Figure 3: Surgical needs suggested by staff.**



#### **4.6 Theatre and Surgical Staffing in hospitals**

Of all the hospitals surveyed, only 10 % of surgical personnel involved in carrying out surgical operations are surgeons. As can be seen from table 5, the majority of theatre staff are general doctors (23%) without specialised training in carrying out surgical operations.

**Table 6: Category of theatre and surgical staff**

<b>Category of theater staff</b>	<b>n</b>	<b>%</b>
Surgeons	12	10%
General Doctor	29	23%
Medical Licentiate	5	4%
Clinical Officer	30	24%
Anesthetist		
Theatre Nurse	29	23%
Nurse Anesthetist	11	9%
General nurse	10	8%
Total	126	100%

#### **4.6.1 Surgical staffing in hospitals**

Table 6 shows the categories of personnel involved in carrying out surgical procedures. The fact that 64% of the staff doing surgery in Zambia is completely unspecialised trained shows that surgical care and needs are far from being met. A number of these surgeons are missionaries found in mission hospitals while very few surgeons are found in Government hospitals. Some provinces at a time of this study had no surgeon while those that had, had only one surgeon at the provincial (general) manning both the provincial and the mobile hospital. It was also noted that at the time when the mobile

hospital was out most hospitals were left with no adequate specialised staff. District hospitals had no surgeons and depended on referrals to general hospitals.

**Table 7: Surgical staff involved in performing surgical procedures.**

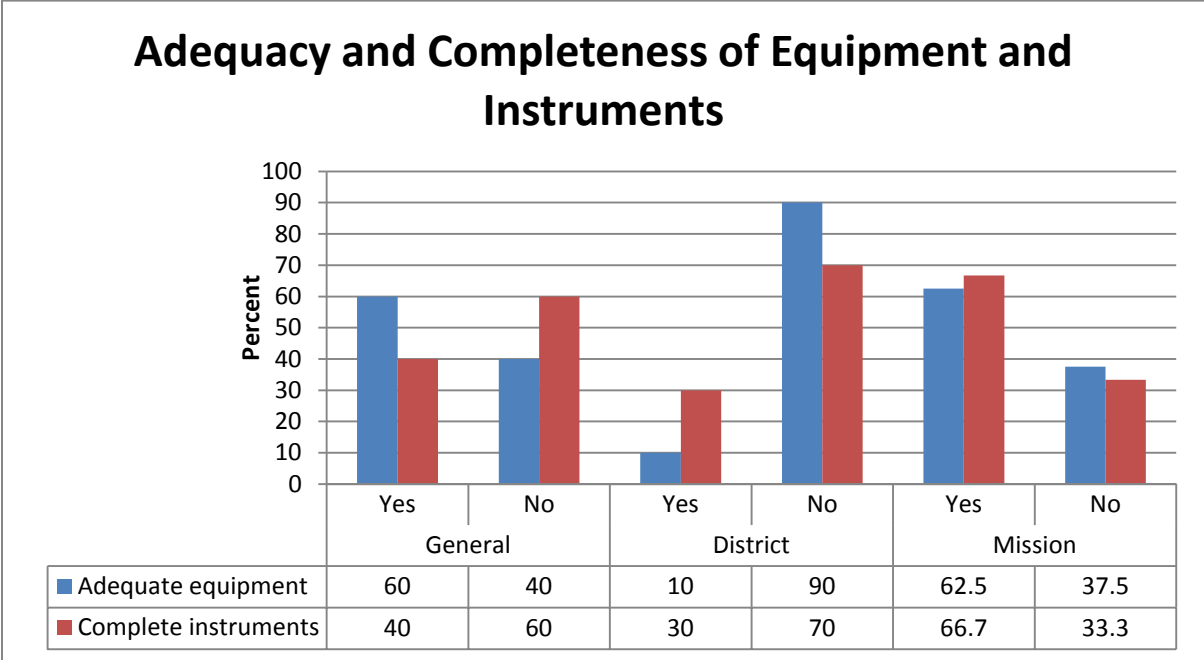
Category of theater staff	n	%
Surgeons	12	26%
General Doctor	29	63%
Medical Licentiate	5	10%
Total	46	100%

Table 7 shows the number of surgeons, general doctors and Medical Licentiate who performed surgical procedures. These results show that there was no adequate staffing in specialised staff hence allowing general practitioners and Medical Licentiate to perform surgical operations. This shows a pure picture of task shifting.

