

**THE UNIVERSITY OF ZAMBIA**

**SCHOOL OF MEDICINE.**

**DEPARTMENT OF POST BASIC NURSING.**

A study to determine factors contributing to caesarean section incisional wound infections at the University Teaching Hospital.

By

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## LIST OF ABBREVIATIONS.

ASHP	American Society for Health System Pharmacists
C.D.C.	Centre for Disease Control.
C/S.	Caesarean Section
JCTR	Jesuit Centre for Theological Reflection
K	Zambian Kwacha
\$.	United States Dollar
U.T.H	University Teaching Hospital

NHS.        Nursing Homes.

US         United States.

OR         Operating Room

             British pound

## DECLARATION.

I, Kashika Edwin, here by declare that the work presented in this study, for the Bachelor of Science in Nursing Degree has been not presented either wholly or partially for any other degree and is not currently being submitted for any other degree.

Signed P. Kashika Date 20/03/03

Candidate.

Signed P. Mwenbera Date 20.3.03

Supervisor.



**STATEMENT**

I here by certify that this study is the result of my own labour and independent investigation. I have clearly indicated the various sources to which I am indebted through out the text and in the references.

Signed.....*S. Koushik*.....  
Date.....*28/03/23*.....

## **DEDICATION**

This study is passionately dedicated to my beloved late wife, Patricia Mukwena and to my son Eddie. Papa you endured the absence of your parents at a very tender age, this study is for you.

## **ABSTRACT**

The aim of the study was to determine the factors that contribute to post-operative incisional wound infections at U.T.H. The post-operative incisional wound infection rate at the Institution, among the women who had undergone caesarean section operations was quite high. Consequently, majority of the women were staying much longer for treatment and the hospital was incurring huge costs in terms of procuring the antibiotics and other surgical requirements.

A descriptive study was used with a study sample of 50{fifty} respondents, who were selected by convenient sampling technique.

The data was collected using a checklist and by review of some medical records of the respondents. Data was sorted out, coded, and systematically analysed.

The analysis of the study results, revealed that;56% of the study respondents received adequate pre-operative care while 44% did not received adequate pre-operative care. The findings also revealed that adequate pre-operative care helps to prevent incisional wound infection rates. Prophylaxis antibiotics, was also noted as one of the measures that could reduce the chances of post-operative wound infections.

The level of Nurse intra-operative care was adequate in {100%} of the cases observed. The study findings indicated that, good aseptic techniques, such as hand-washing, scrubbing of the hands, adherence to a clean operating environment, all help to prevent post operative wound infections.

The level of the Surgeon intra-operative care was adequate in all {100%} of the cases observed. The study findings also confirm that the surgeon's good aseptic practices can help to prevent post-operative incisional wound infections.

The level of post-operative care was not adequate. Wound dressing practices were not adequate in 98% of the study respondents. Only 2% of the study respondents received adequate wound dressing care.

The results of this study show that 8% of the respondents developed post- operative incisional wound infection.

This, puts the prevalence rate of incisional wound infection at U.T.H. in the year 2002, at 8%.

According to the study findings the factors contributing to Caesarean wound infections at U.T.H. were; inadequate post operative care on the post-natal wards, the unavailability of surgical materials to use for cleaning the wounds, such as sterile gauze and anti septic solutions.

The major recommendations were; Nurse Managers to formulate policies and guidelines on the post-operative nursing care and management of the wounds; increase the allocation of surgical requirements for wound dressing and cleaning on the post natal wards.

## **CHAPTER ONE**

### **1.0 INTRODUCTION.**

#### **1.1 BACKGROUND INFORMATION.**

Zambia is a land locked country covering an area of 752,610 square kilometres. It shares borders with Zimbabwe and Botswana in the south, Namibia and Angola in the west, Democratic Republic of Congo and Tanzania, in the north, Malawi and Mozambique, in the East {CSO 2001}.

It lies between eight {8} and eighteen {18} degrees south latitude, and between twenty {20} and thirty-five {35} degrees east longitude. It has a mild tropical climate with three distinct seasons, namely, the cool dry winter, the hot season and the warm wet season {CSO 2001}

There are many sources of water for example, the Zambezi River, Kafue River, Luangwa River and Luapula River, lakes like lake Tanganyika, Mweru and Lake Bangweulu.

Zambia has a population of about ten million [10,000,000] people {CSO, 2001}. It is a developing country with a Growth per capita of \$300 in the year 2001. Its GNP was \$43155,000, in 2000. This shows that the country has a poor socio economic status. It has also been indicated that about 80% of Zambians are essentially poor, living below the poverty datum line. The poor socio-economic status has impacted negatively on the lives of most Zambians. An average Zambian is living on one US dollar per day {JCTR, 2001}.

Because of the poor socio-economic situation in the country, services such as the health and education have been badly affected. The poor socio-economic status of the country was brought about, partly due the previous Government's economic policy of privatisation. There was, for example, the privatisation of Government owned parastatal organisations and the mines to private ownership. Most of these parastatal organisations and mines were the country's major sources of foreign earnings and employment.



Privatisation resulted in a number of people losing employment. This was either through retrenchments or retirement. The policy of privatisation contributed to so much poverty level, especially in the rural areas of the country. In recent years, for example, there has been an increase in the number of people migrating from the rural areas, to the urban areas, in search of better living conditions. This has resulted into intense pressure on the social services particularly in the urban areas, where most of the urban-poor are now suffering from a number of deprivations. Majority of the people do not have access to basic needs, such as clean and safe drinking water, proper sanitation, shelter, food and health services. This state of affairs has led to the high disease burden in the health care system. The Government decided to upgrade a number of urban health centres to operate along side the University Teaching Hospital {Chanda 2000}.

The University Teaching Hospital {UTH} is Zambia's main and biggest referral Hospital. It receives referral cases from all over the country and has almost all the medical and surgical specialities. It also provides nursing education, medical education and research. The Hospital is situated in Lusaka, the capital city of Zambia. It is located 4.5km south end of the city centre. The Hospital has a bed capacity of 1700. About 1740 to 2100 patients are seen on a daily basis {U..T.H. Medical Records, 2002}.

The mission statement for UTH is to provide **"Quality medical and nursing care, Rehabilitation, teaching and conducting of research"**

**{U.T.H. Report, 1995}**. The motto for the Hospital is **"Striving to provide Quality care."**

Although the population of the country has been growing, there has not been any corresponding increase in the expansion of the Hospital facilities, as a result, U.T.H. now experiences a number of problems related to high patient turn over, congestion, floor beds, and an over stretched expenditure, consequently; leading to compromised standards of care.

The hospital has also suffered from a number of set backs such as the health staff leaving the institution for better conditions of services elsewhere. The variances in the staffing levels are very high.

**Table No. 1.**  
**SHOWING U.T.H. STAFF ESTABLISHMENT. {2002}**

category	Current establishment	Actual	Variance	percentage of variance
Doctors	378	197	181	48%
Nurses	1700	750	650	38%
others	1571	947	730	46%

**{UTH Hunan Resource Dept. 2002.}**

The University Teaching Hospital has an establishment of 3664 personnel {U.T.H. Hunan Resource Dept. 2002.} The current establishment for nurses is 1700; this number includes theatre Nurses, midwives, and other specialised nurses. There are about 700 nurses actively working. The nurse-patient ratio in the medical wards for the Enrolled Nurses is at an average of one nurse to fifteen patients and in the surgical wards, is at an average of one nurse to eighteen patients. The nurse-patient ratio for registered nurses is one to thirty-five patients {UTH. E. Block Medical Records, 2002}.

This short-fall in staffing levels has resulted in work overload to most of the nurses and because of the work overload, there has been a burn-out syndrome among nurses, thus ending up with compromised standards of nursing care. Consequently, the Hospital has been experiencing a high rate of nosocomial infections {UTH Medical Records 2002}.

The Hospital management has been concerned with the nosocomial infection hence it set up a "Hospital infection control committee." The main objective of the committee was to monitor the incidence and prevalence of Hospital acquired infections and to prevent these infections from the staff to the patients and from

the patients to the staff or visitors.

One of the departments under surveillance for nosocomial infections is the obstetric unit. The obstetric unit is where the antenatal mothers come for their normal deliveries. It so happens however that some of the deliveries end up with complications and cannot be delivered via the normal birth canal. Such complications may be delivered by a caesarean section operation. Caesarean section refers to the delivery of a baby through an abdominal incision in cases where the delivery through the normal birth canal has not been possible. It is conducted in the operating theatre department. Some of the common indicators for caesarean section operations at U.T.H. are Cephalo-pelvic disproportion, {CPD}, foetal distress, two or more previous caesarean section operations and pre-eclampsia. The University teaching hospital has four operating theatre departments; Phase V; for out-patient and emergency cases from Casualty, Phase III; for elective/emergency cases from the main wards, C Block; for obstetric cases and D Block; for neonatal surgical cases. The C Block theatre, {Obstetric unit theatre}, handles all the Obstetric cases. The department performs an average of five cases of caesarean operations per day {U.T.H. Medical records 2002.}.

A surgical team consisting of Doctors, Nurses, Anaesthetists and other support staff, perform the operations. Doctors work according to their firms. A Consultant heads each firm and each individual firm is responsible for the pre-operative, the intra-operative and the post-operative care of the patient. The post-operative cases are managed in post-natal wards, B 11, BO 1, BO 3 and C 11.

Caesarean section operations have a long history originating from Egypt, Asia, and Europe. The first recorded successful caesarean operation was done in the British Empire. This was conducted by a woman called James Miranda Stuart Barry between 1815 and 1821, who performed the operation while

masquerading as a man in the British army in South Africa {British National Library of Medicine 1996}.

The indigenous healers in Kahura, Uganda also conducted successful caesarean section operations {Felkin. R.1879}. While Barry applied western surgical techniques, nineteenth century travellers in Africa reported instances of indigenous people successfully carrying out the procedure with their own medical practices. In 1879, for example, the British traveller, Felkin, witnessed caesarean section operation being performed by Ugandans. The healer used banana wine to semi-intoxicate the woman and to cleanse his hands and her abdomen prior to surgery. He used a midline incision and applied cautery to minimise haemorrhaging. He massaged the uterus to make it contract but did not suture it. The abdominal wound was pinned with iron needles and dressed with a paste prepared from roots. Patients recovered well and Felkin concluded that the technique was well developed and had been clearly employed for a long time. Similar reports came from Rwanda where botanical preparations were also used to anaesthetise the patients and promote wound healing.

While many of the earliest reports of caesarean section issues are from the remote parts of Europe, the United States and from such places far from the latest development in western medicine, it was only with increased urbanisation and growth of Hospitals that, the Caesarean operation began to be performed routinely.

By the end of the second half of the nineteenth century large numbers of special Hospitals sprang up through out the United States and Europe. During this time, the operation for caesarean section was transformed both technically and professionally. A new era in surgical practice began in 1846 in Massachusetts General Hospital when Dentist William Morton used diethyl ether while removing a facial tumour. This medical practice of anaesthesia-use, rapidly spread to obstetrics though, initially with some opposition to its use based on the biblical

injunction that women should sorrow to bring forth children in atonement for Eve's sin, however the practice became common among many mothers. By the end of the century, a wide range of technological innovations had enabled the surgeons to revolutionize their practice. The advances permitted the surgeons to operate with precision, cleanse the cavity and record details of the operation and procedures. Women were spared the agony of operations and were less susceptible to shock, which had been a leading cause of morbidity and mortality. Unfortunately, even after such advances in surgery, the surgical techniques of that day still remained as the major problem as they contributed to the appalling high maternal death rates from the wound infections post operatively.

According to one estimate, not a single woman survived Caesarean operation in Paris between the years 1787 to 1876. Surgeons were afraid to suture the uterine incision because they thought that the internal stitches, which could not be removed, might end up with infection and cause uterine rupture in subsequent pregnancies. They believed the muscles of the uterus could contract and close spontaneously, such was not the case. As a result a lot of women died due to loss of blood, but more due to wound infections {British National Library of Medicine, 1996}.

Even though the surgical techniques of today have greatly improved, the problem of postoperative Caesarean section wound infection is still significant. The situation is by no means any different at the University Teaching Hospital, where, in the month of August 2002, the prevalence rate of caesarean wound infection was 10%. {UTH hospital medical records 2002}.

The risk of developing a surgical wound infection is largely determined by 3 factors:-

1. The amount and type of microbial contamination of the wound,

2. The condition of the wound at the end of the operation (largely determined by surgical technique and disease processes encountered during the operation,) and
3. Host susceptibility, that is, the patient's intrinsic ability to deal with microbial contamination. These factors interact in a complex manner. For example, a wound in healthy tissue is resistant to infection even when contaminated with many microorganisms but a wound containing foreign or necrotic material is highly susceptible to infection even if few microorganisms are present. Measures intended to prevent surgical wound infections are directed at all factors just mentioned. Since most infections are acquired in the operating room and good surgical practices are crucial to their prevention, most preventive measures should be directed at influencing the practices of the surgical team.

Measures aimed at preventing microbial contamination of the wound begin before the operation. One important pre- and post-operative measure is the treatment of active infections. A patient, who has an active bacterial infection, even if it is at a site remote from the surgical wound, has a greater risk of wound infection than does an uninfected patient. Treating a "remote" infection that is present before or after an operation is believed to reduce the risk of wound infection. Other pre-operative measures involving the patient are keeping the pre-operative hospital stay short, avoiding hair removal or, if necessary, removing hair with clippers or depilatories rather than a razor, and preparing the operative site with an antiseptic. A short pre-operative stay has been associated with low wound infection rates. Bathing the patient with anti-microbial-containing products has been suggested as an effective pre-operative prevention measure, because it reduces colonization with typical wound pathogens such as Staph. Aureus. Although such bathing is relatively easy safe, and inexpensive. It

has not been proven to reduce colonization with Staph. Aureus in the host's natural reservoir, the anterior nares or to reduce infection rates {Busy, 1984}.

Hair adjacent to the operative site is often removed to prevent the wound from becoming contaminated with hair during the operation. However, several studies have suggested that shaving with a razor can injure the skin and increase the risk of infection. Clipping hair, using a depilatory or no shaving at all has been suggested in place of shaving. Results of some studies suggest that if shaving is necessary, it should be performed immediately before the operation.

The skin at the operative site is thoroughly cleaned to remove superficial flora, soil, and debris before the operation to reduce the risk of contaminating the wound with a patient's skin to kill or inhibit more adherent, deep, resident flora. A patient's pre-operation skin preparation is defined as " a safe, fast acting, broad-spectrum, anti microbial and disinfectant-containing preparation, which significantly reduces the number of micro-organisms on intact skin {Haley 1981,Wonder [cdc.gov/prev/guid](http://cdc.gov/prev/guid).}

The surgical team must also take pre-operative measures to prevent microbial contamination of the wound. Contamination from the surgical team may result from direct contact, usually with hands or from shedding from skin or mucous membranes. Transfer of micro-organisms from hands to the wound is reduced by scrubbing the hands and wearing sterile gloves. The surgical scrub is designed to kill or remove as many bacteria as possible, including resident bacteria. A surgical scrub preparation is defined as: "a non irritating anti microbial-containing preparation that significantly reduces the number of micro-organisms on the intact skin. A surgical hand scrub should be broad-spectrum, fast-acting, and persistent {Haley. 1981, Wonder [cdc.gov/prev/guid](http://cdc.gov/prev/guid).}

The ideal duration of the surgical scrub is not known, but times, as short as five minutes appear safe once hands are scrubbed, sterile gloves act as an additional

barrier to transfer of micro-organisms to the wound. However, bacteria can multiply rapidly under gloves and can contaminate the wound through punctures in gloves, which occur frequently; use of surgical hand scrubs before putting on gloves should retard bacterial growth.

Air is also a potential source of micro-organisms that can contaminate surgical wounds; its role in wound infections has been demonstrated in certain clean operations, such as operations in which a foreign body is implanted. Operating room (OR) air is often contaminated with micro-organisms that are usually attached to other airborne particles such as dust, lint, skin squames, or respiratory droplets. Many of these micro-organisms are potential pathogens. The number of viable airborne micro-organisms for the given count of OR ventilation is largely proportional to human activity. Greater numbers of airborne micro-organisms can be expected with increased number of persons, especially if OR doors are being opened and the persons are moving or talking.

Airborne contamination decreases with, decreased number and activity of personnel, Increased ventilation that dilutes contaminated air with relatively clean filtered or outdoor air, Ultraviolet light, which kills micro-organisms, and proper use of occlusive clothing, masks, and gloves, which reduce shedding into air. Movement or activity in the OR can be decreased by closing the OR door and by limiting the number of personnel in the OR and adjacent corridors, in addition to limiting unnecessary activity. This is due, in great part, to adequate sterilisation of surgical devices, ventilation system that provide clean air, and adequate cleaning of the OR, environmental culturing and special cleaning after "dirty" cases are not recommended. There is no evidence that special cleaning procedures, for example, "dirty case routines," are necessary. Some architectural designs incorporated into O.Rs may be useful in maintaining a clean environment. Others, however, such as floor plans including a central clean area and a peripheral traffic corridor, have not been proven to be especially useful.



