

ORIGINAL PAPER

Challenges Faced by Hospitals in Providing Surgical Care and Handling Surgical Needs in Zambia

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ABSTRACT

Objectives: To determine challenges faced by hospitals in providing surgical care and handling surgical needs in Zambia. Specifically looking at staffing levels, skills and training, equipment and infrastructure in hospitals relating to surgical care.

Design: The authors carried out a non-intervention cross sectional study. The study further looked, post operative care, proportion of male to female patient, surgical cases not catered for, number of operations done, and availability of anaesthetic drugs. The design was both quantitative and qualitative. For quantitative data collection the questionnaire was used to determine the outcome of certain variables. While for qualitative the questionnaire and information audit was done from the theatre register.

Results: In all the hospitals surveyed, staff raised a number of challenges that hinder them in offering adequate surgical services to their clients. The problems include; lack of briefings about surgical services (9.1%), lack of training (11.7%), and low staffing levels (9.1%), lack of specialized equipment (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%).

Conclusions: The challenges faced by hospitals may be higher than explained because things like funding, accommodation, and training among others were not discussed in this study. However the major challenges have been highlighted which seem to support the

literature review. The findings such as critical shortage of essential surgical staff, inadequate funding, poor state of health facilities and equipment, inadequate development of social support systems for fostering health programmes, insufficient empowerment of communities to improve their health, poor geographical access, especially rural areas, and inadequate systematic research in alternative and traditional medicines.

INTRODUCTION

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. Ongoing 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 internships 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 needs¹.

The surgical needs in low-income countries is an issue generally neglected within the global public health arena for a long time. 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. Yet at the moment, it appears there is no better source of data.

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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 no one available to provide the services. So there is a large undercount of the potential impact of surgical services².

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 years³.

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. Africa accounts for 24% of the global disease burden but only 3% of the global health workforce. The reasons include 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 countries⁵.

According to Hodges' report, the human resource crisis is most acute at the level of specialists, including surgeons and anaesthesiologists⁶. In East Africa, there are 0.25 fully trained surgeons per 100,000 persons compared to 5.69 per 100,000 in the United States⁷.

The concept of a surgeon as a University-trained physician is a relatively modern one and has contributed to the shortage of specialised surgeons. 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 physicians⁸. Almost half of all countries in sub-Saharan Africa use non-physician clinicians to perform minor surgical procedures due to shortage of or scarcity of doctors. In Tanzania and Mozambique, 84% and 92% respectively of caesarean sections, obstetric hysterectomies, and laparotomies for ectopic pregnancy are performed by non-physician-clinicians⁹. In Malawi, 90% of caesarean sections at district hospital level are performed by surgical clinical officers with low morbidity and mortality¹⁰.

Zambia has young population and yet there are about 85% surgical needs in paediatrics that require surgical intervention by 15 years of age. Most hospitals in Zambia are faced by lack of surgical facilities as a result of poor

policies, on human resource development and provision of surgical consumables, due to lack of statistical data.

METHODOLOGY

The author carried out a non-intervention cross sectional descriptive study.

The questionnaire was used to determine the following education level, infrastructure, equipment, theatre staffing, post operative care, proportion of male to female patient, proportion of HIV reactive to HIV non-reactive, surgical cases not catered for number of operations done, availability of anaesthetic drugs and equipment.

Study Design

The design for this study was both quantitative and qualitative. For quantitative the questionnaire was used to determine the outcome of certain variables. While for qualitative the questionnaire and information audit was done from the theatre register.

Research Setting

The study was conducted in selected hospitals in the nine provinces of Zambia. This representative sample was selected using multistage sampling to arrive at these hospitals.

Study Population

A total number of 46 hospitals were included in this study from the 9 Provinces of Zambia, which included general, district and mission hospitals.

Study Sites

The study was conducted in 42 static and 4 mobile health institutions throughout Zambia.

The following were the sites included in the study per province..

Northern Province

Mbala, Kasama, Chilonga, Mporokoso and Chinsali hospitals.

Luapula Province

Nchelenge, Lubwe, Kasaba, Kawambwa, Mansa and mobile hospitals.

Eastern Province

Lundazi, Mwami, St. Francis, Chipata, Petauke and mobile hospital.

Southern Province

Chikankata, Monze, Choma, Mazabuka, Livingstone and Mobile hospital.

Western Province

Kalabo, Yuka, Senenga, Lewanika and Sesheke hospitals

North Western Province

Chitokoloki, Zambezi, Mukinge, Solwezi and mobile hospitals

Copperbelt Province

Nchanga North, Ndola, Kitwe, Mpongwe, and Thomsons hospitals.

Central Province

Mumbwa, Chitambo, Serenje and Liteta hospitals

Lusaka Province

Katondwe, Kafue and St. Luke hospitals

Criteria

Inclusion Criteria

This included all hospitals that had been pre-selected as stated above.