#### **4.7 Adequacy and Completeness of Equipment and Instruments**

Though all the hospitals had equipment, most of these were far from being adequate and complete for them to conduct successful surgical operations. District hospitals were the most poorly stocked with only 10% of the hospitals having adequate surgical equipment with mission hospitals had well above 62% in terms of equipment adequacy and completeness (Figure 4).

Figure 4: Adequacy and completeness of equipment and instruments



## CHAPTER FIVE

### 5.0 DISCUSSION

According to literature reviewed in this study only a limited percentage of patients that require operations are treated because of various constraints, which include among others shortage of human resource, lack of materials and supplies to be used, inability to pay for services, lack of transport, lack of electricity and erratic water supply to institutions.(Gosselin, 2011).

#### 5.1 Gender and age

From the results it was noted that the representation of women is low as compared to male counterparts working as surgical staff. For example out of the number of 12 surgeons who took part in the study 91.7% were males and 8.3% were females and out of 29 doctors who took part in the study 89.7% were males while 10.3 were females. There were also 30 Clinical Officer Anesthetists that took part in the study of which 96.7% were males, and 3.3% were females. And of the 11 nurse anesthetists that took part in the study 72.7% were males while 27.3% were females. Medical licentiates who took part in the study were 5 and all males representing 100% .General nurses were 10 males 70% while females were 30% .Theatre nurses were 29, males 82.2% while females were 17.2. The number of women was below 40% compared to males of all the surgical staff that took part in the study.

The age grouping from the results showed that most of the surgical staff and the medical superintendents are middle aged with potentially many years of service ahead

of them. Out of 29 general doctors 3.4% were below the age of 30, 75.9% were between 31-40 years old, 10.3 % were between 41-50 years old and 10.3% were between 51-60% while none were above 60 years. Of the 30 anesthetists who took part in the study 6.7% were below 30 years 30.0% were between 31-40 years old, 33.3% were 41-50 years old, 26.7% were 51-60 years old while 3.3% were above the age of 60. Surgeons who participated were 58.3% between 31-40 years of age, 8.3% 41-50 years of age, 33.3 were 51-60 years of age none of them was below 30 years or above 60 years old. Theatre nurses 41.4% were below 30 years of age, 37.9% were between 31-40 years old, 13.8% were between 41-50% and 6.9% were between 51-60 years of age. The fact that relatively a young cadre of workers are in this field could also mean lack of experienced personnel with a lot of experience in surgical work. However, this also presents itself as an opportunity because training can be provided to them since they have a lot years remaining before they retire.

## **5.2 Qualifications**

Of all the hospitals surveyed only 10% qualified surgeons took part as compared to 23% general practitioners who said they operated on patients, confirming a big gap in task shifting as seen in literature review in most sub-Saharan African countries. In this study there was no qualified anaesthesiologist. However, we discovered that the only staff with qualification to administer anaesthesia were CO anesthetises (24%) and anaesthetic nurses 9%. 23% acting anaesthetists were qualified theatre nurses who were not anaesthetically trained. while the other 8% who worked as theatre nurses in some hospitals had no specialised training in theatres at all. As observed from our



results Zambia like any other sub Saharan country has experienced inadequacies in surgical staff hence the involvement of non-qualified staff in doing surgical work. Our results are similar with WHO report of 2006, which states that one of the main barriers to surgical care defined as the safe provision of pre-operative, and post-operative surgical and anaesthesia services in resource-limited settings is shortage of trained health workers.

Our results revealed that most surgical cases done were done by medical doctors (23%) and general nurses (8%) who have not undergone any post-graduate or specialised training in surgery or anaesthesia. When compared with the study done by Jochberger (2008) on the status of education and research in anaesthesia and intensive care medicine at university teaching hospital in Lusaka Zambia it was found that ketamine was used more due to incompetency in administering other drugs.