In addition, tacky or antiseptic mats placed at the entrance to OR suites to reduce carriage of micro-organisms on shoes or stretcher wheels have not been shown to reduce the risk of infection. {Auerbach, 2001}.

The most important measure to prevent wound infections is operative technique. Poor technique can result in inadvertent contamination of the wound for example, an accidental perforation of the bowel during an abdominal operation, may not only prolong the operation, but also lead to deposition of bowel contents on to the wound and may result in a wound that cannot adequately resist infection because it contains devitalized tissues or foreign bodies. Since the risk of wound infection increases with the length of the operation, an expeditious operation is important. However, the surgeon must balance the need to operate quickly with the need to handle tissues gently, reduce bleeding and hematoma formation, eradicate dead space, and minimize devitalized tissue and foreign materials in the wound. Other prevention techniques are not as well established as those just mentioned but appear prudent to use when possible. These are, the use of the fine and monofilament rather than thick or braided suture and the minimal use of suture and cautery. Techniques apply not only to a surgeon's skill in handling the wound, but also to skill in supervising the surgical team and maintaining professional decorum that facilitates expeditious and successful operations. Poor discipline in the OR can result in mistakes and sloppy aseptic technique.

Once a surgeon has finished training, surgical habits might not be easy to change, but improvement may be stimulated by calculating and informing surgeons of their rates of wound infections. Traditionally, such efforts have been primarily focused on measuring the surgical wound infection rates following clean operations and reporting these rates to practising surgeons. Two recent reports, however, demonstrate the effectiveness of not limiting surgical wound surveillance and reporting programs exclusively to clean operations. The first report, from the CDC SENIC Project {1994}, showed that establishing an

infection surveillance and control program which included reporting surgeon-specific rates led to a reduction in hospitals overall surgical wound infection rates of approximately 35%. Moreover, the report indicated that programs reporting such surgical wound infection rates were just as effective in reducing infection rates in contaminated or dirty cases as in clean or clean-contaminated cases. The other report, a 5-year prospective study in a large Veterans Administration Medical Centre that involved surveillance and reporting of clean, clean-contaminated, and contaminated surgical wound infection rates, demonstrated a 55% reduction in the incidence of surgical wound infections and a savings of nearly \$750,000 in hospital costs over the study period. Overall wound infection rates and clean-contaminated wound infection rates were significantly lower than baseline rates in each year of the study.

The post-operative period usually does not contribute greatly to the risk of surgical wound infections. Nevertheless, wound can become contaminated and later become infected if they are touched by contaminated hands or objects after the operation, especially if the wound is left open or if a drain is used. Until wound edges are sealed and the wound is healing (about 24 hours after the operation for most wounds), wounds are covered with sterile dressing to reduce the risk of such contamination. A transparent, semi permeable membrane dressing has been developed for use on wounds because the dressing does not need to be removed for the wound to be observed; the effect of the use of this dressing on wound infection rates is unknown. Most dressings are occasionally removed to observe the wound; the frequency of removal depends on such factors as the type of wound and the presence of infection. The current practice at UTH in the postnatal units is to remove the dressing on the second post-operative day. A daily dressing with spirit is then done and the alternate sutures are removed by the fifth post-operative day. All stitches will have been removed by the seventh post-operative day.

1.2 STATEMENT OF THE PROBLEM.

The rate of postoperative Caesarean section wound infections among women who had under gone Caesarian operations at the University Teaching Hospital was of great concern to the UTH Board of management. In the year 2000, 1399 cases of caesarian section were performed at the Hospital while 1891 cases were performed in 2001.This was 492 cases more than that performed in 2000. The table 2 below, shows the number of operations conducted at UTH between 2000 to the year 2001.

TABLE NO.2 NUMBER OF CEASREAN SECTION DONE AT UTH.

YEAR 2000

YEAR 2001

Month	No. C/S cases	Ave/Day Approx.	Month	No. C/S cases	Ave/Day Approx.
Jan	95	3.	Jan	145	5
Feb	101	3	Feb	146	5
March	110	4	March	171	6
April	109	4	April	200	6
May	105	3	May	164	5
June	94	3	June	138	5
July	119	4	July	179	6
August	140	5	August	160	5
Sept	130	4	Sept	158	5
Oct	122	4	Oct	151	5
Nov	142	5	Nov	131	4
Dec	132	4	Dec	148	5
Total	1399	Ave. 4	Total	1891	Ave. 5

{U.T.H. Medical Records, 2002}

There was a 10% prevalence rate of Caesarean section wound infection during August of 2002.

The table below shows the prevalence rate of Caesarean wound infection in the post natal wards at UTH, {UTH 2002}

Table No. 3

Year 2002	Ward	Doctors' Firm	No. C/S in the ward	No. C/S infected
	C11	C	4	none
	B03	D	7	1
	B11	A	6	1
	B13	All	2	none
	B01	B	1	none
		Total	20	
Prevalence rate				10%

{UTH hospital medical records 2002}

Post-Caesarian wound infections consume a substantial amount of resources, {Human, finance and material resources.} Approximately 80% to 90% of the patients who have Caesarean wound infection receive anti-biotic therapy; in addition to the daily wound care. The cost of the surgical supplies and antibiotics to treat surgical wound infections at U.T.H in the year 2001 alone was in excess of K 1 566 839 940. {UTH Purchasing and supplies dept.2002}. Such costs incurred by the Hospital eventually spills over to the Government in social and economic terms.

Table No.4 Summary of Purchase for Medical/Surgical Supplies. UTH. Year 2001

SS.NO	MONTH	EXPENDITURE	TOTAL
1	Jan	K 69 875 165	
2	Feb	K 34 465 998	
3	March	K 58 387 872	
4	April	K 54 233 271	
5	May	K 59 344 444	
6	June	K 29 947 320	
7	July	K 42 850 560	
8	August	K 305 681 000	
9	Sept	K 14 860 000	
10	Oct	K 39 486 000	
11	Nov	K 29 486 000	
12	Dec	K 40 0710155	
		SUB-TOTAL	K 775 739 940.00

1	ANTIBIOTICS		
	Jan to Dec	SUB-TOTAL	K 791 100 000.00
		TOTAL	K 1 566 839 940.00

In a study by Plowman et al {2000}, the research findings, in an England NHS survey revealed that, patients with surgical wound infections post operatively, had a 10% chance of dying, there was an extra cost of £3,154 spent on the health care and an extra six days of work created for the staff. The overall economic burden was £1billion per year and affected one in ten patients.

Another study by Dr Lydon Rachelle, at the University of Washington School of Nursing said, "The cost implication for the Hospital to treat caesarean wound infections are enormous, apart from the financial drain, there is disruption of early parenting and an increased family burden" {Lazare and Burgess, 1996}.

80% of women who have caesarian section are more likely to be re-admitted to Hospital after giving birth than those women who have assisted deliveries. {Hunt 1996}.

The complications resulting from post-operative caesarean wound infections, include, increase in the morbidity for the patients with additional risks such as the likelihood to develop uterine infections, appendicitis, pulmonary and gall bladder problems {Simmons .1982}.

There have also been increased reports of abdominal distension at U.T.H following caesarean section operations. Most of these infections and abdominal distensions are seen within the first four days post operatively probably, suggesting that, the source could be from the operating Theatre. As Simon notes that "60% of infections occurring within a few days after the operation result from the Theatre" {Simon, 1982}.

A US study of more than 250 000 births by caesarean section concluded that complications including hysterectomy were worse for women who had caesarean

operations than those with assisted vaginal deliveries. Women who had caesarean section operations were more likely to have hysterectomies done in the near future {Hunt 1996}.

Patients who have caesarean wound infections experience stress of illness and prolonged Hospitalization. This affects the patients physically, socially and psychologically because they are unable to carry out their daily activities as planned before the operation, they are worried about their families, their jobs and in some instances; the mothers are the breadwinners. The patients also feel burdened to adjust to the Hospital routine and daily schedules of being visited, given food and drugs by other people . The family suffers loss of their member's presence; this may result into disruption of the family system because of the inability to get financial and psychological support. The effect of this to the children is that, they will lack significant role models for their development and functioning due to the absence of the mothers. Discipline for the children often becomes difficult or a problem as they act out their anger and depressive feeling about the absence of the mother. The absence of the mother due to prolonged illness and long stay in the hospital because of complications of wound infection can have an added disadvantage of affecting the development of the child {Wilson and Kneil, 1989}.

Women who have post –caesarean wound infection experience hardships in sustaining the long stay in the Hospital, the family members incur a lot of expenses in traveling to visit the patient and provide for the patient. Equally, the Hospital spends a lot of resources to provide for the patients as a result of extra bed space created by the patients who develop wound infections. The number of the health workers especially the Doctors and the Nurses against the number of patients is so high so much that, it is affecting the standards and quality of care being delivered. The Nurse- patient ratio, for example, in the surgical wards is at an average one nurse to fifteen patients. In the Medical wards, the nurse-

patient ratio is at an average of one nurse to eighteen patients. The low staffing levels at the institution appear to have impacted negatively on the quality of care and this is seen from the high prevalence rate of Caesarean section wound infections.

According to Meera et al{1983}, it is reported that most Hospitals are aware of such infections and in spite of studies, there are still increasing reports of high prevalence of wound infections in Hospitals. The problem at the University teaching Hospital has been such that those affected by Caesarean section wound infection have had delayed recovery and often an increased length of stay, producing lasting sequelae and requiring extra investigations, management and nursing care. Therefore, the prevention or reduction of such kind of wound infection is relevant in the light of trying to provide quality care to the patients.

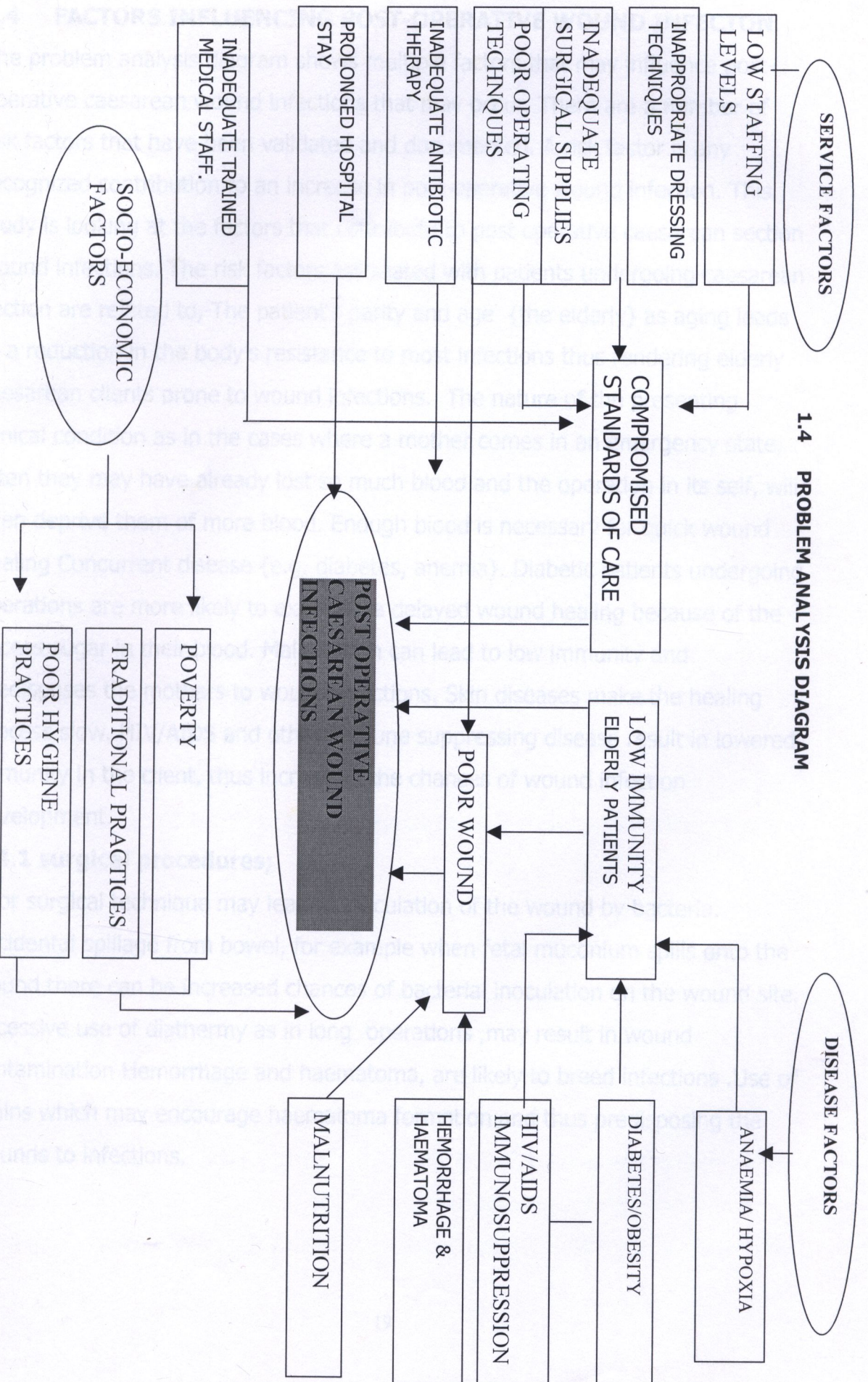
The U.T.H. Management, through the infection control committee, began addressing this problem of high prevalence of post caesarean wound infections by conducting Hospital surveillance. One such surveillance was conducted by Chanda {1994} on post-caesarean hysterectomies which were done as a result of post –caesarean wound infection. The study findings indicated that the hysterectomies were done due to the development of gangrene after Caesar.

In another study by Burges {1987}, a senior Lecturer at the Post Basic Nursing Department UNZA revealed the prevalence rate of infected caesarean section wounds at 19.5% in the year 1987.

The investigator would therefore like to find the answer to the question, " What are the contributing factors to incisional wound infections in post caesarean operations at U.T.H.?"



#### 1.4 PROBLEM ANALYSIS DIAGRAM





## **1.4 FACTORS INFLUENCING POST-OPERATIVE WOUND INFECTION.**

The problem analysis diagram shows multiple factors that may influence post-operative caesarean wound infections that may occur. There are a number of risk factors that have been validated and documented. A risk factor is any recognized contribution to an increase in post-operative wound infection. This study is looking at the factors that contribute to post operative caesarean section wound infections. The risk factors associated with patients undergoing caesarean section are related to, The patient's parity and age {the elderly} as aging leads to a reduction in the body's resistance to most infections thus rendering elderly caesarean clients prone to wound infections. The nature of the presenting clinical condition as in the cases where a mother comes in an emergency state, often they may have already lost so much blood and the operation in its self, will even deprive them of more blood. Enough blood is necessary for quick wound healing Concurrent disease {e.g. diabetes, anemia}. Diabetic patients undergoing operations are more likely to experience delayed wound healing because of the excess sugar in their blood. Malnutrition can lead to low immunity and predisposes the mothers to wound infections. Skin diseases make the healing process slow. HIV/AIDS and other immune suppressing disease result in lowered immunity in the client, thus increasing the chances of wound infection development.

### **1.4.1 surgical procedures;**

Poor surgical technique may lead to inoculation of the wound by bacteria. Accidental spillage from bowel, for example when fetal muconium spills onto the wound there can be increased chances of bacterial inoculation on the wound site. Excessive use of diathermy as in long operations ,may result in wound contamination Hemorrhage and haematoma, are likely to breed infections .Use of drains which may encourage haematoma formation and thus predisposing the wounds to infections.

#### **1.4.2 Preoperative patients care,**

Inadequate antibiotic therapy, if these are given inappropriately, they may cause resistance to some of the micro-organisms and therefore result in delayed healing of wounds. Inadequate skin care may still leave deposits of infective agents on the skin resulting into an infected wound later. Prolonged pre-operative stay may predispose the mothers to nosocomial infections, which can increase their chances of getting their wounds infected.

#### **1.4.3 Theatre design and planning,**

Staff with skin infections in the theatre, should not be admitted as they may transfer the infection on to the exposed wounds. Unrestricted movement in the theatre, which can lead to increased traffic of micro-organisms and deposition of the same on the wounds of the patients. Inadequate use of theatre clothing, this can result in the penetration of the micro-organisms on the wounds of the patients from the exposed skin. Open containers of solutions {for example, saline or disinfectants} often grow some micro-organisms which can lead to infection of the wounds. Inadequate operating theatre ventilation, this leads to poor ventilation and a damp atmosphere containing a number of micro-organisms, which can lead to wound infections. Simultaneous operations in the same room, this results in increased chances of micro-bacterial inoculation onto the wound.