Exclusion Criteria

All hospitals that would not want to take part.

Sample Size

A sample size of 52 hospitals involving 43 static and 9 mobile hospitals was selected.

Sampling

Sampling was done using multistage sampling method. This involved stratifying the sample, clustering, and simple random selection, purposeful and convenient sampling methods.

Quantitative and qualitative data collection was used in this study using questionnaires.

Data Collection

Data was collected both qualitatively and quantitatively from the In-charge theatre Nurse, anaesthetist, senior surgeon and the hospital Medical Superintendent, using an interviewer administered questionnaire on a number of

variables. The hospital records were inspected to correlate the information to ensure accurate data collection..

Furthermore the register audit was done to collect the number of cases done in the past 6 months.

Data Analysis

Data was entered in the computer using a spread sheet. Analysis of data was done using SPSS version 20.0. SPSS was used to provide frequency counts for a specified categorical variables e.g 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.

Ethical Consideration

All study participants were required to sign an informed consent form prior to their participation. Participants were allowed to withdraw from the study at any time they wish and no further contact was to be 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 does not involve human subject's physical participation and no monetary gain was involved. Permission to carry out the study was sought from the Research Ethics Committee, Ministry of Health and Provincial Medical officer (PMO) and District Medical Officer's Offices.

Questionnaire

The hospital Medical Superintendent, the anaesthetist, the senior surgeon, and the In-charge theatre Nurse were asked to fill-in the questionnaire

RESULTS

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 lack behind in surgical services they can offer. It was interesting to note that almost all the hospitals surveyed were able to offer caesarean section.