More comprehensive and sustainable solutions include the development of local training programmes, better retention of trainees with adequate incentives particularly in rural areas, and engaging Government and Professional Associations as well as academic institutions, to develop and implement policies to address local training needs (Gosselin, (2011).

### **5.3 Surgical cases offered by static hospitals**

In our study we categorised static hospitals as General (provincial), District and mission hospitals. Results showed that surgical cases such as Caesarean section,

Hysterectomy, ectopic, Laparotomy, limb amputation and skin graft were 100% done by the general hospitals. Except for limb amputation and skin graft which stood at 88.9% in mission hospitals, while district hospitals did 80.0% hysterectomy and limb amputation and 10% skin graft. Tonsillectomy, ORIF and prostatectomy were only done in general and mission hospitals while district hospitals could not perform any. Mastectomy, cataract, eye removal, thyroidectomy and tracheostomy were generally done by all hospitals even though higher percentages were done by general and mission hospitals. It was noted that orthopaedic surgery and plastic surgeries were not done in most hospitals due to lack of specialised staff and equipment to carry out the operations. The results further showed some of the surgical cases done in the past 6 months. These were Hernia, skin graft, mastectomy, laparotomy 52%, ectopic 28%, prostatectomy 4% and caesarean section 100%. These results showed that there was more of Obstetric and gynaecological related surgical cases as compared to others.

#### **5.4 Surgical needs suggested by the staff**

In the hospitals surveyed, staff raised a number of challenges that hinder them in offering adequate surgical services to their clients. 9.1% of the personnel surveyed felt that lack of briefings about surgical services affects their performance. They felt that medical personnel involved in surgical services could perform better if they were to be having frequent briefings thereby, exchanging knowledge and new ideas required to deliver successful surgical services. 11.7% also attributed the low surgical service delivery to the lack of training by personnel involved, 9.1% of staff surveyed said the main challenge they face was low staffing levels. The lack of specialised equipment

which stood at 15.7% was also a major problem cited by most of the staff and lastly but not the least the lack of drugs required to conduct a successful operation was named as a big hindering factor 3.9%. Other problems cited were delays in obtaining biopsy results resulting in district hospitals doing more referrals to general hospitals and university teaching hospital. Due to these delays some mission hospitals have been forced to send their biopsies outside the country where they said the results only take about 2 weeks to be ready as compared to University teaching Hospital where they said results take even up to 3 months or longer to be ready. Such delays make it difficult for them to manage the patients as many of the results are obtained when lives are already lost.

Another factor hindering surgical work as discussed with the surgical staff was the availability of blood for transfusion. According to the staff discussed with, blood is mostly in short supply to mission hospitals and district hospitals making it difficult for such hospitals to perform emergency cases.

The other one was no designated surgical wards in most district hospitals, resulting in post-operative patients being admitted to general wards; thereby increasing incidences of infection in these hospitals.

#### **5.6 Adequacy and completeness of equipment and Instruments**

Though most hospitals had equipment, most of these were far from being adequate and complete for them to conduct successful surgical operations. District hospitals were the most poorly stocked with only 10% of the hospitals having adequate surgical equipment

and 30% having complete surgical instruments. Mission hospitals had well above 62% in terms of equipment adequacy and completeness of surgical instruments while general hospitals had 60% in terms of adequate equipment and 40% completeness of instrument.

Our study also found that there was great miss-allocation of equipment in most district hospitals, for example it was discovered that some hospitals had been keeping anaesthetic machines for over 5 years without using them due to lack of skilled staff able to use them. On the other hand those hospitals with skilled staff were found not to be having specialized equipment such as these anaesthetic machines.

### **5.7 Mobile Hospitals**

Mobile hospitals are a new concept in Zambia. These have been procured by the government in order to realize the national health vision of insuring that there is equity of access to affordable, cost effective, and quality health services, that are as close to the family as possible. (SOP for mobile services, 2010).

Mobile hospitals are meant to carry out services that are commensurate with that found at the second level of care.