#### **1.4.4 Equipment,**

Inadequate sterilization and disinfection, these result in the deposition of micro-organisms on to the wound. Re-use of inadequately prepared invasive devices also ends up depositing some micro-organisms onto the wounds. Inadequate training of medical and nursing staffs that end up providing sub standard care and surgical techniques. It has been generally accepted that use of drains in caesarean section provides access for bacterial entry via colonization and hands. Drains should not be used as an alternative to good homeostasis. The closed system of wound drainage is preferred where drainage is essential. Open wound

drains are not considered appropriate and may lead to an increase in wound infection. Shaving is no longer recommended. Hair is removed with clippers where necessary. Shaving if thought necessary should be performed in the operating ward. Prolonged shaving leaves the skin bruised and with contusions which could increase the risk of colonization and infection. It is essential that the operating site is well disinfected before making an incision. A rapid reduction of skin flora is required. 70% of ethanol or isopropanol is an effective disinfectant. However, alcoholic solutions containing long acting skin Disinfectants, such as chlorhexidine or povidine iodine are preferred. The excessive presence and movement of staff contributes to an increase in air born bacteria contamination. In the case of bacterial skin infections dispersal of pathogens {Staph..aureus, beta hemolytic streptococci infections} may be large. It is advisable to keep the operating staff to a minimum. Staff with a boil or septic lesion of the skin or eczema colonized with Staph.aureus should not be allowed in the operating theatre.

To avoid the transfer of pathogens into the operating suite clothes intended for work in the suite should not be worn in patient care outside the suite. The operating team should wear sterile gowns and gloves. Any open containers of solutions should not be used as these may result in contamination with the air borne contaminants and growth of gram-negative bacteria, which may colonize the wound. Disinfectants may be inactivated. Liquids should be stored in bottles until immediately before use. The water baths should be disinfected before use. To prevent contaminated air from reaching the operating theatre, mechanical ventilation is recommended. If windows have to be left open it is advisable to cover them with fly or insect proof netting.

## **1.5 JUSTIFICATION OF THE STUDY.**

The Investigator has looked at the increased rates of Post –Operative Caesarean wound infections at the Institution, There has also been a corresponding increase in the incidence of post-operative abdominal distension following

Caesarean operations. The cost implications for the Hospital to treat the infections are enormous and consume a considerable amount of the Health care Finance. For example, about K 1, 566 839 940, in the year 2001 was spent on the purchase of surgical supplies and antibiotics {UTH Purchasing Dept. 2002}. A study also by Plowman et al {2000}, confirms the enormous costs associated with the incidence of wound infections as in a study at one hospital in England, where, the overall hospital acquired infections resulted in an extra 14 days for a patient's in the hospital, an increased chance of 10% dying, an extra cost of 3154 British pounds, spent on the health care and six extra days work from the staff. The study concluded that the economic burden for the hospital was about £1 billion per year and affected one in ten patients. The mean length of stay was eight days for the unaffected patients but it was considerably longer for those with infected wounds, the mean cost of treatment was 1628 British pounds, for unaffected patients, it was considerably greater for those with any infection.

The Investigator was therefore prompted to under take this study because of the belief that, in spite of the difficulties that the Institution was going through, It was possible to reduce the infection rate as long as, a re-evaluation of the Factors contributing to caesarean wound infections was carried out. Measures to reduce the infection can be worked out from the identified factors. This would ultimately reduce of the excess costs that the Hospital is incurring. It is the hope of the Investigator that the importance of this study will provide scientifically supportive evidence in so far as the causes of caesarean wound infections are concerned, among the mothers who have caesarean section operations done at the University Teaching Hospital. This study will also benefit the investigator in gaining a lot of knowledge and experience from the review of literature and practical experience to be gathered during the time of data collection.

## **1.6 OBJECTIVES OF THE STUDY.**

### **1.6.1 GENERAL OBJECTIVE.**

To investigate factors contributing to post-operative Caesarean section wound infections at the University Teaching Hospital.

### **1.6.2 SPECIFIC OBJECTIVES.**

- 1.6.2.1 To identify pre-operative preparations of patients under going caesarean section operation.
- 1.6.2.2 To determine scrub-up nurse intra-operative care among patients under going caesarean section operation.
- 1.6.2.3 To determine surgeon intra-operative care among patients under going caesarean section operation.
- 1.6.2.4 To find out the post-operative out-come of caesarean section incisional wounds.
- 1.6.2.5 To determine factors contributing to incisional wound infections in post caesarean section operations
- 1.6.2.6 To make recommendations for implementation
- 1.6.2.7 To identify further areas of Research.

## **1.7 HYPOTHESES.**

- 1.7.1 Poor surgical techniques lead to high rates of post-operative caesarean section wound infection
- 1.7.2 Emergency cases are prone to caesarean wound infection than elective cases
- 1.7.3 Poor dressing techniques increase chances of Caesarean section wound infection.
- 1.7.4 Prophylactic antibiotic therapy peri-operatively lead to reduced rates of Postoperative caesarean wound infections.
- 1.7.5 Poor social –economic status leads to post operative Caesarean wound infections

## **1.8 OPERATIONAL DEFINITIONS.**

**1.8.1 Wound** A break in the continuity of the skin integrity due to an incision made in the operating Theatre department

**1.8.2 Clean wound** Absence of pus, slough and/or necrotic tissue on a wound.

**1.8.3 Dirty wound** Presence of pus slough and/or necrotic tissue on a wound.

**1.8.4 Wound infection** Presence of pus, necrotic tissue and slough on a wound

**1.8.5 Nosocomial infection.** Infection acquired within the Hospital

**1.8.6 Peri operative** Period before during and after the operation

**1.8.7 Pre-operative** Period before the operation begins.

**1.8.8 Intra-operative** Period during the operation.

**1.8.9 Post operative** Period after the operation.

**1.8.10 Caesarean section** Delivery of a foetus by an incision through the abdominal wall and uterus.

**1.8.11 Contamination** .Inoculation of An object with pathogenic organisms.

**1.8.12 Micro-organism** Minute phagocyte that causes disease.

**1.8.13 Susceptibility** Lack of resistance to infection of an individual.

**1.8.14 Class one** These are wounds that have the least potential of getting contaminated during surgery.

**1.8.15 Prophylaxis anti-biotics** Refers to a brief course of an anti microbial agent administered just before an operation begins in order to reduce the microbial contamination to a level that will not overwhelm host defence.

VARIABLES AND CUT OFF POINTS

VARIABLE	CUT OF POINTS	INDICATOR
PRE-OPERATIVE CARE	ADEQUATE	Respondent is bathed, shaved, gowned, catheterized, starved, and given prophylaxis antibiotics
	INADEQUATE	Respondents has less than three of the above activities done
INTRA OP. CARE	ADEQUATE	Aseptic technique followed with very few or no chances of contamination
	INADEQUATE	A lot of contamination observed
POST-OP. CARE	ADEQUATE	Aseptic technique followed with little or no contamination during wound dressing
	INADEQUATE	A lot of contamination observed during wound dressing

## **1. CHAPTER TWO.**

### **2.0 LITERATURE REVIEW.**

#### **2.1 INTRODUCTION.**

Caesarean section operation has become an increasingly frequent method of delivery, an important means of making sure that many babies who are at risk from antenatal and labour problems are born alive. It is the only means of saving the lives of some mothers. These major benefits have to be weighed against the possible danger to the mother from complications, which can occur during or soon after the operation and even in the future pregnancies. Moreover the delivery of the baby via caesarean section is not always safe to the baby. Caesarean section operations carried out by experienced Surgeons, in a well run and equipped hospital, on healthy patients are associated with little risks. The risks are however higher when the surgery is carried out by less experienced operators, under less satisfactory conditions, for patients who are poorly nourished and unlikely to seek good care in many future pregnancies.

The mother and baby can face the following risks from a caesarean delivery. The mother can die due to hemorrhage. Infection or anesthetic complications. Hemorrhage comes from the uterine wound edges as well as from the placenta site. The risk is greater if patients are severely anemic or in shock before the operation begins or the blood replacement during the operation is delayed or inadequate. Infection, which complicates caesarean section, can cause peritonitis septicemia, abscess or poor healing of the uterine and abdominal wounds, or a burst abdomen. The risk is greater for patients who have anemia, are under-nourished, have low resistance to infection as in HIV/AIDS, or whose infections are due to organisms that are resistant to common antibiotics. Dangerous organisms like these can come from the hospital environment or its staff. Anesthetic complications are more likely to occur in-patients who need emergency surgery.



The other complications to the mother may be, damage to the bladder, uterus or bowels. The rupture of the uterine is a possible future risk if a further pregnancy or labour follows a caesarean section. Long term complications can be intestinal obstruction due to adhesion formation, an incisional hernia caused by inadequate suturing or infection of the abdominal wound or chronic urinary tract infections following pre-operative catheterization.

To the baby, the unexpected prematurity can result from an elective caesarean section because the operation may be carried out before the onset of labour. The babies are also prone to intrauterine hypoxia after the anesthesia has began if the mother's blood pressure falls or if the mother is not adequately ventilated and her blood is poorly oxygenated, neonatal respiratory depression can complicate to intra-uterine hypoxia. It can also occur due to depressant drugs like thiopentone. The risks are real; therefore, caesarean section operation should never be carried out without a clear indication.

A Caesarean delivery can be made safe for the mother and the baby by good, pre-operative and post-operative management, well-chosen, careful anesthesia and the use of sound surgical techniques {Beryl 1986}. One of the common complications of Caesarean delivery at UTH has been the occurrence of caesarean wound infection.

The US Centre for Disease Control {1992}, defines caesarean wound infection under the following criteria; the infection must occur within 30 days of surgery, The infection must only involve the skin and the subcutaneous tissue, There must be at least one of the following; Purulent discharge from a superficial infection, Organisms isolated from aseptically obtained wound culture, There must also be at least one of the following signs of infection; Pain or tenderness, Localized swelling, Redness or heat.

In general however, a wound can be considered infected if purulent pus drains from it even without confirmations of a positive culture. This clinical definition has advantages compared to those based on the culture results because a positive culture does not necessarily indicate infection, since many wounds infected or not, usually are colonised by some bacteria. Other types of infected wounds may not yield pathogenic organisms by culture, because some pathogens are fastidious and certainly in other areas culture techniques may be inadequate. The patients at times would have received anti microbial therapy thus mimicking the infection {Haley 1981}

The great majority of caesarean wounds heal quickly and cleanly, thanks to the transformation that came from the works of Louis Pasteur and Joseph Lister. Wound sepsis whether infected at a Hospital or by a surgeon is still a common problem world over.

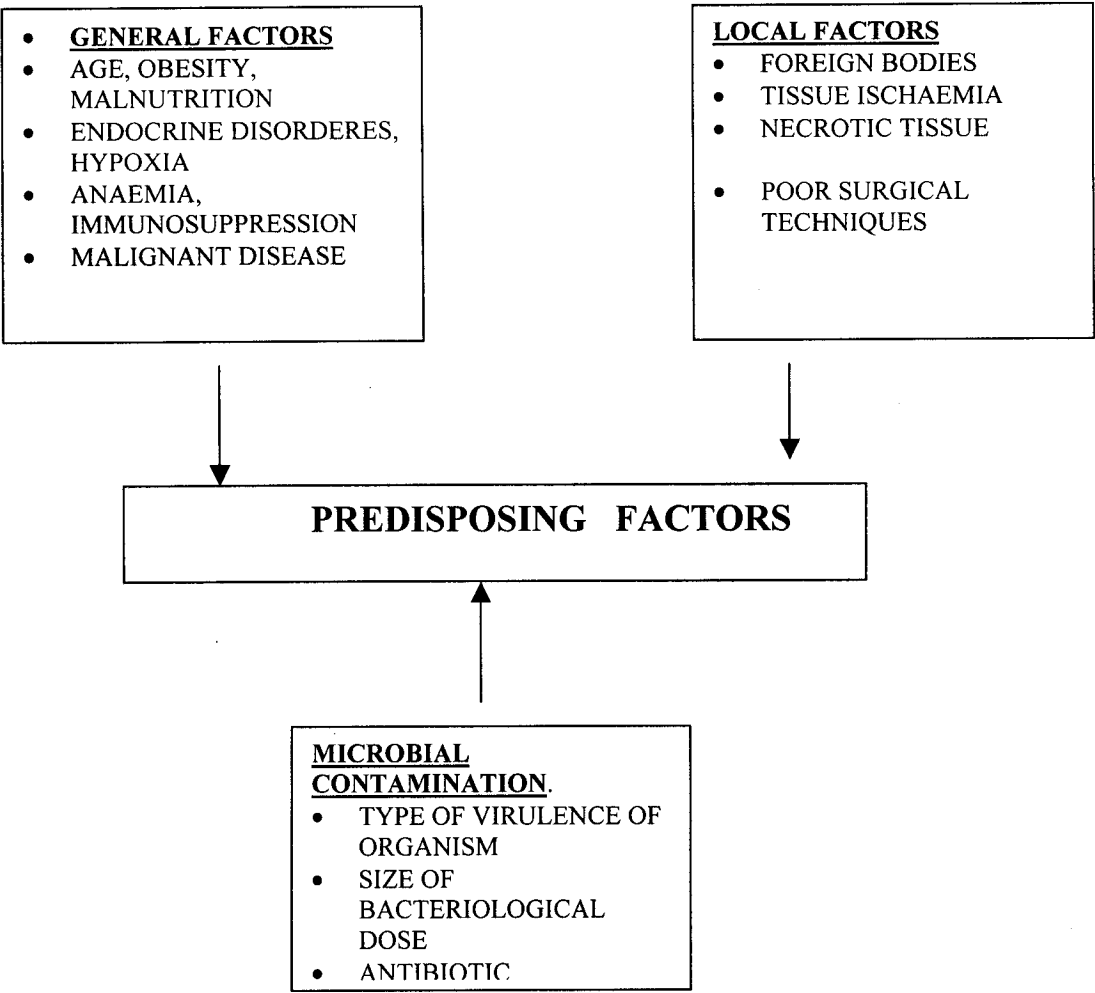
A caesarean section wound is susceptible to infection from the moment it has been opened to the time that it has soundly healed, In other ways, It is exposed to danger first in the operating room and then afterwards, in the wards. There is a general tendency to believe that either the ward or the operating room is dominant as a place where the infection occurs, such opinion on the relative importance of the genesis of the infection are often determined by fashion and prejudice and not by facts, at some point, the introduction of aseptic techniques was strongly followed by the belief that any infection that occurred must have necessarily done so in the wards. However it is now apparent that caesarean wound infection can occur both in the operating room and in the ward. It also now possible even to determine with precision and certainty where the infection took place. Infection in the operating room can be recognized when strong epidemiological evidence is associated with a clearly recognized fault of techniques whose correction is followed by a striking reduction of sepsis rate.

Other publications have also clearly indicated that operating room and wards have each been responsible for caesarean section wound infections. For example the development of surgical wound infection over a cleanly healing wound, generally suggest operating room infection, discharge of pus, red wound, or fever, within seven days, also indicates operating room infection, Infection appearing later than seven days is thought to be from the wards and wound sepsis, on the other hand, is thought to come from either place {Mayhall,1996}

In the operating Theatre, the source of infection can be either endogenous [from patient himself] or exogenous [from out-side the patient's environment]. Although most of the post -operative-caesarean section wound infection originate from the patient's own micro-flora, some exogenous sources have been implicated. For example there is a large body of knowledge, which suggests that prevention of post-operative caesarean section wound infection is dependent on several factors including. Effective sterilization and disinfection of surgical equipment, good surgical, techniques, good Theatre design, theatre discipline, Restriction of the movement of staff in and during procedures appropriate use of prophylactic antibiotics.

The center also looked at the possible predisposing factors and divided them into three groups; These groups were; General factors Micro -biological contamination Local factors.

FIGURE 2;     **SUB-GROUPS FOR THE PREDISPOSING FACTORS.**



In a study carried out by {Nandi L et al. HKMJ 1999 5 {1}: 82 .6}, it was observed that other factors were also responsible for wound susceptibility to infection, such as the duration of the operation, wound contamination, a pre-existing illness, abdominal operation and three or more diagnosis made at a time.

## 2.2 GLOBAL PERSEPECTIVE

A study by Maggart [2002], in Atlanta, observed that the risk of caesarean section wound infection, when it comes to completing class one surgery, was minimal. The majority of the patients could count on the existing success. As in her recent study {2000}, of 200 thousand surgical cases performed, she found that more than 58% of the class one wounds and 33% of the class two wounds accounting for 91% of total cases done, were infection-free after surgery. Caesarean section is one example of a class one wound, of the 200 thousand surgical cases studied, Class one surgical wounds accounted for more than half 58.21%. The class one wounds have the least potential of getting contaminated during surgery, they exhibit no infection, no inflammation and are non traumatic. They have a 1% to 5% risk of infection.