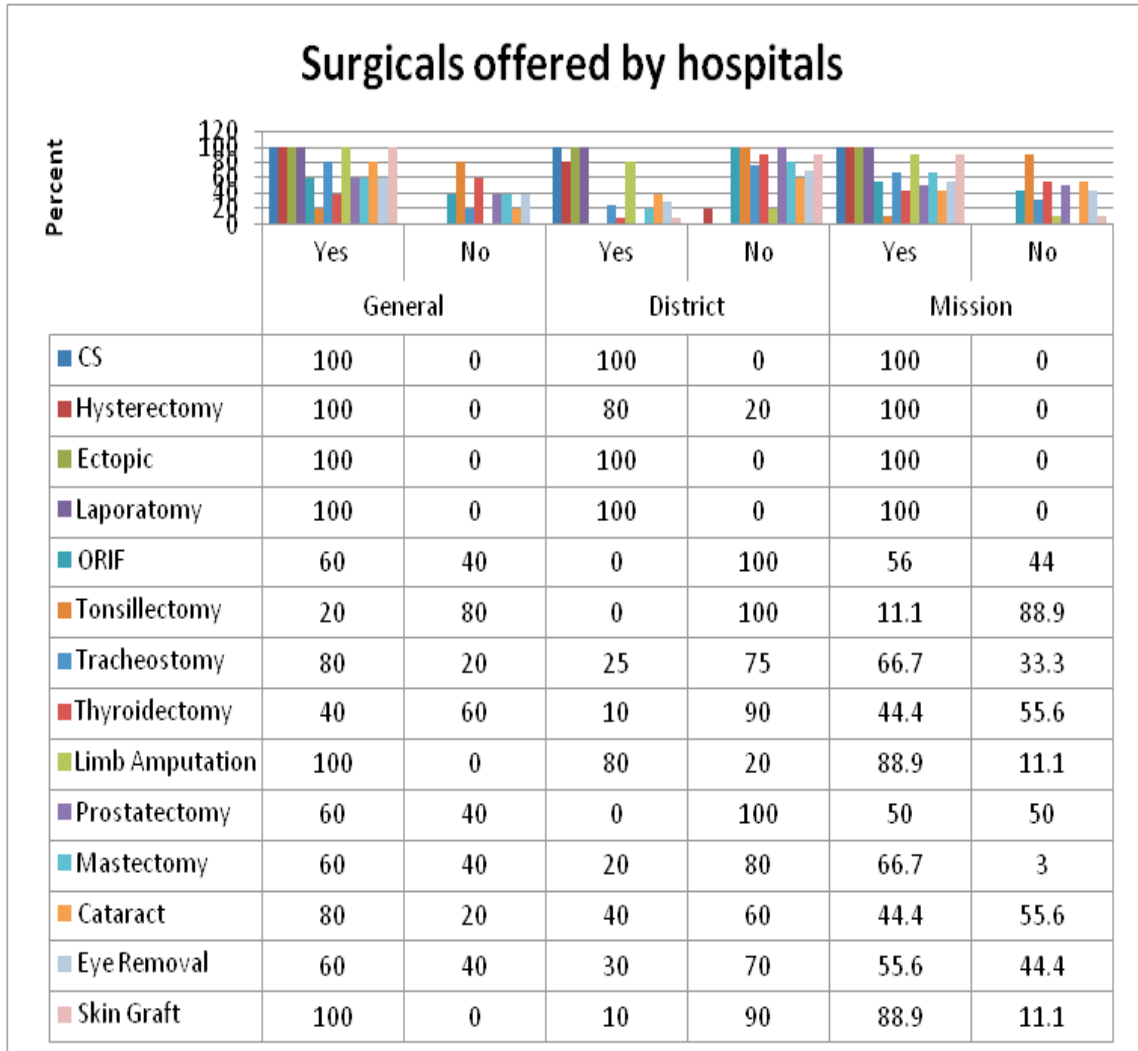


Figure 1 : surgical services offered by hospitals

Operations done in the past 6 months

Of the surgical services offered by the hospitals considered, the most prevalent ones as was ascertained by examining the records in surgical registers are the ones shown in figure 2. As can be seen in figure 2, caesarean section was the highest of the top surgical performed.

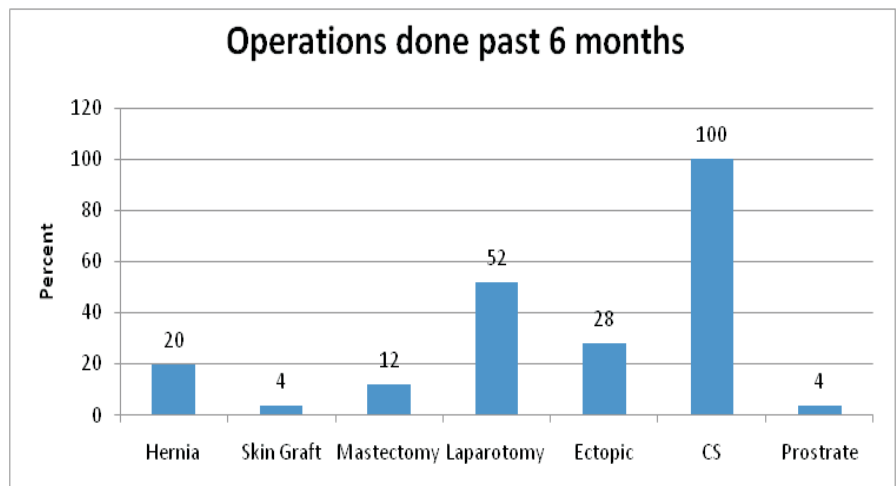


Figure 2 : Operations done in the past 6 months

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. 9.1% of the personnel felt that lack of briefings about surgical services affects their performance. They felt that they could perform better if they were to be having frequent briefings thereby, exchanging knowledge required to deliver successful surgical services. 11.7% attributed the low surgical offerings to lack of training by personnel involved, while 9.1% said the main challenge they faced was low staffing levels. 15.7% cited lack of specialised equipment as a major problem. 3.9% cited the lack of drugs required to conduct a successful operation.

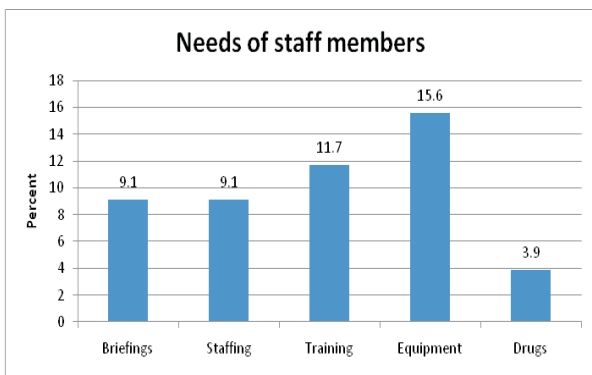


Figure 3: Surgical needs suggested by staff

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

Figure 4 : Category of theatre staff

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 figure 4 below, the majority of theatre staff are general doctors (23%) without specialised training in carrying out surgical operations.

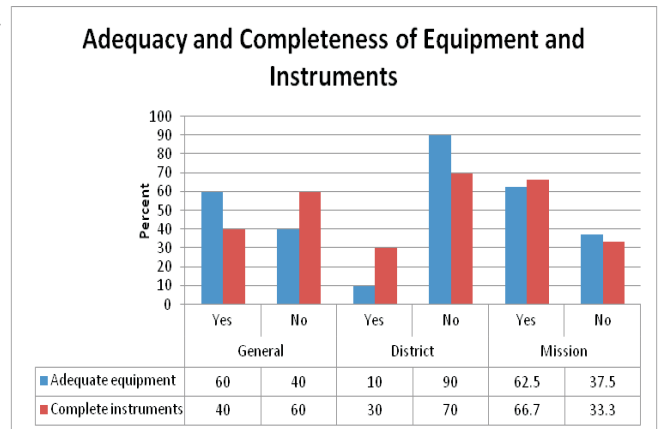


Figure 5 : Equipment

DISCUSSIONS

In this study the challenges faced by hospitals in providing surgical care and handling surgical needs such professional competencies, infrastructure, staff, catchment area, distance from the hospital, equipment, mobile hospital verses static hospitals, number of surgical beds per hospital, number of surgical cases done in the past 6 months prior to the visit, time taken for results to be given back from the laboratory for biopsies taken, stability of electricity and water supply to the hospital, these among others were examined.