Mobile hospitals in Zambia have been stationed in every province and as such serve as a provincial mobile outreach facility. The estimated mobile facility target population is 13,217,933 national wide. Furthermore since the urban population has easy access to hospitals the rural population find it extremely difficult to access hospitals.

Table 8 below shows the estimated facility target population, 2010 (SOP mobile hospital p.23)

**Table 8: Shows the estimated facility target population.**

Province	Total population (2010)	Rural (estimated mobile facility target population)	Urban	%rural	%urban
Central	1,386,628	1,053,682	332,946	0.76	0.24
Copperbelt	2,088,146	462,330	1,625,816	0.22	0.78
Eastern	1,744,430	1,590,433	153,997	0.91	0.09
Luapula	1,064,422	925,539	138,883	0.87	0.13
Lusaka	1,768,205	321,365	1,446,840	0.18	0.82
Northern	1,662,240	1,428,365	233,875	0.86	0.14
Northwestern	808,046	708,724	99,322	0.88	0.12
Southern	1,706,468	1,344,858	361,610	0.79	0.21
Western	989,348	870,266	119,082	0.88	0.12
Zambia	13,217,933	8,705,562	4,512,371	0.65	0.35

As shown in the table above mobile hospitals are targeted for rural population. Unfortunately they are not evenly distributed.

The mobile hospitals are fully equipped in terms of surgical facilities although they are not meant to deal with major cases.

Since inception mobile hospitals have offered relief to static hospitals especially in minor surgical cases such as male circumcisions among others. This is because they are capable of moving to the target population and carry out services there.

In our study mobile hospitals have shown to be useful in offering surgical needs and providing surgical care because they have specialised manpower and equipment. The disadvantages are that these facilities are dependent on manpower and consumables from the static hospitals making it even more difficult for static hospitals to function properly when specialised manpower is not at the station. For example, surgeons at provincial hospitals are the ones in-charge of mobile hospitals and when these facilities go out they go with them.

The challenges faced by hospitals in providing surgical care and handling surgical needs may be higher than explained because things like funding on static and mobile hospitals, accommodation, and duration of training surgeons or anaesthetists among others were not discussed in this study. However the major challenges have been highlighted which support the literature review, and therefore suggests little progress being made. The findings such as critical shortage of surgical staff, inadequate funding, poor state of health facilities and inadequate equipment.

Other studies have shown that low-income countries like Zambia have been facing challenges in surgical needs such as shortage of qualified human resource in both surgery and anaesthesia (Robertson, 2010). These findings support our findings in this

study as observed in the qualifications of specialised staff which shows low percentages.

### **5.8 Limitation for the study**

The main limitation for this study was the inclusion of mobile hospitals. At the time of data collection most of the mobile hospitals were not in operation making it difficult to find staff to answer questionnaires. To this effect results on surgical care done in mobile hospitals cannot be generalised, since the mobile hospitals are being used in Zambia for the first time and have not been in use for a long tested time.

In some hospitals we were unable to find all the respondents we were hoping for which caused some incomplete data collection.

The researcher also, had a limited time period in which to carry out the study.

Overall, the response rate was low and results may be biased to the extent non-respondents differed from those who participated in the study.

Comparisons between provinces were not done in this study, because this study only aimed at establishing challenges faced by hospitals in general. Nevertheless it would be interesting to make comparisons between provinces and hospital levels to really show how individual provinces and hospitals are performing against each other.

## CHAPTER SIX

### 6.0 CONCLUSION/RECOMMENDATION

#### 6.1 Conclusion

There is low participation of females in surgical work of less than 40%. With the age group within the productive age surgical work can be improved upon if the current workforce developed interest in specialising in surgery. The already existing infrastructure needs to be developed in all district hospitals so that people can have facilities to seek surgical care from. Most of the theatres visited were not up to standards recommended by World Health Organisation. The good news is that we do not need to build more expensive hospitals but focus our limited funds on upgrading what is already there and employing more surgical and anaesthetic staff.

If there is to be any meaningful improvement in surgical care in Zambian hospitals, the number of surgeons, theatre nurses and anaesthetists in the country need to conform with an average standard set by WHO as opposed to one surgeon per over 500,000 people working in rural provinces of Zambia.