Parrot et al {1989} highlighted the increase in the number of births by caesarean section in the U.K, rising from 5% in 1970 to 15% in the late 1980s.

The increase in the number of caesarean section can also be seen at UTH. A total of 1399 and 1891 births by Caesarean delivery occurred in the year 2000 and 2001 respectively. There was an increase of 492 births accounting for 35% from the previous year.

An extensive study by Moir-Bussy et al {1984} followed up caesarean section that took place in 31 Centers in England and Wales. A total of 17,500 normal deliveries took place with approximately 13.5% by caesarean section. There definition of infections was those based on the National prevalence Survey, {Meers, 1989}. The Moir-Bussy study {1984} found an infection rate of about 6% with no significant differences in rates between the elective and emergency cases. However, on re-examining the data in 1987,they concluded that wound infection was underestimated in most hospitals because they did not send sufficient swabs for examination. They estimated a true figure to be at about 14% for wound infection following caesarean section.

Frost et al {1989} studied caesarean section over a period of two years and no incidence of infection occurred during the study of patients who had undergone elective caesarean section. The study also showed an increase in the prophylactic antibiotic use. The Moir study {1989}, highlighted the cost of treating surgical wound infection as being highly significant and that there was an extra two and half days stay for the patient in the hospital who had developed wound infection. This approximated figure only applied to the hotel costs and not to drugs, dressing or other treatment.

Moir-Bussy et al {1989} did not find pre-operative shaving methods to have a significant effect on the infection rates, while frost et al {1989} changed their procedure for preparing the patients for surgery in the second year. In the first year, patients were shaved with a razor blade while in the second year; they were shaved with a pair of scissors. The findings of the study indicated that there were no significant changes in the rates of postoperative wound infections. Reports on urinary tract infections varied. For example, Parrot et al {1989} recorded 14.5%. while Leigh et al {1990} reported a change in the infection rates when catheters were used pre-operatively, between 1985 and 1987. In 1985, the procedure was to insert a catheter immediately pre-operatively and leave to drain on a sterile pad. This was removed at the end of the procedure. In 1987, women were catheterized immediately prior to surgery, the bladder emptied and the catheter removed, they found that the study showed a drop in the incidence of bacteriuria and symptoms, which could be associated with early removal of urinary catheter. Catheterization is known to have a major risk of developing a urinary tract infection {Garibaldi 1974}.

A publication by Auerbach, {2001}, on prevention of surgical site infections, recognized that surgical site infections are a common complication of care occurring in 2.5% of the patients after clean wound- abdominal surgery and up to 20% of patients under going intra-abdominal surgeries. Studies following

patients into the post discharge period have reported even higher rates of post-operative infections. These complications increase the morbidity of patients and subsequently consume substantial Hospital resources. Wounds can be classified according to the likelihood and degree of wound contamination at the time of operation.

A widely accepted classification scheme is as follows;

Clean wounds as class one,

Clean contaminated wounds as class two,

Contaminated wounds as class three,

Dirty infected wounds as class four.

Haley. R. {1981}, observed that wound classification assists in determining the extent of wound contamination during surgery and provides a tool for determining surgical site infection as nosocomial or community acquired. Their wound infection rates were; Clean wounds 1.2%; Clean contaminated less than 10%; Contaminated 15%–20%; Dirty surgery 40%.

Ellis {1980] states that a clean wound is one which no known contamination occurs, in this case wound infection is very rare being less than 2%. If infection however occurs, the possible sources of contamination are from;

The patient's skin, infection introduced in the Theatre and Poor technique in wound care.

Some of the factors that may contribute to post-operative caesarean wound infections are; the use of unsterilised equipment and sutures, absence of Positive pressure ventilation in the operating rooms, lack of Laminar airflow systems in high-risk areas, like the dirty corridor, inclusion of infected staff during operating sessions, inadequate Surgical skin preparation of patients pre-operatively and Inadequate mechanical bowel preparation of patients pre-operatively, Poor surgical techniques.

Some global initiatives have been taken to prevent the occurrence of postoperative wound infections. For example, a large body of evidence supports the premise that post-operative caesarean section wound infections can be prevented by administration of appropriate antibiotics. Two National organizations; The Federal Center for Disease control and prevention {CDC} and The American society for health systems Pharmacists [ASHP], have recently synthesized this vast Literature to produce comprehensive Guidelines regarding the administration of the prophylactic antibiotics across a broad range of procedures. Anti-microbial prophylaxis refers to a brief course of an anti-microbial agent administered just before an operation begins in order to reduce intra-operative microbial contamination to a level that will not overwhelm host defense and result in infection. The use of peri operative antibiotic therapy has been shown to prevent post –operative surgical wound infections, when employed rationally, significant reductions in mortality as well as morbidity as well as saving resources can be demonstrated.

Benefits of anti-microbial prophylaxis were first demonstrated in animal experiments, by {Miles, 1950} who showed that streptomycin protected against pseudomonal dermal infections in animals if the antibiotic was given within three hours of bacterial inoculation. Miles {1950} referred to this as the decisive period.

Burke {1972} several years later showed quite conclusively that administration of penicillin in guinea pigs inoculated intra-dermal with streptococcus Aureus prevented infection if the penicillin was given shortly before or after the inoculation of the bacteria. If the administration of the penicillin was delayed more than three to four hours after bacteria inoculation, the prophylaxis effect was lost. This decisive period probably represents the time required by the bacteria to establish an infection. Once an infection has established, prophylactic antibiotics become useless. Classen et al, {1980}, demonstrated the significance



for this clinical setting some thirty years later. Classen {1980} prospectively monitored 2 847 patients under-going elective clean contaminated procedures. Of the 1,708,patients who received antibiotics during the two hours prior to incision, the infection rate was 0.6% This contrasted with the infection of 1.4% in 282 patients who received antibiotics in three hours and 3.3% infection rate in 488 who only received antibiotics in three or more after the incision.

In 1984, the center for disease control began developing a series of Guidelines for the prevention and control of Hospital acquired infection or nosocomial infections.

The guidelines incorporated the following;

Recommendations for specific generic anti-microbial ingredients for skin preparation skin antiseptics and hand washing antiseptics.

Recommendations for removal of hair pre-operatively emphasized clipping of hair rather than shaving,

Recommendations for the operating room ventilation to be to a minimum of 20 air changes per hour. These recommendations presented in the Guidelines were chosen primarily on the basis of importance to infection prevention, feasibility of implementation and the potential cost to the Hospital. {Haley.R. 1981,}

On the contrary, other studies on prevention, indicate that routine sampling of inanimate environment, particularly surfaces, for culture studies, does not contribute to the prevention of nosocomial infection or predict when most post-operative infections are most likely to occur since, rates of nosocomial infections have not been correlated with levels of general environmental contamination, standards of environmental contamination are arbitrary.

## **2.3 REGIONAL LEVEL**

A study carried out at by Olatinwo.A. {2000} at Gwagwalada specialist hospital, Abuja, Nigeria, on patients who had under gone caesarean section and

hysterectomy operations indicated that the wound infection rate was 10% and 11% respectively post-operatively.

A randomized study to determine the effectiveness of antibiotic prophylaxis in patients undergoing caesarean section operation was conducted by Mukasa et al in rural Africa, on patients who had hysterectomy or caesarean section operation. He discovered that the prevalence of wound infection had reduced by 14%, Peritonitis and wound dehiscence occurred in-patients who had caesarean operation but did not receive any antibiotic prophylaxis.

In Uganda, it was a common practice to prescribe postoperative parenteral antibiotics to reduce the likelihood of caesarean section wound infection. This approach of antibiotic prophylaxis was challenged by the research of Miles et al {1980}, whose studies show that systemic antibiotics have no effect on primary infections if the bacteria that created the infection were in the tissue less than three hours before the antibiotics were given.

A retrospective study was done at the centre Me'dical Evangelical, {CME}.by Nyankunde,{1992} in the north Eastern of Zaire. A total of 21,599 deliveries were conducted over a period of 13 years. Out of these, there were 76 reported cases of ruptured uterus, following previous uterine surgical wound infection in post -caesarean surgery. 12 patients {18%} died due to septicemia and hemorrhagic shock.

At King Edward VII hospital, Durban, the Caesarean section rate was approximately 23% of the total number of deliveries. A study by Thubisi {1992} to determine the out come of the Caesarean section operation at that hospital revealed that the wound infection rate was 3.8%. The factors contributing to the wound infection rate were attributed to lack of good health infrastructure,

inadequate post –natal care and the continuously deteriorating social – economical conditions.

The increasing rate of Caesarian sections in the Sub-Sahara Africa raises a lot of concerns regarding the complications and subsequent postnatal care. Observations and conclusions have indicated that there is an increase in the surgical wound infections with a deplorable sequel to constitute a major obstetrical problem. {Longombe, 1994}.

Pearse, {1996}, noted that Caesarean operations were not without any complications. Most of the complications of Caesarian section operation were those of increased maternal infections and morbidity, neonatal morbidity in Caesarean section was linked to the premature delivery and the subsequent respiratory distress syndrome. The Caesarean operation was also noted to alter the lung mechanisms and volume. {Pearse et al, 1996.}.

At a Baptist Medical center, in Nalerigu, Ghana, between 1990 and 1993, 2870 deliveries were conducted. The mean number of deliveries over a year was 718. By comparison a mean average of 99 Caesarean section were done annually, {13%} of the deliveries. The most common indicator was obstructed labour, {17.9%}. The most common complication was wound sepsis, {5.6%} {Greenway et al, 1996}.

Another retrospective study in Nigeria designed to determine the incidences of major injuries that occur during paturition, 48,693 deliveries were conducted about 4,622 of these were conducted by Caesarean delivery, {9.5%}. There were 10 cases of severe bladder injuries, 3 of these were as result of repeat caesarean section operations. There was one case of a ruptured bladder.10 women sustained ureteric injuries. There was one case of kidney rapture.

Hemorrhage was profuse in many cases and warranted hysterectomy in 6 of the cases. Internal iliac arteries were ligated in 3 cases. {Onuora et al, 1997}. This is in agreement with Pearse 's study {1996}, which highlighted the fact that Caesarean section operations were not without any complications.

## **2.4 NATIONAL PERSPECTIVE**

A study conducted at Kitwe central Hospital by kasonde Muchemwa {1995} revealed that the average wound infection rate was 8.7% post operatively. The reason given was due the shortages of surgical supplies used to clean and dress the wounds.

At UTH, a study conducted by Gullat and Shama{2001} which looked at the impact of Nurses' strike on the nursing care of the post caesarean section mothers, conducted around April and May, 2001, found the prevalence rates of caesarean wound infection around 6% and 5% respectively. {Gullat and Shams, 2001}.

In another retrospective study conducted by Henry {2001} on post Caesarean wound sepsis at UTH, the results indicate that, of the 245 files reviewed, 15 had post caesarean section wound infection, a prevalence of 6.1%. This actually confirms the study of Gullat and Shama, which had put the prevalence rate at between 5 % and 6%. Among the signs of infection seen were; eleven presenting with pus, one case with wound dehiscence, and two with both pus and wound dehiscence.

In another study by Burges H. {1987}, a senior Lecturer at the Post Basic Nursing Department, revealed the prevalence rate of infected caesarean section wounds at 19.5% in the year 1987.

A study by Paul. Mwansa, {1997}, on caesarean section at U.T.H indicated that the most prevalent complication of caesarean section operation was wound infection standing at 12.7% in 1997.

As a result of caesarean section wound infections, patients tend to stay much longer in the hospital; this was confirmed by Phiri {1987}, in whose study, it is reflected that the majority of patients with wound infections {56.4%} stayed in the hospital longer than eight days.

Another surveillance of surgical wound infections was conducted in UTH.

This was in a study by {Erzah. 1997}, where, out of 232 operations {72 elective and 160 emergency}, 15% of the operations had developed postoperative wound infections. Three of the patients with the infection died.

## **2.5 Summary**

A number of documentation have put the factors contributing to Caesarean section wound infection to include factors such as poor theatre design, which leads to inadequate ventilation and air flow, un sterilized equipment, poor surgical techniques, and poor clinical presentation, at the time of surgery, i.e. the immune status of the body and conditions such as diabetes, anemia and malnutrition, poor health infrastructure, insufficient medical and surgical supplies including inadequate human resources.

The insufficient supply of medical and surgical material has been supported by Kasonde's study {1995} in Kitwe where she found that the main factor attributed to post operative wound infection was due to the inconsistency in the supply of surgical requirements.

Some studies have also shown a reduction in the Caesarean section wound infection rates in some cases to as much as 14% when antibiotic prophylaxis was

used. If catheterization is done just prior to surgery,, bladder is emptied and then catheter removed, some studies have indicated that the incidence of wound infection would drop significantly.

Post-operative caesarean wound infections, whether infected at a Hospital or by a surgeon is still a common problem, it remains a major source of illness in obstetric patients world over. The infections result in longer Hospitalisation and added costs. This is a situation, which is obtaining at UTH where because of large costs involved in the medical and surgical supplies, the hospital has not been able to purchase enough of these supplies. The medical and nursing personnel are not enough. These factors where supported by Shama 's study, {2001}, at UTH where he noted an increase in the post operative caesarean wound infection rates, {5% to 6%}, during the absence of trained personnel on the post-natal wards when there was a strike by nurses, for better conditions of service and improvement of medical and surgical supplies on the wards.

The prevention and control of wound infection depends on pre-operative factors including the surgeon's hands, the patient's skin, reduction of contamination i.e. by hand washing, use of drapes, wound drainage, duration of operation, type of suture material, type of dressing material and correct use of antibiotic prophylaxis.

An alert infection control and monitoring team contributes to keeping the wound infections down in a hospital.

This study will attempt to add on information to the existing literature on the factors contributing to Caesarean section wound infection, in particular at UTH.

## **CHAPTER THREE.**

### **3.0 RESEARCH METHODOLOGY.**

#### **3.1 INTRODUCTION**

Methodology is a study of the manner of collecting data.{ Treece and Treece 1982}.The main aim of this study is to determine factors that contribute to post operative caesarean section wound infection, at UTH. The chapter discusses the design, the research setting, the study population sample selection sample size data collection tool, data collection technique validity and reliability and the ethical plus the cultural considerations.

#### **3.2 RESEARCH DESIGN.**

A Research design refers to a scheme of action for answering the research Question. It is an overall plan for the study {Dempsey and Dempsey 2000}.

A non-experimental descriptive design was used in this study. A descriptive study is one in which a body of data is collected, recorded and analysed {Treece. E.W and Treece. J.W. 1986}.

According to Achola, and Bless,{1995} the purpose of a non-descriptive study is to give an accurate account of characteristics of a particular phenomena, situation, community or person. It also includes the frequency of how some events occur or the proportion of people with certain manners.

A descriptive study was therefore, appropriate because it gave an accurate account of characteristics of the factors that contribute to caesarean section wound infection.

The observation technique was used to collect data. The Research design also allowed for data collection using the review of existing Medical Records.

A systematic collection of data and presentation was followed so as to give a clear picture of the contributing factors to post-operative caesarean section wound infection.

The study was non-experimental because there was no manipulation of variables. For example, the study only described and analysed the research problem without any further steps to intervene or control the variables. In a non-experimental study, the researcher collects data and describes phenomena, as it exists. {Dempsey and Dempsey 2000}. The study was carried out in a natural setting and the phenomena were observed as it occurred.

### **3.3 RESEARCH SETTING.**

A setting is a surrounding in which something is been done.{oxford dictionary,1982}. A research setting is the location where the study will be conducted. {Achola and Bless 1995}.

The study was conducted at the University Teaching Hospital, {UT.H}.

C-Block operating Theatre. This Theatre was set aside for obstetric cases such as caesarean section operations. The Theatre conducted an average of five cases of caesarean section a day. A Registered Theatre Nurse runs it. The department had a total of five Theatre nurses. There were four Doctors' firms that conducted operations from this Theatre. The Firms are A, B, C and D. Other support staff, includes, the Anaesthetists. There were also some auxiliary workers such as the porters and the cleaners.

The researcher chose this place because all Caesarean section operations were done in these theatres and it was also proximal to the residence of the researcher, so that the transport costs to and from the Hospital were reduced during data collection.



**3.4 STUDY POPULATION.**

This is the population that the researcher has access to and actually studies. According to Dempsey and Dempsey {2000,} a target population is total group of individuals, people or things meeting the designated criteria of interest to the researcher. The study population included all mothers who were scheduled for caesarean section operation at the University Teaching Hospital, during the period extending from the 6<sup>th</sup> to the 20<sup>th</sup> of September 2002. The study units were be drawn from the antenatal and postnatal wards. There was no exclusion. All the mothers who were scheduled for caesarean section operation during the specified two-week period of data collection were taken on, regardless of the nature of the clinical condition they presented with.