According to literature reviewed in this study only a small percentage of patients that require operations are treated because of various constraints.

These 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.¹

Gender and age

The age grouping from our results showed that most of the surgical staff and the medical superintendents are within the productive age. 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 anaesthetists 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 where 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 in surgical work. However, this also presents itself as an opportunity because training can be provided to them since they have a lot of years remaining before they retire.

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. 24% clinical officer anaesthetises and 9% anaesthetises nurses where the only ones qualified to administer anaesthesia, 23% were qualified theatre nurses and 8% who worked as theatre nurses in some hospitals had no specialised training in this area. As observed from our results Zambia like any other sub Saharan country has experienced inadequacies in surgical staff hence the involvement of none qualified staff in doing surgical work.

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 in 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.

Surgical needs suggested by the staff

In the hospitals surveyed, staff raised a number of challenges that hinder them in offering adequate surgical services. 9.1% of the personnel surveyed felt that lack of briefings about surgical services affects their performance. They felt that they could perform better if they were to be having frequent briefings thereby, exchanging knowledge and 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. 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 forever to be ready. Such delays make it difficult for them to manage the patients as most of the results are obtained when lives are already lost.

Adequacy and completeness of equipment and Instruments

Though most hospitals had sufficient 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.

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). The 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.

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 from the static hospitals and consumables making it even more difficult for static hospitals to function properly when specialised manpower is not at the station for a example surgeons at provincial hospitals are the ones in-charge of mobile hospitals and when these facilities go out they go with them.

CONCLUSION/RECOMMENDATIONS

The challenges faced by hospitals in providing surgical care and handling surgical needs may be higher than explained because things like funding, accommodation, and training among others were not discussed in this study. However the major challenges have been highlighted which seem to support the literature review. The findings such as critical shortage of essential surgical staff, inadequate funding, poor state of health facilities and equipment, inadequate development of social support systems for fostering health programmes, insufficient empowerment of communities to improve their health, poor geographical access, especially rural areas, and inadequate systematic research in alternative and traditional medicines. (MOH 2005).

ACKNOWLEDGEMENT

My acknowledgement goes to the following people:

My wife Shirley and my two daughters Lisa and Linda.

Mercy Mission Flyers.

Mr Chama Eslon.

Ms. Dora Mulwani

Mr. John Banda

Dr. Kankasa.

Ministry of Health and its Staff in various hospitals where the study was conducted.

Department of community medicine and all my class mates.

REFERENCES

1. Gosselin R.A. Y.Gyamfi. S.Contini .2011. "Challenges of meeting surgical needs in the developing world". *World J Surg* (2011).35:258-261.
2. Riviello R. D.Ozgediz. Y. Renee and et al 2010. Role of collaborative academic Africa". *Journal.pmed*.1000078.
3. Chu K. P.Rossee. P.Gielis and et al 2009. "Surgical task shifting in sub-Saharan
4. Haynes A.B. T.G Weiser. W.R Berry and et al, 2009. A surgical safety checklist to partnerships in surgical training, education, and provision. *World J Surg* 34: 459-465
5. World Health Organisation (2006) The world health report (2006): working together for health. <http://www.who.int/health-systems>.
6. Hodges SC, Mijumbi C, Okello M, McCormick BA, and et al 2007. "Anaesthesia services in developing countries: defining the problems". *Anaesthesia* 2007;62:4-11
7. Lyng DC. Larson EH, Thomas MJ, and et al 2008."A longitudinal analysis of the general surgery workforce in the United States, 1981 2005. *Arch Surg* 143:345-351.
8. Ozgediz D, Galukande M, Mambweijano J, and et al 2008.The neglect of the global surgical workforce: Experience and evidence from Uganda. *World J Surg* 32: 1208-1215
9. Pereira C, Cumbi A, Malalane R et al 2007."Meeting the need for emergency obstetric care in Mozambique: Work performance and histories of medical doctors and assistant medical officers trained for surgery". *BJOG* 114:1530-1533. Reduce morbidity and mortality in a global population. *N Engl J Med* 2009;360:491-9.
10. Chilopora G, Pereira C, Kamwendo F, et al 2007. Postoperative outcomes of caesarean sections and other major emergency obstetric surgery by clinical officers and medical officers in Malawi. *Hum Resour Health* 5:17.