Despite these findings, much work remains to be done. There is need to do similar studies with increased response rate so that the bigger picture is obtained for future strategic planning.



## 6.2 Recommendations

This study has provided a base of data on challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia. The study also reveals some challenges that form a basis for the following recommendations:

1. Government should intensify in-service training for surgical staff so that the country can have specialised surgical staff. More comprehensive and sustainable solutions include the development of local training programmes and better retention of trainees with adequate incentives particularly in rural areas. Additionally engaging Government, Professional Associations and Academic Institutions to develop and implement policies to address local training needs, as observed in a study done by Gosselin et al (2011).
2. There is need to improve on theatre infrastructure in most of the district hospitals so that the layout of the theatres can conform to the acceptable standards.
3. The Ministry of Health should be carrying out annual equipment audit to minimize on misplacement of equipment.
4. Where possible the Government should look into establishing provincial oxygen plants to enable hospitals have access to oxygen and utilise their equipment that has been lying idle due to lack of oxygen.
5. Government should look at establishing provincial histopathology labs to enable hospitals have quick biopsy diagnosis and speed up patient treatment unlike the current trend where some hospitals have resorted to taking samples outside the country for diagnosis. Following this the government should also look at training

more Pathologists to take up the challenge of histopathology which has lagged behind for many years now.

6. There is need for the Ministry of Health to intensify on sensitising communities on utilisation of surgical care services as they have done on other health services so that the community is aware of the existence of non-communicable diseases that need surgical care, to reduce incidences where patients present to hospitals when it is too late for safe surgical intervention.
7. The Government should promote partnership with developing private medical schools that can help out improve the training of essential workers.
8. The Government should also look into stocking of anaesthetic drugs in all the hospitals.
9. There is need for the Health Professions Council of Zambia to conduct inspections to ensure that duties are carried out by qualified personnel as opposed to task shifting which subjects patients to high risk.

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## **APPENDICES**

### **APPENDIX I.**

#### **Information Sheet**

Dear participant,

I am a final year student of a Master of Public Health at the University of Zambia School of Medicine, in the Department of Community Medicine. As a fulfilment of the programme, I am required to undertake a research in any area of benefit to the provision of public health care. The study title is: **Challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia.**

The findings of this study will help public health practitioners and policy makers learn more about surgical needs and see if tangible measures can be made to meet the needs.

I hereby seek your permission to take part in the study.

#### **Participation**

Your taking part in this study is purely voluntary. You can withdraw from the study at any time you wish to do so. If you wish to withdraw notify the researcher.

### **Risks**

There are no risks involved in participating in this study.

### **Benefits.**

There are no direct benefits to you as a participant in the study. The results will be used for planning purposes of public health workers and policy makers.

### **Confidentiality.**

Your name or initials will not be written on the questionnaire instead serial numbers will be used so that there is no identification of study participants. All information will be kept in the researcher's confidential file.

### **Contact**

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**Consent**

I have read/ been explained to the purpose of the study. I understand what is involved and I agree to participate. I have been given a copy of this form and have had a chance to read it.

Participant's signature.....

Date.....

Witness

(Name and Signature ).....

Date.....





## APPENDIX II

### MD's Questionnaire

#### Title

A study to determine surgical challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia.

#### Instructions

Indicate clearly the correct answer by ticking or writing in the space provided.

Questionnaire serial #.....

#### Section A

##### Demographic Data

1. Age **at** last birth day.....

2. Gender

1=Male. 2=female.

##### Section B.

3. What level is your hospital.....

1=1          2=2          3=3

4. How long have you been in service?

1=1-4 years

2=5-9 years

3=10-14 years

4=15-20 years

5=Above 20 years

5. How big is your catchment area by?

1=Population.....

2=Size.....

6. What would you say is the furthest distance from here? Please explain in terms of kilometres covered by your clients to the hospital.

.....  
.....  
.....

7. Do you believe your hospital has the facilities it needs to meet the surgical needs of your community?

1= Yes      2= NO

8. If not what would you say is lacking to help you meet the surgical needs.

.....  
.....