**3.5 SAMPLE SELECTION METHOD.**

Sample selection is the process of selecting a subject of a population to obtain information about phenomena that represents the entire population {Treece and Treece, 1986}. A convenient sampling technique was used. This was because the researcher did not have any control over the scheduling of patients for caesarean section operations. According to Treece and Treece, convenient sampling utilises the readily available subjects as a means of obtaining a sample.

**3.6 SAMPLE SIZE**

A sample is a part of a whole selected by the researcher. {Treece and Treece, 1986}. Sampling refers to the process of selecting a sample from the population. 50 cases of caesarean section operations were observed. These were mothers pending caesarean section operation either as elective or emergency surgery. A sample of 50 mothers was observed in the peri-operative stages, they were selected by convenient sampling.

### **3.7 DATA COLLECTION TOOL.**

Data collection tool or instrument is equipment used to collect data. Treece and Treece. {1986}. A checklist was used as a data collection tool when observing procedures and collecting data from the patient's records. A Checklist is a prepared list of items with marked columns in which the respondents indicate their participation in a certain activity. {Treece and Treece, 1986}.

Checklists can be used by an observer or by a subject. The lists are usually given some hierarchical arrangement such as traits, habits behaviours or actions. This research tried to elicit the habits, behaviour and some actions observed during caesarean section operations .The advantages of check list are that, It can be completed through mail, It is a useful way of obtaining large amounts of data and the resulting data are in definite categorize, because the subject either does or does not engage in some acts. The distinct disadvantages of the check lists are that, there is no opportunity for the respondent to classify his judgement, it is a rigid method in both the question and the response, extra time must be planned for pre-testing and validating the instrument, the respondent is required to make forced choice response, so each item must be carefully worded and be based on the purpose of research; and it is easy for certain important items to be omitted.

### **3.8 DATA COLLECTION TECHNIQUE.**

Where as the data collection tool is what the investigator intends to use in collecting data, the data collecting technique refers to how the investigator will collect the information for the study. {Treece and Treece, 1982}

Two data collection techniques were used. The techniques were;

By observations and by review of the existing medical records.

### **3.9 THE OBSERVATION TECHNIQUE.**

Observation method involves a systematic selection, watching and recording of behaviour and characteristics of phenomena. {Treece and Treece, 1982} This method was used to check all the peri-operative activities done during a caesarean section operation. The checklist that was developed, tried to measure or elicit the following;

#### **3.9.1 THE PRE-OPERATIVE ACTIVITIES;** such as,

Physical preparation of the patient, [Bathing of the patient]

Removal of hair from the operating site,

Provision of Theatre gowns to the patients.

Gastro-intestinal clearance/ Urinary catheterisation

Prophylactic antibiotic therapy.

#### **3.9.2 INTRA OPERATIVE ACTIVITIES.**

Hand washing, Scrubbing up hands, Gowning, Gloving, Pre surgical skin preparations, Draping of patient, Swab count and instrument count, Observance of sterility during the procedure, Surgical approach, {abdominal incision}, Surgical approach, {wound closure}, Insertion of drain/s, and Wound dressing.

#### **3.9.3 POST OPERATIVE ACTIVITIES,**

Initial dressing change, Subsequent-dressing changes and Linen change, catheter cleaning/removal.

#### **3.9.4 ADVANTAGES OF THE OBSERVATION TECHNIQUE.**

The advantages of this technique are; It is relatively cheap. The researcher is not dependent on the subjects who consent to answer. It is an important technique in studying human behaviour. It most open to using record in devices such as the tape recorder and the camera. It allows the researcher to view the complete

situation first hand as it develops and also affords the inclusions of a sequence of events. Technique can be started and stopped any time.

### **3.9.5 DISADVANTAGES.**

The time and duration of event cannot be predicted. Observations can always be subject to bias of the researchers background and personal interpretations The researcher may be unreliable because different observers may observe one thing differently. Extensive training is necessary if more than one event is to be observed to gather data. The observer may lose their objectivity by becoming personally involved themselves in the situation. Once the subjects know that they are being observed they may change behaviour, which will affect the data collected.

### **3.9.6 REVIEWING RECORDS.**

Records are compilation of writing and figures that individuals have collected. {Treece and Treece, 1986}. The researcher used the existing hospital records for the patients in collecting the data. The records helped in the discovery of events and trends that occurred to the client before and after hospitalisation The advantages of the records are that the are unbiased as far as the researcher is concerned for the purpose of a particular project, because at the time of data collection, the collector had no knowledge that some research information will be extracted from the data been collected. This means that the records are objective. Records are also inexpensive because all data is at one place. They are convenient and time serving. The researcher cannot bias the subject since the records are already in pure form and have been collected. The existence of large quantities of records allows the researcher to a considerable choice of data. Records can supply personal information about the subject's beliefs, altitude and feelings concerning the topic of interest. The records do not rely on recall but were recorded when they occurred. Disadvantages of records are that the amount of information is limited to what is available, no one can be sure of the

condition under which the record were taken and there is no assurance of the accuracy of the records. The people who preserved the records had no idea that the records that they were obtaining would be used for research purposes, thus the researcher is forced to admit any error that were built in. There may be some serious draw back in material of which the researcher is not aware, i.e. the person who recorded the data may only have recorded one type of data. Extracting the exact data sought for a study can be time consuming. The other problem in records is the location, restriction due to confidentiality.

### **3.10 PILOT STUDY.**

A Pilot study is a small version of the main study conducted with a purpose of testing the instrument and potentially refining the research. Dempsey and Dempsey, {2002}-. The purpose of a pilot study is to; provide a miniature trial run of the methodology planned for the major project and also gives an opportunity to adjust methods and the techniques to be used.

The pilot study was done in phase V Theatre at the UTH and in the surgical admission ward. 10% of the sample size {5 units} was used for the observation. This was for a period of one week. The sample was selected by convenient sampling. There was no adjustment made to the data collection technique. The method used was similar to that used in the pilot study.

### **3.11 VALIDITY**

Validity is defined as the degree to which the researcher has measured what he has set out to measure {Khumar 1995}. The validity of the instrument will be by logic and by statistical evidence. Logic in the sense that there will be justification of each observation in relation to the set objectives and statistical by way of calculations in the coefficient of correlation between the observations and the Out-come of variables. The use of a checklist as a data collection instrument enabled the investigator to obtain factual information on the ground. The checklist elicited information on the peri-operative activities, which may

contribute to post operative caesarean section wound infection. Reliability refers to the ability of a measuring instrument to do consistently what ever it is designed to do in the same way each time it is administered  
Dempsey and Dempsey,{2000} .

**3.12 RELIABILITY**

Reliability refers to the accuracy of a measuring instrument.{Treece and Treece, 1986} To maintain reliability, the study was conducted in a natural setting. There was no manipulation of the environment. The same instrument was used through out. A pilot study was conducted to test the tool and the checklist was given to some experts to verify the reliability.

**3.13 ETHICAL CONSIDERATION**

Ethical consideration involves an understanding of the ethical codes and guidelines for protecting the rights of the research subjects.  
Dempsey and Dempsey,{2000}. A clearance was given from the facilitator to go ahead with the study. Permission was also given from the executive Director {UTH} to conduct the study at the institution. Clearance was given from the Nursing Officer in B Block and the Nurse in charge of the Operating Theatre departments. Data collected was kept confidential and safe under a lockable bag.

**CHAPTER FOUR.**

**4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS.**

**4.1 INTRODUCTION.**

Data analysis is a process of categorizing, scrutinizing and cross- checking the research data. {Treece and Treece, 1986}.

Tables and other visual aids are important in organising the research findings. Where appropriate, statistics and quantification of data is applied.

**4.2 DATA ANALYSIS.**

Data analysis plan in general terms describe the strategy one intends to use for data analysis. {Khumur 2000}. The data will be checked for completeness and coded. It was categorised and entered on a data master sheet. Data was then analysed both manually and using computer SPSS software.

**4.2 PRESENTATION OF FINDINGS.**

The findings were presented according to the sequence of observations from the pre-operative to the post-operative phase. The data was presented in tabular forms as single frequency tables, cross tabulation and graphics. Sweeney and Oliviere {1981}, states that one of the most effective ways of communicating results of a study is to use tables.

**TABLE 5**  
**DEMOGRAPHIC DATA O F THE STUDY RESPONDENTS.        N=50**

VARIABLE	FREQUENCY	RELATIVE FREQUENCY
AGE	21	42%
15-24	25	50%
25-34	4	8%
35-44	-	-
Above 45		
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
MARITAL STATUS		
Single	2	4%
Married	48	96%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
OCCUPATION		
Employed	2	4%
Unemployed	48	96%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
PARITY		
1-2	28	56%
3-4	14	28%
5-6	5	10%
7-8	3	6%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>

**DEMOGRAPHIC DATA CONTINUED.**

DIAGNOSIS	FREQUENCY	RELATIVE FREQUENCY
APH	11	22%
CORD PROLAPSE	4	8%
BREECH	4	8%
TRANVERSE LIE	3	6%
C.P.D.	2	4%
FOETAL DISTRESS	6	12%
PREVIOUS C/S	7	14%
PROLONGED 1 <sup>ST</sup> STAGE	9	18%
ECTOPIC	4	8%
<b>TOTAL</b>	<b>50</b>	<b>00%</b>
DURATION OF OP.		
0-44min	45	90%
45-90min	5	10%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
TYPE OF OPERATION.		
EMERGENCY	30	60%
ELECTIVE	20	40%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>



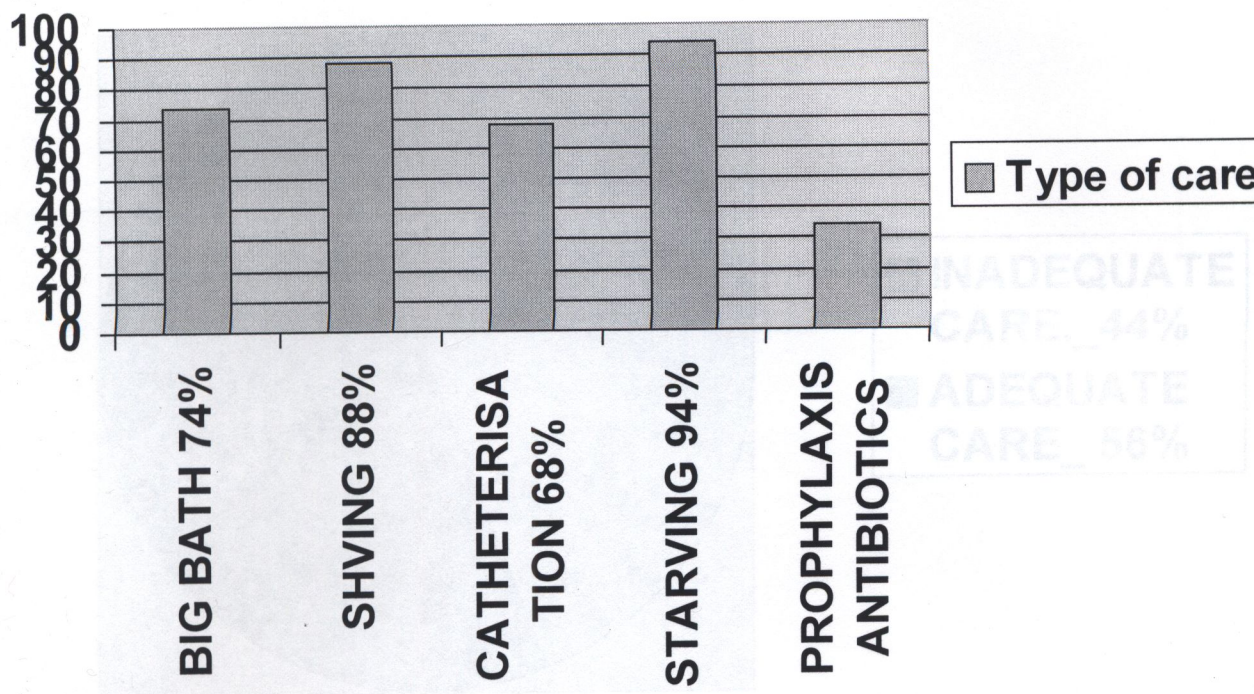
Majority of the study respondents {50%} were between ages 25 –34 years.96% were married while 4 % were not married.

56% of the study respondents had either 1 or 2 children while 6 % had between 7 -8 children. 86% of the study respondents were not employed. The most common diagnosis observed was A.P.H. {22%} followed by prolonged first stage of labour, {18%}. Previous cases of caesarean section operation were at 14%. 60% of the cases were performed as emergency surgery while the electives were 40%. The duration of the operations in 90% took a period of between 0 to 45minutes, 10% of the cases took between 46 to 90 minutes. The average number of people in the operating room was between 5 to 8.

TABLE NO. 6 THEATRE ENVIRONMENT.		N=50
VENTILATION SYSTEM	FREQUENCY	RELATIVE FREQUENCY
WORKING	-	-
NOT WORKING	50	100%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
LIGHTING SYSTEM		
WORKING	-	-
NOT WORKING	50	100%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>

The ventilation and lighting systems were inadequate at all times in all the cases observed {100%}

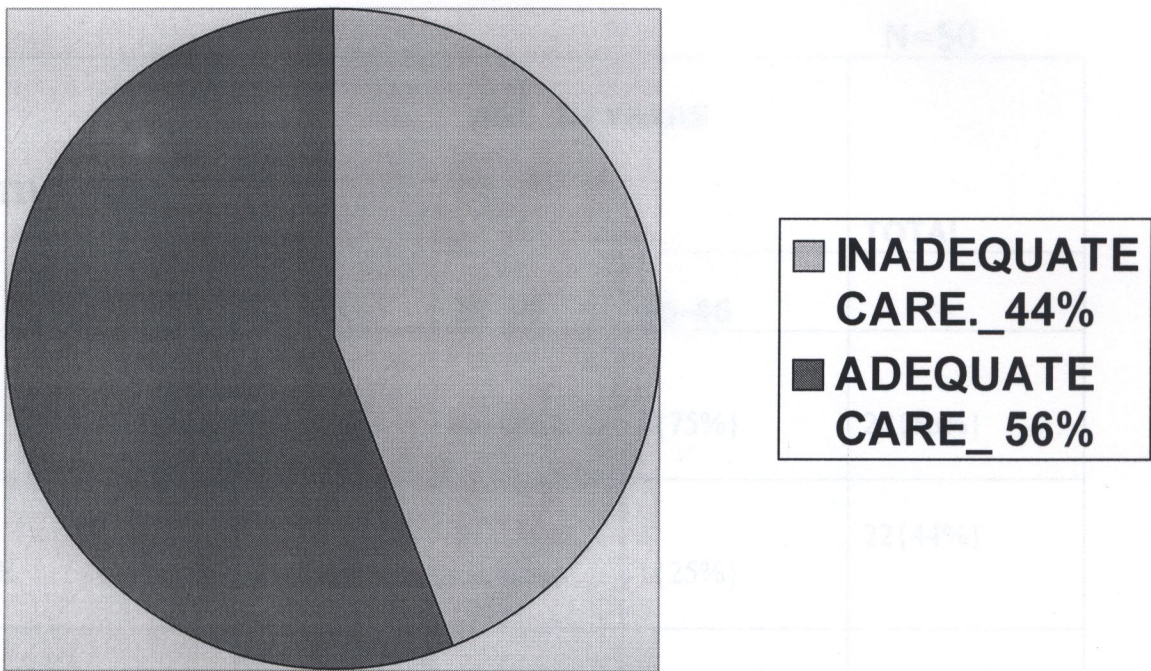
FIGURE.NO. 3  
PREOPERATIVE CARE.



The pre operative preparations were done in all {100%} the cases observed.74% received a big bath. 88% were shaved. Catheterization was done in 68% of the respondents, 94% were starved prior to surgery and 34% received prophylaxis antibiotics. None of the respondents was given a theater gown.

**FIGURE NO. 4**  
**LEVEL OF PREOPERATIVE CARE.**

**N=50**



The level of pre operative care was adequate in 56% of the cases observed.

**TABLE NO. 7**

**RELATIONSHIP BETWEEN PREOPERATIVE CARE AND AGE.**

PRE OPERATIVE CARE	AGE IN YEARS			N=50
				TOTAL
	15-25	26-35	36-46	
ADEQUATE	13{62%}	12{48%}	3{75%}	28{56%}
INADEQUATE	9{43%}	13{52%}	1{25%}	22{44%}
TOTAL	21{42%}	25{50%}	4{8%}	50{100%}

52% of those who were between the ages of 25-34 that did not have adequate pre-operative care ,while 75% of the study respondents aged 36 to46 received adequate pre-operative care.

TABLE.NO. 8

DIAGNOSIS										
	A.P.H	CORD PROLAPSE	BREECH	TRANSVERSE LIE	C.P.D.	FAETAL DISTRESS	PREVIOUS C/S	PROLONGED 1 <sup>ST</sup> STAGE	ECTOPIC	TOTAL
ADEQUATE	63%	100%	50%	66%	100%	60%	29%	55%	-	56%
	7	4	2	2	2	4	2	5	-	28
INADEQUATE	33%	-	50%	33%	-	33%	71%	44%	100%	44%
	4	-	2	1	-	2	5	4	4	22
TOTAL	22%	8%	8%	6%	4%	12%	14%	18%	8%	100%
	11	4	4	3	2	6	7	9	4	50

All the respondents with cord prolapse and C.P.D .were adequately prepared pre-operatively while 71% of those with previous caesarean section operation were not adequately prepared.

**TABLE NO. 9****SCRUB UP NURSE INTRA-OPERATIVE PRACTICES. N=50**

<b>HAND WASHING</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>
NO HAND WASHING AT ALL.	-	-
HAND WASHING UNDER RUNNING WATER.	19	38%
HAND WASHING WITH ORDINARY SOAP	13	26%
HAND WASHING WITH ANTI SEPTIC SOAP AND DONE UNDER RUNNING WATER.	18	36%
HAND WASHING DONE WITH ANTI SEPTIC SOAP FOR AT LEAST FIVE MINUTES	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>SCUBBING</b>		
NO SCRUBBING DONE AT ALL	-	-
SCRUBBING UP UNDER RUNNING WATER ONLY	-	
SCRUBBING UP WITH SOAP ONLY UNDER RUNNING WATER.	3	6%
SCRUBBING UP WITH ANTI SEPTIC SOAP AND USING A BRUSH BUT FOR LESS THAN FIVE MINUTES.	47	94%
SCUBBING UP WITH SOAP AND BRUSH FOR AT LEAST FIVE MINUTES	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>VARIABLE</b>		
<b>GLOVING</b>		
NOT WEARING ANY GLOVES AT ALL	-	-
WEARING CLEAN GLOVES BUT NOT AUTOCLAVED ONES.	-	-
WEARING AUTOCLAVED BUT REUSED GLOVES	-	-
WEARING THE SURGICAL GLOVES	50	100%
WEARING TWO PAIRS OF SURGICAL GLOVES	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
NO WEARING OF A GOWN	-	-
GOWN WORN BUT NOT AUTO CLAVED.	-	-
WEARING AUTO CLAVED GOWN BUT HEAD DRESS OR MASK NOT WORN PROPERLY	-	-



WEARING GOWN BUT WITH SOME CONTAMINATION DURING THE PROCEDURE.	50	100%
WEARING THE GOWN WITH NO CHANCES OF CONTAMINATION	-	-
<b>TOTAL TROLLEY PREPARATION</b>	<b>50</b>	<b>100%</b>
NO TROLLEY PREPARATION AT ALL	-	-
TROLLEY PREPARED INADEQUATELY	-	-
TROLLEY PREPARATION WELL DONE BUT WITH A LOT OF CONTAMINATION DURING THE PROCEDURE.	3	6%
TROLLEY PREPARATION WELL DONE WITH ONLY FEW CHANCES OF CONTAMINATION DURING THE PROCEDURE	47	94%
TROLLEY PREPARATION WELL DONE WITH NO CHANCES OF CONTAMINATION	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>SWAB INSTRUMENT AND NEEDLE COUNT</b>		
NO SWAB INSTRUMENT AND NEEDLE COUNT	-	-
SWAB INSTRUMENT AND NEEDLE COUNT DONE	-	-
SWAB INSTRUMENT AND NEEDLE COUNT DONE BEFORE AND AFTER THE OPERATION	9	18%
SWAB INSTRUMENT AND NEEDLE COUNT DONE EVERY AFTER CLOSURE OF EACH CAVITY	41	82%
STRICT ADHERENCE TO THE SWAB INSTRUMENT AND NEEDLE COUNT POLICY.	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>USE OF STERILE EQUIPMENT</b>		
USE OF UNSTERILISED EQUIPMENT	-	-
USE OF STERILISED EQUIPMENT BUT WITH NO ADHERENCE TO ASEPTIC TECHNIQUE	-	-
USE OF STERILISED EQUIPMENT BUT ENDING UP WITH CONTAMINATION MOST OF THE TIMES	11	22%
USE OF STERILISED EQUIPMENT WITH ONLY FEW OCCURRENCES OF CONTAMINATION	39	78%
USE OF STERILISED EQUIPMENT WITH STRICT ADHERENCE TO ASEPTIC TECHNIQUE	-	-

<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>ASEPTIC TECHNIQUE PRACTICES</b>		
NO ASEPTIC TECHNIQUE FOLLOWED AT ALL.	-	-
ASEPTIC TECHNIQUE ATTEMPTED BUT WITH CONTAMINATION ALL THE TIME		-
ASEPTIC TECHNIQUE APPLIED BUT WITH CONTAMINATION MOST OF THE TIMES	5	10%
ASEPTIC TECHNIQUE APPLIED AND FEW CHANCES OF CONTAMINATION OBSERVED	45	90%
STRICT ADHERENCE TO ASEPTIC TECHNIQUES	-	
<b>TOTAL</b>	<b>50</b>	<b>100%</b>

<b>WOUND DRESSING PRACTICES</b>		
NO WOUND DRESSING DONE	-	-
DRESSING DONE WITH UNSTERILE GAUZE	-	-
DRESSING DONE USING STERILE BUT SOILED GAUZE	-	-
DRESSING DONE WITH FEWER CHANCES OF CONTAMINATION	50	100%
STRICT ADHERENCE TO ASEPTIC TECHNIQUE	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>

Majority of the scrub Nurses {38%}, washed their hands under running water but did not use any soap nor anti septic solution.

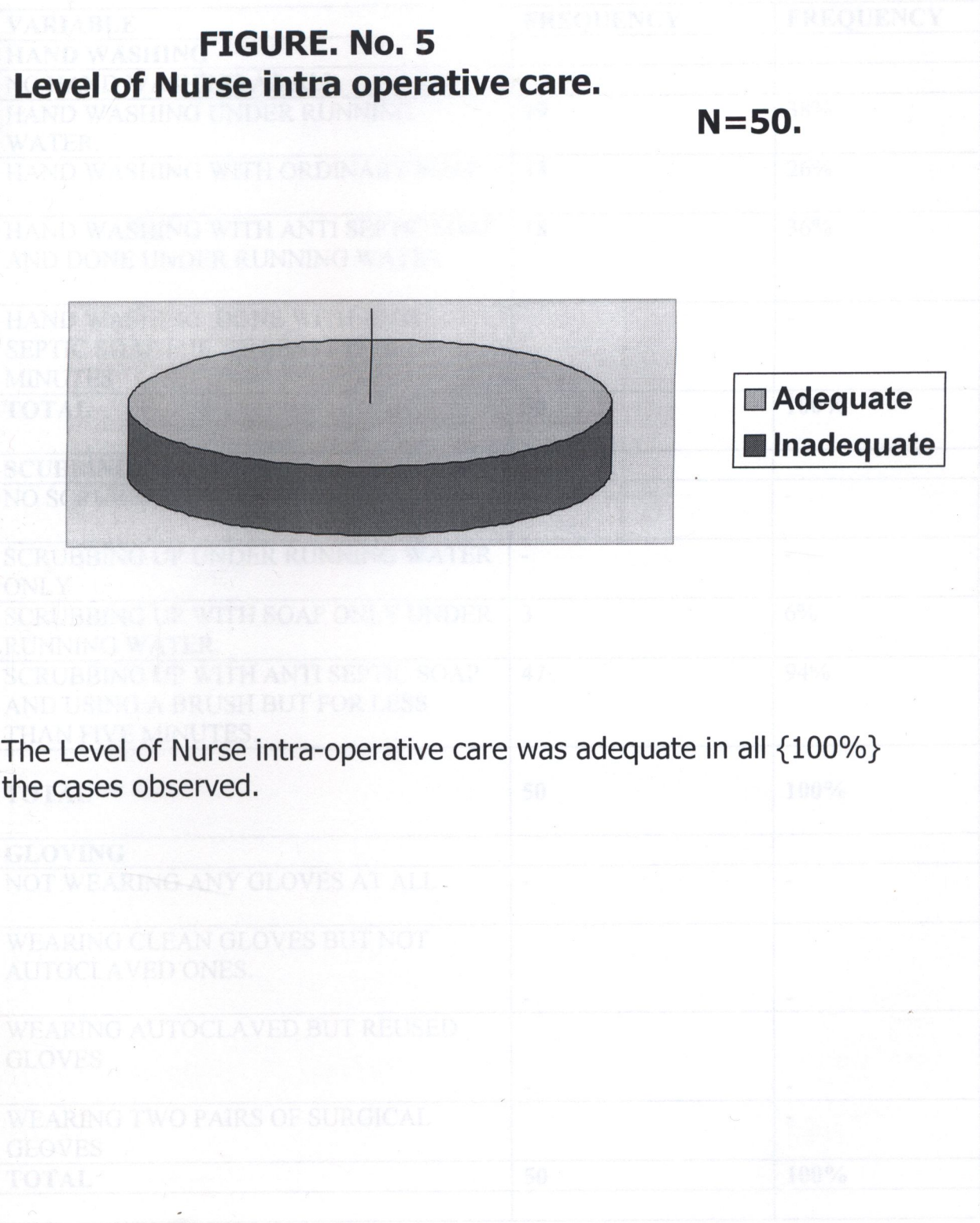
94% scrubbed up using an anti septic soap and a brush but scrubbed for less than five minutes.

In 78% of the procedures, sterile equipment was used and aseptic techniques were followed in 90% of the procedures.

Wound dressing in the operating room was done under adequate aseptic precautions in all {100%} of the procedures.



The swab instrument and needle count was done after closure of each cavity in 82% of the cases.



The Level of Nurse intra-operative care was adequate in all {100%} the cases observed.

**TABLE.NO. 10**

**INTRA-OPERATIVE CARE FOR THE SURGEON.                      N=50**

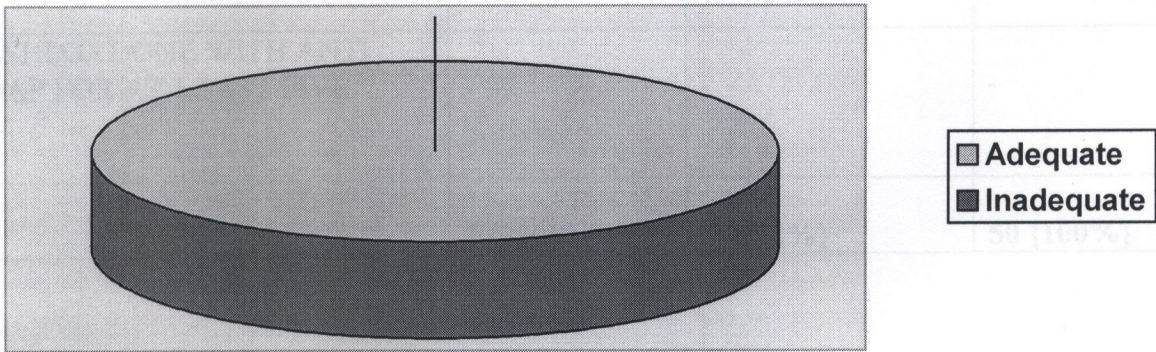
<b>VARIABLE</b>	<b>FREQUENCY</b>	<b>FREQUENCY</b>
<b>HAND WASHING</b>		
NO HAND WASHING AT ALL.	-	-
HAND WASHING UNDER RUNNING WATER.	19	38%
HAND WASHING WITH ORDINARY SOAP	13	26%
HAND WASHING WITH ANTI SEPTIC SOAP AND DONE UNDER RUNNING WATER.	18	36%
HAND WASHING DONE WITH ANTI SEPTIC SOAP FOR AT LEAST FIVE MINUTES		-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>SCUBBING</b>		
NO SCRUBBING DONE AT ALL	-	-
SCRUBBING UP UNDER RUNNING WATER ONLY	-	-
SCRUBBING UP WITH SOAP ONLY UNDER RUNNING WATER.	3	6%
SCRUBBING UP WITH ANTI SEPTIC SOAP AND USING A BRUSH BUT FOR LESS THAN FIVE MINUTES.	47	94%
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>GLOVING</b>		
NOT WEARING ANY GLOVES AT ALL	-	-
WEARING CLEAN GLOVES BUT NOT AUTOCLAVED ONES.	-	-
WEARING AUTOCLAVED BUT REUSED GLOVES	-	-
WEARING TWO PAIRS OF SURGICAL GLOVES		-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>

<b>GOWNING PRACTICES</b>		
NO WEARING OF A GOWN	-	-
GOWN WORN BUT NOT AUTO CLAVED.	-	-
WEARING AUTO CLAVED GOWN BUT HEAD DRESS OR MASK NOT WORN PROPERLY	-	-
WEARING GOWN BUT WITH SOME CONTAMINATION DURING THE PROCEDURE.	50	100%
WEARING THE GOWN WITH NO CHANCES OF CONTAMINATION	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>USE OF STERILE EQUIPMENT</b>		
USE OF UNSTERILISED EQUIPMENT	-	-
USE OF STERILISED EQUIPMENT BUT WITH NO ADHERENCE TO ASEPTIC TECHNIC	-	-
USE OF STERILISED EQUIPMENT BUT ENDING UP WITH CONTAMINATION MOST OF THE TIMES		
USE OF STERILISED EQUIPMENT WITH ONLY FEW OCCURANCES OF CONTAMINATION		
USE OF STERILISED EQUIPMENT WITH STRICT ADHERENCE TO ASEPTIC TECHNIQUE	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>
<b>ASEPTIC TECHNIQUE PRACTICES</b>		
NO ASEPTIC TECHNIQUE FOLLOWED.	-	-
ASEPTIC TECHNIQUE ATTEMPTED BUT WITH CONTAMINATION ALL THE TIME	-	-
ASEPTIC TECHNIQUE APPLIED BUT WITH CONTAMINATION MOST OF THE TIMES		
ASEPTIC TECHNIQUE APPLIED AND NO CONTAMINATION OBSERVED		
STRICT ADHERENCE TO ASEPTIC TECHNIQUES	-	-
<b>TOTAL</b>	<b>50</b>	<b>100%</b>

Hand washing with anti septic soap was done in 38% of the cases. There was no hand washing at all in 6% of the cases. The scrubbing practices were adequate in all {100%[of the cases. The Gloving and Gowning practices were also adequate in all {100%} of the cases. In 90% of the cases aseptic techniques were adequate. There was no contamination observed to the equipment in94% of the cases and the wound dressing was done with fewer chances of contamination in all {100%} of the procedures.

**FIGURE. No. 6**  
**Level of surgeon intra operative care.**

**N=50**



The Level of Surgeon intra-operative care was adequate in all {100%} the cases observed.

**TABLE NO. 11**

**RELATIONSHIP BETWEEN HANDWASHING AND THE POST OPERATIVE WOUND OUT COME. {SURGEON}**  
**N=50**

<b>SURGEON HAND WASHING PRACTICES</b>	<b>POST OPERATIVE INCISIONAL WOUND OUTCOME</b>		<b>TOTAL</b>
	<b>INFECTED</b>	<b>NOT INFECTED</b>	
NO HAND WASHING AT ALL.	-	3 {7%}	3 {6%}
HAND WASHING UNDER RUNNING WATER.	2 {50%}	11 {24%}	13 {26%}
HAND WASHING WITH ORDINARY SOAP	1 {25%}	14 {30%}	15 {30%}
HAND WASHING WITH ANTI SEPTIC SOAP AND DONE UNDER RUNNING WATER.	1 {25%}	18 {39%}	19 {38%}
HAND WASHING DONE WITH ANTI SEPTIC SOAP FOR AT LEAST FIVE MINUTES	-	-	-
<b>TOTAL</b>	<b>4 {8%}</b>	<b>46 {92%}</b>	<b>50 {100%}</b>

Post operative incisional wound infection occurred in 50% of the respondents where the surgeon washed hands under running water only.