9. Do you believe your surgical and anaesthetic staff is adequately trained for the task that faces them?

1= YES      2= NO

10. If not what would you say needs to be improved.



ii. Lights	1=Yes	2=No
iii. Autoclave	1=Yes	2=No
iv. Anaesthetics machine	1=Yes	2=No
v. Oxygen supply	1=Yes	2=No
vi. Suction units	1=Yes	2=No
vii. Diathermy	1=Yes	2=No
viii. Constant water supply	1=Yes	2=No
ix. Constant power supply	1=Yes	2= No

18. What post-operative care facilities are available?

.....

.....

.....

19. Are facilities/drugs available for general and spinal anaesthesia?

1=Yes      2=No

20. For either answer explain which ones are or not available

.....

.....

.....

21. What is your source of surgical equipment and consumables?

1=GRZ      2=Mission      3=Donors      4=Self      5=mixed

22. Is your source providing you with enough surgical materials to use throughout the year?

1=Yes      2=No      3=Sometimes

23. If not do you need any assistance in terms of surgical materials?

1=Yes            2=No

24. If yes, explain the nature and form of assistance you would need

.....  
.....

25. How many cases were done in the past 6 months? State the figure.

.....

26. Does your hospital have designated wards for surgical conditions/cases?

1=Yes            2=No

27. If yes how many wards are available?

1= 1    2= 2    3= 3    4= 4

28. How many beds are available for:

1=Males.....2=Females.....3=Children.....

29. If not where do you admit your patients with surgical needs?

.....  
.....

30. What is your population of males and female you see for surgical needs?

1=Males..... 2=Females.....

31. What surgical patients are not catered for?

1=Males            2=Females            3=Children

32. What surgical conditions are not catered for in your hospital?

.....  
.....

33. Do you think these patients and conditions can be helped done by surgeons on an outreach programme?

1=Yes                      2=No

34. If yes how do you think this could be done?

.....  
.....

35. Where do you take your histopathology Biopsies/samples for lab diagnosis?.....

36. On average, how long does it take you to receive the histopathology lab results.....

37. Are the results always helpful when you receive them.....

Thanks for your time please would you counter check your answers before you hand over to the survey personnel.

## **APPENDIX III**

### **Anaesthetist Questionnaire**

#### **Title**

A study to determine challenges faced by hospitals in providing surgical care and handling surgical needs Zambia.

#### **Instructions**

Indicate clearly the correct answer by ticking or writing in the space provided.

Questionnaire serial number.....

#### **Section A**

Demographic data

1. Age at last birth day,.....
2. Gender



1=Male      2=Female

**Section B**

3. What is your primary qualification?

1= Doctor    2= Anaesthetic Clinical Officer    3=nurse    4=porter

4. What formal training have you received in anaesthesia?.....

5. What formal certificates do you have?.....

6. How long have you been doing anaesthetic work?

1=1 – 2 years      2=3 – 4 years      3=5 – 7 years      4=if over 8 years

specify.....

7. How long have been working at this hospital? Specify period.....

8. When did you last attend a formal training course in anaesthesia?

1=1 - 2 years

2=3 - 4

3=5 - 7

4=specify if above 7.....

9. How many nights are you on call in week?

1=1 night      2=2 nights      3=3 nights

4=4 nights      5=5 nights      6=6 nights

7=The whole week.

10. Do you have the following equipment and consumables?

(i) Functional anaesthetic machine able to administer volatile anaesthesia.