**TABLE NO. 12**

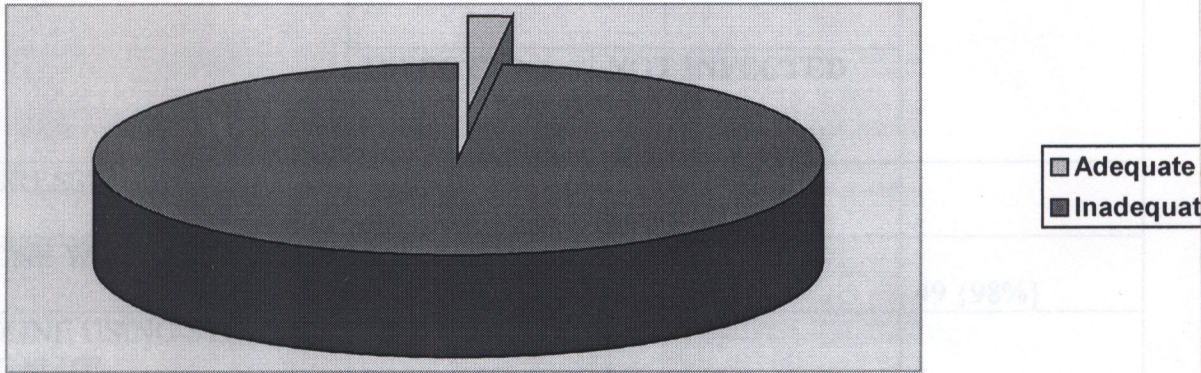
**RELATIONSHIP BETWEEN ASEPTIC TECHNIC AND THE POST  
OPERATIVE WOUND OUT COME. {SURGEON}  
N=50**

SURGEON'S ASEPTIC TECHNIQUE PRACTICES	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
NO ASEPTIC TECHNIQUE FOLLOWED AT ALL.	-	-	-
ASEPTIC TECHNIQUE ATTEMPTED BUT WITH CONTAMINATION ALL THE TIME	-	-	-
ASEPTIC TECHNIQUE APPLIED BUT WITH CONTAMINATION MOST OF THE TIMES	1 {25%}	4 {9%}	5 {10%}
ASEPTIC TECHNIQUE APPLIED AND FEW CHANCES OF CONTAMINATION OBSERVED	3 {75%}	42 {91%}	45 {90%}
STRICT ADHERENCE TO ASEPTIC TECHNIQUES	-	-	-
TOTAL	4 {8%}	46{92%}	50 {100%}

Post incisional wound infection did not occur in 91% of the respondents where aseptic technique was followed with fewer chances of contamination.

FIGURE NO. 7

LEVEL OF POST OPERATIVE CARE.



The level of postoperative care was inadequate in 98% of the cases.

TABLE NO.15  
POST OPERATIVE OBSERVATIONS. {FOURTH DAY.} N= 50

POST OPERATIVE OBSERVATION	FREQUENCY	RELATIVE FREQUENCY
FEVER.		
PRESENT	1	2%
NOT PRESENT	49	98%
TOTAL	50	100%
ACTIVE DISCHARGE		
PRESENT	1	2%
NOT PRESENT	49	98%
TOTAL	50	100%

**TABLE NO 13**  
**RELATIONSHIP BETWEEN POST OP. WOUND DRESSING AND POST**  
**OPERATIVE INCISIONAL WOUND OUT COME.**

WOUND DRESSING PRACTICES	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
NO WONUD DRESSING DONE	-	-	-
DRESSING DONE WITH UNSTERILE GAUZE	4 {100%}	45- {90%}	49 {98%}
DRESSSSING DONE USING STERILE BUT SOILED GAUZE	-	-	-
DRESSING DONE WITH FEWER CHANCES OF CONTAMINATION	-	1	1 {2%}
TRICT ADEHERENCE TO ASEPTIC TECHNIQUE	-	-	-
TOTAL	4 { 8%}	46 {92%}	50 {100% }

**TABLE NO.15**  
**POST OPERATIVE OBSERVATIONS. {FOURTH DAY.} N=50**

POST OPERATIVE OBSERVATION	FREQUENCY	RELATIVE FREQUENCY
FEVER.		
PRESENT	1	2%
NOT PRESENT	49	98%
TOTAL	50	100%
ACTIVE DISCHARGE		
PRESENT	1	2%
NOT PRESENT	49	98%
TOTAL	50	100%



ABDOMINAL DISCHARGE		
PRESENT	50	100%
NOT PRESENT	-	-
TOTAL	50	100%

STATE OF THE WOUND		
CLEAN	50	100%
INFECTED	-	-
TOTAL	50	100%

Fever was not present in 98% of the cases on the first day post operative. 25 presented with active discharge from the wounds on the first -post operative day, while 98% did not show any active discharge. There was abdominal distension observed in 8% of the cases.The state of the wound was clean in 100% of the cases and shoed no signs of wound infection.

**TABLE NO.16**  
**RELATIONSHIP BETWEEN AGE AND INCISIONAL WOUND OUTCOME.**

AGE	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
-24	1	20{43%}	21{42%}
-34	2	23{50%}	25{50%}
-44	1	3{7%}	4{8%}
bove 45	-	-	-
TOTAL	4	46{92%}	50{100%}

50% of the respondents aged 25 –34, had incisional wound infection post operatively.

**TABLE NO. 17**  
**RELATIONSHIP BETWEEN PARITY AND INCISIONAL WOUND**  
**OUT COME.**  
**N=50**

PARITY	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
1 _ 2	1	27{58%}	28{56%}
3- _ 4	3{75%}	11{23%}	14{28%}
5- _ 6	-	-5{11%}	5{10%}
7- _ 8	-	3{6%}	3{6%}
TOTAL	4{8%}	46{92%}	50{100}

Majority of the respondents {75%} with I incisional wound infection had 3\_4 children, where as 58% of the respondents who had 1\_2 children did not developed any post operative incisional wound infection.

TABLE NO. 18

RELATIONSHIP BETWEEN MARITAL STATUS AND THE POST  
OPERATIVE WOUND OUTCOME.

N=50

MARITAL STATUS	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
Single	-	2{4%}	2{4%}
Married	4{100%}	44{96%}	48{96%}
TOTAL	4{8%}	46{92%}	50{100%}

All {100%} that developed postoperative incisional wound infection were married.

**TABLE NO.19**  
**RELATIONSHIP BETWEEN EMPLOYMENT AND THE POST**  
**OPERATIVE WOUND OUTCOME.**

OCCUPATION	POST OPERATIVE INCISIONAL WOUND OUT-COME		TOTAL
	INFECTED	NOT INFECTED	
Employed	-	7{15%}	7 {14%}
Unemployed	4{100%}	39{85%}	43{86%}
TOTAL	4{8%}	46{92%}	50{100%}

All {100%} of the respondents who developed post operative incisional wound infection were unemployed.

**TABLE NO. 20**  
**RELATIONSHIP BETWEEN DIAGNOSIS AND THE POST**  
**OPERATIVE WOUND OUTCOME. N=50**

DIAGNOSIS	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
AGE	2{50%}	9{19%}	11{22%}
CORD PROLAPSE	-	4{9%}	4{8%}
BREECH	-	4{9%}	4{8%}
TRANVERSE LIE	1{25%}	2{4%}	3{6%}
C.P.D.	-	2{4%]	2[4%}
FOETAL DISTRESS	-	6{13%}	6{12%}
PREVIOUS C/S	1{25%}	6{13%}	7{14%}
PROLONGED 1 <sup>ST</sup> STAGE	-	9{19%}	9{18%}
ECTOPIC	-	4{9%}	4{8%}
TOTAL	4{8%}	46{96%}	50{100%}

Majority {50%} of the study respondents who developed with incisional wound infection had presented with a diagnosis of APH 19% of the respondents with APH did not develop any wound infection. 25% of those developed incisional wound infection post operatively, presented with previous cases of caesarean section operation

**TABLE NO.21**  
**RELATIONSHIP BETWEEN THE DURATION OF THE**  
**OPERATION AND THE POST OPERATIVE WOUND OUTCOME.**  
**N=50**

DURATION OF OP.	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
0-44min	2{50%}	43{93%}	45{90%}
45-90min	2{50%}	3{13%}	5{10%}
TOTAL	4{8%}	46{92%}	50{100%}

Majority of the respondents {93%}, who had surgery that took duration of between 0 45 minutes, did not have any incisional wound infection.

**TABLE NO.22**  
**RELATIONSHIP BETWEEN THE TYPE OF THE OPERATION**  
**AND THE POST OPERATIVE WOUND OUTCOME.**  
**N=50**

TYPE OF OPERATION.	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
EMERGENCY	-	30{65%}	30{60%]
ELECTIVE	4{100%}	16[35%}	20{40%}
TOTAL	4{8%}	46{92%}	50{100%}

All {100%} of the respondents that developed incisional wound infection had elective surgery.

**TABLE NO.23**  
**RELATIONSHIP BETWEEN HAND-WASHING AND THE POST**  
**OPERATIVE WOUND OUTCOME. N=50**

HAND WASHING	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
NO HAND WASHING AT ALL.	-	-	-
WASHING UNDER RUNNING WATER.	2 {50%}	17 {37%}	19 {38%}
HAND WASHING WITH ORDINARY SOAP	2 {50%}	11 {24%}	13 {26%}
HAND WASHING WITH ANTI SEPTIC SOAP AND DONE UNDER RUNNING WATER.	-	18 {39%}	18 {36%}
HAND WASHING DONE WITH ANTI SEPTIC SOAP FOR AT LEAST FIVE MINUTES	-	-	-
TOTAL	4 {8%}	46 {92%}	50 {100%}

There was no infection in 39% of the cases observed where hand-washing practices was done with antiseptic soap.



**TABLE. NO. 24**  
**USE OF STERILE EQUIPMENT IN RELATION TO POST**  
**OPERATIVE INCISIONAL WOUND OUTCOME.**

N=50

USE OF STERILE EQUIPMENT	POST OPERATIVE INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
USE OF STERILISED EQUIPMENTBUT WITH NO ADHEREBCE TO ASEPTICTECHNIC	-	-	-
USE OF STERILISED EQUIPMENT BUT ENDING UP WITH CONTAMINATION MOST OF THE TIMES	1 {25%}	10{22%}	11{22%}
USE OF STERILISED EQUIPMENT WITH ONLY FEW OCCURANES OF CONTAMINATION	3{75%}	36{78%}	39{78}
USE OF STERILISED EQUIPMENT WITH STRICT ADHERENCE TO ASEPTIC TECHNIQUE	-	-	-
TOTAL	4[8%}	46[92%}	50{100%}

There was no incisional wound infection in 78% of the cases where sterilized equipment was used with fewer chances of contamination.

**TABLE NO.25**

**RELATION SHIP BETWEEN PRE OPERATIVE CARE AND NURSE**

**INTRA-OPERATIVE CARE.**

**N=50**

PRE OPERATIVE CARE	INTRA- OPERATIVE CARE {NURSE}		TOTAL
	ADEQUATE	INADEQUATE	
ADEQUATE	28{56%}	-	28{56%}
INADEQUATE	22{44%}	-	22{44%}
TOTAL	50{100%}	—	50{100%}

56% of the respondents received adequate intra operative and preoperative care. 44% received adequate intra operative care but did not have adequate pre operative care.

TABLE NO.26

RELATION SHIP BETWEEN PRE OPERATIVE CARE AND SURGEON  
INTRA-OPERATIVE CARE.

N=50

PRE OPERATIVE CARE	INTRA- OPERATIVE CARE {SURGEON		TOTAL
	ADEQUATE	INADEQUATE	
ADEQUATE	28{56%}	-	28{56%}
INADEQUATE	22{44%}	-	22{44%}
TOTAL	50{100%}	—	50{100%}

56% of the respondents received adequate intra operative and preoperative care. 44% received adequate intra operative care but did not have adequate pre operative care.

**TABLE NO. 27**

**PRE-OPERATIVE CARE IN RELATION TO POST OPERATIVE CARE.**

**N=50**

PRE OPERATIVE CARE	POST OPERATIVE CARE		TOTAL
	ADEQUATE	INADEQUATE	
ADEQUATE	1 {100%}	27{55%}	28{56%}
INADEQUATE	-	22{44%}	22{44%}
TOTAL	1{2%}	49{98%}	50{100%}

55% of the respondents did not have adequate postoperative care even if they had adequate pre operative care.

**TABLE NO. 28**  
**INCISIONAL WOUND OUTCOME IN RELATION TO NURSE**  
**INTRA- OPERATIVE CARE.**

**N=50**

NURSE INTRA OP.CARE	INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
ADEQUATE	4{100%}	-46{100%}	50{100%}
INADEQUATE	-	-	-
TOTAL	4{8%}	-46{92%}	50{100%}

In spite of receiving adequate intra operative care, 8% of the cases developed incisional wound infection.

**TABLE NO. 29**  
**INCISIONAL WOUND OUTCOME IN RELATION TO SURGEON**  
**INTRA- OPERATIVE CARE.**

**N=50**

SURGEON INTRA OPERATIVE CARE	INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
ADEQUATE	4{100%}	-46{100%}	50{100%}
INADEQUATE	-	-	-
TOTAL	4{8%}	-46{92%}	50{100%}

In spite of receiving adequate intra operative care, 8% of the cases developed incisional wound infection.

**TABLE NO. 30**  
**INCISIONAL WOUND OUTCOME IN RELATION TO POST**  
**OPERATIVE CARE.**

**N=50**

POST OPERATIVE CARE	INCISIONAL WOUND OUTCOME		TOTAL
	INFECTED	NOT INFECTED	
ADEQUATE	-	1 {2%}	1 {2%}
INADEQUATE	-4 {100%}	-45 {98%}	49 {98%]-
TOTAL	4 {8%}	-46 {92%}	50 {100%}

All {100%} of the cases that developed incisional wound infection received inadequate post operative care

## **CHAPTER FIVE.**

### **5.0 DISCUSIONS OF FINDINGS AND IMPLICATIONS FOR THE HEALTH CARE SYSTEM.**

#### **5.1 INTRODUCTION.**

This Study, Conducted at the University Teaching Hospital, sought to determine factors that contribute to post operative caesarean section wound infection. The study was decided upon because of the high prevalence of caesarean wound infections. As a result of the high prevalence, the Hospital was incurring huge costs in procuring the necessary antibiotics and other surgical requirements to treat the infected wounds. About K 1,566 839 940, in the year 2001, was spent on the purchase of surgical supplies and antibiotics.

{U.T.H. Purchasing Dept. 2002}.

The results of the study are based on the peri-operative activities observed as the respondents received treatment. A checklist was used to obtain data in combination with review of the Medical records of the respondents. This study will discuss the findings of the study and the implications for the Health system.

#### **5.2 CHARACTERISTICS OF THE SAMPLE.**

Section A of the checklist {appendix i} comprised questions that obtained information on the sample characteristics. Table 7 summarises the characteristics.



The sample comprised 50 {fifty} respondents. Majority of them, were aged between 25years and 34 years. 21% were aged between 15years and 24 years. and 8% were aged between 35yrs and 44yrs. none of the respondents were above 45 yrs.

According to the Z.D.H.S. {1996.}, the country's most sexually and reproductive age group, are those between 15yrs and 35yrs. This range tallies with the sample characteristics where the majority of the respondents belonged to the age group 25years to 34years. There were probably fewer respondents above the age of 35 yrs, because of diminished sexual and reproductive activities in most elderly women The Z.D.H.S {1996}, indicates that women above 40 years have diminished sexual activities.

96% of the study respondents were married. 4% were not married. The figures correspond to the records in Z.D.H.S. {1996}, which indicate that, 61% of the women in Zambia are married.

86% of the study respondents were not employed. Studies in Zambia have shown that 80% of the people are essentially poor and living on an average of less than one US dollar per day. {J.C.T.R.2001}. This implies that the relative social- economic status of most of the respondents was poor.

The poor social economic status of women impacts negatively on the lives of affected individuals.

56% of the study respondents had children between 1 and 2. 28% had children between 3 and 4, while 10%, had children between 5 and 6 and 6% had children between 7 and 8. The Z.D.H.S. {1996}, indicates that the average woman in Zambia has 6.1 children through out her childbearing age.

The most common diagnosis observed was A.P.H. {22%}, followed by prolonged first stage of labour {18%} and previous cases of caesarean section operations. However, the findings of this study are different from those found at a Baptist Medical Centre in Nalerigu, Ghana, between 1991 and 1993, where out of 2870 deliveries that were conducted, 23% were as a result of obstructed labour {Greenway et al. 1996}. 76% of the study respondents had caesarean section operation for the first time, while 24% had a previous caesarean section operation done before. 25% of the cases that developed incisional wound infection were those that already had a previous caesarean section operation done before. {Table 26}

In 90% of the cases observed, the duration of the operation was between 0 to 44 minutes. 10% of the cases took between 45 to 90 minutes. 50% of the cases that turned out to have developed incisional wound infection post operatively were those associated with the duration of time lasting between 45 to 90 minutes {Table 27}.

The significance of this finding, is that probably, longer periods of time taken during operations predispose patients to post-operative wound infections.

These findings are supported by a study done by Nandi et al. {1999}, where she supports the premises that among other factors, the duration of the operation is responsible for wound susceptibility to infection.

60% of the cases observed were done as emergency surgery, while 40% were done as elective surgery. All the cases that developed incisional wound infection were those performed as elective cases. None of the cases performed as an emergency developed any incisional wound infection post operatively. These findings are different from a study done by Frost et al {1987} over a period of 2 years, in which it was revealed that, no incidence of infection had occurred during surgery to patients who had under-gone elective caesarean section operation. The hypothesis therefore that emergency operation are more prone to developing post- operative caesarean section wound infections, was not accepted in this study. The reason this could have been probably, that majority of the emergency cases were performed by senior Surgeons, while the elective cases were preferably, left to the Junior Doctors, who were still expected to develop some competence.