1=Yes      2=No

- |             |   |         |                     |
|-------------|---|---------|---------------------|
| (ii) Oxygen | - Piped                                   | 1 = Yes | 2= No               |
|             | -Cylinder                                 | 1 = Yes | 2 = No              |
|             | -Concentrator                             | 1 = Yes | 2 = No              |
| •           | Electricity - 24 hours /day               | 1= Yes  | 2 = No              |
|             | - ±20 hours                               |         | 1 = Yes      2 = No |
|             | - ±16 hours                               |         | 1 = Yes      2= No  |
|             | - ±12 hours                               |         | 1 = Yes      2= No  |
|             | - 8 or less hours                         |         | 1= Yes      2 = No  |
| •           | Ketamine, THIOpentone,                    | 1= Yes  | 2 = No              |
| •           | Halothane (reliable supply)               | 1 = Yes | 2 = No              |
| •           | Isoflurane (reliable supply)              | 1 = Yes | 2 = No              |
| •           | Adult breathing system                    | 1 =1    | 2=23 =>2            |
| •           | Paediatrics breathing system              | 1 = 1   | 2 = 2 3 =>2         |
| •           | Spinal needles (reliable supply)          | 1 = Yes | 2 = No              |
| •           | Bupivacaine/ spinal lig (reliable supply) | 1 = Yes | 2 = No              |
| •           | Suction                                   | 1 = Yes | 2 = No              |
| •           | Diathermy                                 | 1 = Yes | 2 = No              |
| •           | Functional autoclave                      | 1 =Yes  | 2 = No              |
| •           | Theatre surgical lights working           | 1 = Yes | 2 = No              |

11. Are you proficient in spinal anaesthesia?

1= Yes      2= No

12. Do you do spinals as part of your routine practice?

1= Yes      2= No

13. If not, why not?

.....  
.....

14. How do you anaesthetise your caesarean section patients?

.....  
.....

15. Are you proficient at paediatric anaesthesia?

1= Yes      2= No

16. How many children under the age of 5 do you anaesthetise per year?

.....

17. What technique do you use?.....

.....

18. What do you believe are the most pressing issues regarding anaesthesia in your hospital?

.....  
.....

19. What are your greatest needs personally as an anaesthetist?.....

.....  
.....

Thanks for your time please would you counter check your answers before you hand over to the survey personnel.

## **APPENDIX IV.**

### **Surgeon's questionnaire**

#### **Title.**

A study to determine challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia.

#### **Instructions**

Indicate clearly the correct answer by ticking or writing in the space provided.

Questionnaire serial number.....

#### **Section A**

##### **Demographic data**

1. Age at last birth day

2. Gender

1= Male 2= Female

**Section B**

3. What is your medical qualification?

1= Doctor    2= Medical Licentiate    3=Clinical Officer    4=Surgeon

4. Do you have Sutures in your theatre;

- adequate for bowel surgery 1 = Yes    2 = No

- adequate for skin surgery 1 = Yes    2= No

- adequate for fine surgery eg face, tendons 1= Yes    2= No

5. List the minor surgeries performed in this hospital:

.....  
.....  
.....

6. Does your hospital perform the following major surgeries:

- Caesarean section    1 = Yes    2 = No

- Hysterectomy    1 = Yes    2 = No

- Ectopic    1 = Yes    2 = No

- Laparotomy    1 = Yes    2 = No

- Orif of Fracture    1= Yes    2= No

- Tonsillectomy            1 = Yes    2 = No
- Tracheostomy            1 = Yes    2 = No
- Thyroidectomy           1 = Yes    2 = No
- Limb Amputations       1 = Yes    2 = No
- Prostatectomy            1= Yes     2 = No
- Mastectomy              1 = Yes    2 = No
- Cataracts                 1= Yes     2 = No
- Removal of Eyes         1= Yes     2 = No
- Skin Grafts               1 = Yes    2 = No

7. Do you have adequate equipment in your hospital to perform all you surgical cases?

1= Yes        2 = No

8. Do you have complete operating sets in your theatre?

1 =Yes        2 =No

9. If yes what complete instrument set are available?

.....  
 .....

10. On average how many surgical cases do you book per month?

.....

11. From the booked number of surgical cases how many on average do you actually work on per month?

.....  
 .....

12. Do you need any assistance in terms of meeting the target

1=Yes            2=No

13. If yes explain the nature and form of assistance you would need.

.....  
.....

14. What operations were done in the past 6 months?

.....  
.....

15. How many cases were done in the past 6 months? State the figure.....

16. Does your hospital have designated wards for surgical conditions/cases?

1=Yes            2=No

17. If yes how many surgical wards are available?

1= 1      2= 2      3= 3      4= 4

18. How many surgical beds are available for:

1=Males.....      2=Females.....      3=Children.....

19. If not where do you admit your patients with surgical needs?

.....  
.....

20. What is your population of males and female you see for surgical needs?

1=Males.....      2=Females.....

21. What common surgical patients are not catered for?

1=Males            2=Females            3=Children

22. What common surgical conditions are not catered for in your hospital?

.....  
.....

23. Do you think these patients and conditions can be helped done by an outreach programme?

1=Yes                      2=No

24. If yes how do you think this could be done?

.....  
.....

25. What do you believe are the most pressing issues regarding surgery in your hospital?

.....  
.....  
.....

26. What are your greatest needs personally as a surgeon

.....  
.....

27. Where do you take your histopathology Biopsies/samples for lab diagnosis?

.....

28. On average, how long does it take you to receive the histopathology lab results?

.....

29. Are the results always helpful when you receive them?



.....

Thanks for your time please would you counter check your answers before you hand over to the survey personnel.

## **APPENDIX V**

### **Theatre Nurses' questionnaire**

#### **Title**

A study to determine challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia.

#### **Instructions**

Indicate clearly the correct answer by ticking or writing in the space provided.

Questionnaire serial number.....

**Section A**

**Demographic data**

1. Age at last birth day,.....

2. Gender

1 = Male 2 = Female

**Section B**

3. How long have you been working in your current position.....

4. Do you believe your theatre has the facilities it needs to meet the surgical needs of your community?

1= Yes            2= No

5. Do you believe your theatre nurses are adequately trained for the task that faces them?

1= Yes            2= No

6. If not what would you say needs to be improved if they are to perform well?

.....  
.....

7. Do you believe your hospital should be doing more or less surgery than it currently undertakes?

.....  
.....

8. For any given answer why do you think it should be so?

.....  
.....  
.....

9. How many surgical wards do you have in your hospital?

.....

10. How many are designated for:

1= Males.....2= Females..... 3= Children.....

11. How many surgical beds are available for:

1=Males..... 2=Females..... 3=Children.....

12. If not where do you admit your patients with surgical needs?

.....  
.....

13. What is your population of males and female you see for surgical needs?

1=Males..... 2=Females.....

14. What common surgical patients are not catered for?

1=Males .....

2=Females .....

3=Children .....

15. What common surgical conditions are not catered for in your hospital?

.....  
.....

16. Do you think these patients and conditions can be helped done by an outreach programme?

1=Yes                      2=No

17. If yes how do you think this could be done?

.....  
.....

18. How many cases were done in the past 6 months? State the figure.....

19. How many patients were booked for surgery in the past 6 months?.....

20. What do you believe are the most pressing issues regarding surgery in your hospital?

.....  
.....  
.....

21. What are your greatest needs personally as a theatre nurse?

.....  
.....  
.....

Thanks for your time please would you counter check your answers before you hand over to the survey personnel.

## **APPENDIX VI**

### **GANTT CHART**

		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Activities										
1	Study design	xxxx	xxxx								
2	<i>Data collection from Government institutions &amp; Non Governmental Organisations</i>		xxxx	xxx							
3	Proposal presentation to graduate forum				xxxx						
4	Seeking Ethical approval and Data collection trips					xxx	xxxx				
5	Data analysis							xxx			
6	Report writing							xxx	xxxx		
7	Research findings presentation									xxxx	
8	Dissemination of findings										xxxx

## APPENDIX VII

### Budget

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	ITEMS	COST	TOTAL
1	Project Lap top.	K4.000,000.00	K4.000,000.00
2	5 Reams of paper	K 50,000.00 x 5	K 250,000.00
3	A box of pens	K 50,000.00 x 1	K 50,000.00
4	A box of pencils	K 40,000.00 x 1	K 40,000.00
5	50 box files	K 15,000.00 x 50	K 750,000.00
6	Transport	K 45,000,000.00	K45,000,000.00
7	Lodging and food	K 6,000,000.00	K 6,000,000.00
	Total		K56,090,000.00