### 5.3 PRE-OPERATIVE CARE.

Section B of the checklist {appendix i} comprised questions that obtained information on the pre-operative preparations. Table 9 summarises the pre-operative care that was given.

All {100%} of the respondents received various levels of pre-operative care.

74% were given a big bath before going to the theatre. 88% were shaved on the operating site. 68% had urinary catheters. 94% were starved 12 hours prior to surgery. 34% received anti-biotic prophylaxis preoperatively. None of the respondents was given an enema.{Figure 3}

Howie {1986}, acknowledges the fact that good pre-operative care and sound surgical techniques can make caesarean section delivery safe for the patients and the baby. Bathing a patient with anti-microbial containing products has been suggested as an effective pre-operative measure, because it reduces colonisation with typical wound pathogens, such as Staph..Aureus. A study by Moir Busy {1994} however high lights that, although such bathing is relatively easy and inexpensive, it has not been proven to reduce colonization with Staph. Aureus in the hosts natural reservoirs-anterior nares or to reduce the infection rates.

34% of the study respondents received anti-biotic prophylaxis preoperatively. Out of all,{8%} of the cases that developed post operative incisional wound infection, 75% were associated with those who did not receive any anti-biotic

prophylaxis before the operation. This finding could explain why, Simpson {2002} in his article, "Prophylaxis Antibiotics," insists that anti-biotics are an important component of prophylaxis against surgical wound infections.

{Simpson, 2002.} There is no doubt that Prophylaxis antibiotics reduce post-operative infective complications. This is in agreement with the findings of this study. This study revealed that only 25% of the cases that developed incisional wound infection received prophylaxis antibiotics, compared to 75% who did not receive any prophylaxis antibiotics.

The hypothesis therefore that prophylaxis antibiotics leads to reduced rates of post operative caesarean section wound infection was accepted.

The overall pre-operative care was good. 56% of the study respondents received adequate pre-operative care while 44% did not have adequate preoperative care {Figure 10 }

The hair adjacent to the preoperative site is shaved to prevent wound from becoming contaminated with the hair during surgery. A number of studies however do not support this practice. Garth {2002} suggests the opposite by indicating that shaving with a razor blade injures the skin and this in turn increases the risk of wound infection during surgery. Instead, clipping the hair, using a depilatory or no shaving at all is advocated.

Another study by Moir Busy, {1989}, did not find pre-operative shaving methods to have a significant effect on the post-operative wound infection rates.

Frost et al, {1987}, tried to change the procedure of pre-operative preparation of the patients for surgery. In the first year, he tried to shave the patients with a razor and in the second year, they were shaved with a pair of scissors. The findings of that study did not show any significant changes in the post-operative infection rates.

Leigh et al, {1990}, reported a change in the post-operative infection rates when the catheters were used pre-operatively. This was between 1985 and 1987. A follow up to this study also confirmed a reduction in the bacteriuria, when the women were catheterised immediately in the pre-operative period.

The findings of this study did not establish whether catheterization had a significant effect on the post-operative infection rates. 75% of the cases that developed post-operative incisional wound infection were in fact catheterised preoperatively.

It appears that catheterization has a relationship with the post-operative infection rates. This finding could probably match with the study by

Garibuldi {1994} who noted that catheterization was not without any problems, and carried a major risk in the development of post-operative infections

## 5.4 NURSE INTRA-OPERATIVE CARE.

Section C of the check list{appendix ii} provided information on the activities of a Nurse during the intra operative period. The Nurse intra operative care is reflected in {Table.13}.

In 38% of the cases observed, hand washing was done under running water but without using any soap. In 26% hand washing was done under running water and using soap, while in 36% hand washing was done using an antiseptic soap and under running water. {table 13}.50% of the cases that turned out to have developed incisional wound infection were those associated with hand washing practices where it was done without using any soap or anti septic solution. This could imply that good hand washing practices can help to reduce the post-operative incisional wound infections. This finding is supported by findings of done by Semmelweis {1847} who suggested that the Surgeon's hands could be transmitting puerperal sepsis to post-natal mothers. He reported that there was a dramatic reduction in the puerperal fever after the introduction of soaking hands in chlorinated lime after hand washing in-between treating the patients. In 1865, Lister published his theory of asepsis. He introduced hand asepsis to surgical practice by pouring carbolic acid over his hands prior to surgery. This brought about a dramatic reduction in the surgical sepsis by hand anti-sepsis, which paved way to the development of safe surgery.

Scrubbing, gowning and gloving practices were adequately done in all {100%} cases. {Table13 }. A study by Laison .E.{1992}, revealed the importance of scrubbing up before gowning and gloving. He indicated that the purpose of a surgical hand scrub was to –remove debris and transient micro-organisms from the nails, the hands and the fore arms reduce transient flora to a minimum and inhibit rapid rebound growth of bacteria. In the same study by Laison .E. {1992}, he noted that gloving can a potential source of contamination. Gloving creates a moist environment under the skin. A moist environment usually creates an opportunity for organisms to proliferate and since gloves frequently become damaged during surgical procedures, the organisms may find their way out on to the open wound.

Trolley preparation was adequate in 94% of the cases. Swab instrument and needle count was adequately done in 87%. {Table 9} Howie {1986}, recognises the fact that sound surgical practices such as scrubbing up of hands, gloving and other pre-operative measures go a long way in making caesarean delivery safe for the mother and the child. Aseptic techniques were followed in 90% of the cases that were observed. Sterile equipment was used in 78% of the cases. 25% of the cases that turned out to have developed incision wound infection were associated with the practices where there was no adherence to aseptic technique. This finding could suggest that there was not much contamination during the intra-operative period. The use of aseptic technique



was adequately followed. Majority {78%} did not develop any wound infection. {Table 13}.

## **5.5 THE SURGEON 'S INTRA-OPERATIVE CARE.**

Section C of the checklist {appendix ii} obtained information on the surgeon 's intra-operative care practices. Table 15 summarises the observation on the surgeon.

Hand washing was adequately done in 37% of the study respondents.

The scrubbing, gowning were adequately done in all {100%} of the cases. The need for adequate hand-washing and scrubbing of hands has already been supported by the studies done by Larson .E. {1992}.

Aseptic technique was followed in majority of the respondents. Sterile equipment was used in 94% of the cases. Garth. {2002} acknowledges that prior to the introduction of aseptic technique, sterilization of equipment and a clean operating theatre environment are essential, infections associated with surgery were a common place and had disastrous consequences. However with the modern surgical practice, aseptic technique and developing of anti-microbial agents there has been a great reduction in the post-operative infections.

In relation to the post-operative wound outcome 50% of the cases that turned out to have developed incisional wound infection were associated with hand

washing practices where it was done under running water only without use of any soap. There was no incisional wound infection in 91% of the respondents where hand-washing practices were done using anti-septic soap and under running water. These findings are similar to those obtained in the nurse-intra operative care where there was no incisional wound infection in 78% of the respondents. Howie {1986}, recognises the fact that sound surgical practices prevent the occurrence of incisional wound infection.

The hypothesis that inadequate observance of aseptic technique leads to development of post-operative wound infection was accepted.

## **5.6 POST OPERATIVE CARE.**

This section comprised questions that obtained information on the postoperative care. Table 19 shows the wound dressing practices on the post- natal wards.

Tables 20 and 21 summarise the observations on the first and fourth post-operative days respectively.

Majority of the respondents did not have adequate wound dressing care. Only 2% of the study respondents had their wounds adequately dressed. In majority of the cases, the wounds were cleaned by either the relative or the patients themselves. Instructions on how to clean the wounds were not given. The mothers had to depend on advice from the other relatives or patients who had

stayed a little longer on the ward. The wards did not provide any dressing materials nor anti-septic solutions for cleaning the wounds, such as gauze and anti-septic solutions.

The patients often had to buy their own cotton and methylated spirit, which they used to clean the wounds and in some cases, some of the patients could not afford to buy these requirements, so they had to use pieces of cloths to cover the wounds. This implies that the care given to the patients on the post-natal wards was not adequate as regards wound dressing. This kind of situation highly predisposes the wounds to post-operative incisional wound infection, this is supported by a study done by Thumbisi {1992}, who looked at the out-come of caesarean section operations at one Hospital. His findings were that, the wound infection ratio was 3.8% ,and among the factors contributing to the infection rate were; the lack of good health infrastructure, inadequate post-natal care and the continuously deteriorating socio-economic conditions. {Thumbisi, 1992}.

Another study conducted at Kitwe Central Hospital by Muchemwa,{1995}revealed that, the average wound infection rate was about 8.7%.The reasons given were attributed to shortage of surgical supplies used for cleaning the wounds and inadequate post-natal care.The findings in Muchemwa's study are similar to the findings of this study.

On the first day post-operative, the patients did not present with any fever in 98% of the cases. 2% however, presented with active wound discharge, while 8% had developed abdominal distension. Pearse's {1997} highlights the fact that caesarean section operations are not without any complications.

A retrospective study done in Nigeria, designed to determine the out-come of caesarean section operations, demonstrated that post-operative haemorrhage was the most common complication and in some cases warranted hysterectomy. There were also some cases of bladder injuries to adjacent structures. Puerperal sepsis and incisional wound infection were also noted. The findings of this study also revealed that one of the respondents, who developed post-operative incisional wound infection also ended up with a sub total hysterectomy as a complication. The respondent developed paralytic ileus on her second post-operative day, she later developed gangrene of the uterus, which warranted a hysterectomy, unfortunately, during the hysterectomy, a perforation of the large bowel was done but this was not noticed until a few days after the operation. She then had to go for another operation to repair the fistula that had developed. She stayed in the Hospital for more than three months. Even if these findings agree with Pearse's {1996} study, that caesarean section operations are not without any complications, the investigator believes that adequate peri-operative care, especially during the intra operative period, where avoidance of excessive manipulation of the patients bowels and a reduced period of operating

time is observed, there could a reduction in such complications. 25% of the cases that developed post-operative incisional wound infection were those that presented with fever by the fourth post-operative day. 75% of the cases that developed incisional wound infection, also developed abdominal distension.

Majority of the study respondents did not have adequate wound dressing care. 8% of the study respondents developed incisional wound infection by the fourth postoperative day.

A study by Paul {1997}, on the caesarean section operations at U.T.H. indicated the infection rate was 12.7%.

Ezra. {1997}, conducted another surveillance study of wound infection at U.T.H. in 1997. He reported that the post-operative wound infection rate was 15%. However, a retrospective study done by Henry {2001} on postoperative caesarean wound sepsis at U.T.H., revealed a prevalence rate of 6.1%. This was much lower than the findings of the other two studies. The reduced prevalence rate was attributed to the increased surveillance team of the Hospital infection control team. This was confirmed in a study done by Chanda {1994} which revealed that there was no record of caesarean wound infection rates at U.T.H. in November, out of the 23 cases that were done. The findings of Henry's study were also similar to the findings of a study done by Gullant and Shama {2000},

which had put the prevalence rate of post-operative wound infection at around 5% to 6%. The findings of this study indicate that the prevalence rate of post-operative incisional wound infection is at 8%. This is an increase of 1.9% compared to the study done in 2001, by Henry. {2001}. This increase is significant and hence the reason for my study.

## **5.7. IMPLICATIONS OF THE STUDY FINDINGS TO THE HEALTH SYSTEM.**

### **5.7.1 NURSING PRACTICE.**

The high prevalence of post-operative incisional wound infection could be a reflection of the existing nursing care standards. If this be the case, It then implies that the general nursing care standards have gone down.

Since the medical field is dynamic, it is also important that the nursing standards are constantly reviewed and updated. This can be done by, retraining, orientations and holding workshops for qualified staff and conducting research activities such as this one.

To the general public, the services of a Hospital facility are usually based on the kind of nurses and the quality of nursing being offered. If the standards of care are inadequate, this will also imply that the general public is looking at the nursing profession in a similar way.

### **5.7.2 MANAGEMENT/ADMISTRATION AT U.T.H.**

The number of patients developing post-operative incisional wound infection is high, {8%}. The number of post-natal mothers who are potentially at risk of developing post-operative incisional wound infection is also very high, {98%}.

The Management, through their line managers will have to ensure that the nursing care standards are revisited, in particular, on the postnatal wards.

The ward managers need to formulate polices and guide lines on the management and nursing care of the post-operative wounds.

These polices and guidelines should be user friendly and the care givers should be agreeable to them.

Management needs to find alternative ways of an acceptable way of managing the post-operative wounds, in absence of adequate surgical supplies.

The shortage of manpower is real, just as the shortage of surgical supplies.

Management will need to urgently address theses problems.

### **5.7.3 EDUCATION.**

- 3 The Midwives curriculum has been revised. Among other things, it places emphasis on post-natal surgical wound care. The Nursing education system should therefore take this challenge and organise more seminars workshops, retraining and reorientation of the qualified staff, so that they

can be re-introduced to improved standards of practice in the management and care of post-operative wounds.

#### **5.7.4 RESEARCH.**

There are opportunities for further research to be done from the findings of this study. One such study that can be done would be to focus on; "factors affecting the nurse-post-operative care practices."

## **CHAPTER SIX**

### **6.0. CONCLUSION AND RECOMMENDATIONS.**

This study sought to determine factors that contribute to caesarean wound infection at U.T.H. The data was collected by observations using a checklist. The sample size was fifty {50}, these were antenatal mothers who were scheduled for caesarean section operation. Selection of the respondents was by convenient sampling technique.

The study looked at the peri-operative activities done as a patient received treatment. For example during the; pre-operative care of the patient, the intra operative care provided by the Nurse and the Surgeon, and the post operative care provided on the post natal wards.



The analysis of the study results, revealed that; 56% of the study respondents received adequate pre-operative care, while 44% did not received adequate pre-operative care. The findings also revealed that adequate pre-operative care helps to prevent incisional wound infection rates. The findings show that prophylaxis antibiotics, reduce the chances of post-operative wound infection.

The level of Nurse intra-operative care was adequate in {100%} of the cases observed. The study findings indicate that, good surgical aseptic techniques such as hand washing, scrubbing of the hands, and the general adherence to a clean operating environment, helps to prevent post-operative wound infections.

The level of the Surgeon intra-operative care was adequate in all {100%} of the cases observed. The study findings also confirm that the surgeon's good aseptic practices help to prevent post-operative incisional wound infections.

The level of post-care was not adequate. Wound dressing practices were not adequate in 98% of the study respondents. Only 2% of the study respondents received adequate wound dressing care.

The results of this study show that 8% of the respondents developed post-operative incisional wound infection. This put the prevalence rate of incisional wound infection at U.T.H. in the year 2002, at 8%.

According to the study findings the factors contributing to Caesarean wound infections at U.T.H. Were; inadequate post-operative care on the post-natal wards, the unavailability of surgical materials to use for cleaning the wounds such as sterile gauge and anti-septic solutions.

## **6.2 RECOMMENDATIONS.**

6.2.1 Nurse managers to formulate policies and guidelines on the management and care of post-operative wounds.

6.2.2 In service training programmes, through seminars, workshops, retraining and re-orientation of the staff to carried out.

6.2.3 Nurse Managers to be consistent in supervising and maintaining better standards of care.

6.2.4 Nurse managers to keep record of post-operative wound infection rates.

6.2.5 Management to increase the allocation of surgical supplies to the post- natal wards.

6.2.5 Management to increase the staff levels on the postnatal wards.

6.2.6 A study needs to be done to establish factors that contribute to inadequate post-operative care on the post-natal wards at U.T.H.

### **6.3 DISSEMINATION OF THE FINDINGS.**

After data analysis the researcher wrote a report. A copy was given to the Department of Post basic Nursing, one copy was given to Medical Library another copy was given to the sponsors {Ministry of Health} and the researcher retained one copy.

### **6.4 LIMITATIONS.**

- 6.4.1 The size of the sample as small. This implies that the study findings cannot be generalised to a large population.
- 6.4.2 The sample size was also chosen by convenient sampling technique. This was so because the research did not have any control over the scheduling of the respondents for surgery.
- 6.4.3 The time available for collections of the data and completion of study was limited.

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## BUDGET PROPOSAL.

## APPENDIX I

BUDGET CATEGORY	UNIT COST IN KWACHA	QUANTITY	TOTAL
STATIONERY			
A4 TYPING PAPER	K25,000	2 reams	K50,000
PENS & PENCILS	K1,000	2	K2,000
NOTE BOOK	K500	1	K5,00
TIPEX	K3,000	1	K3,000
SPIRAL BINDERS	K2,000	2	K4,000
STAPLER	K8,000	4	K32,000
STAPLES	K10,000	1box	K10,000
PERFFORATOR	K15,000	1	K5,000
SCIENTIFIC CALCULATOR.	K50,000	1	K15,000
		1	K40,000
SUBTOTAL			
PERSONNEL			<u>K161,500</u>
LUNCH ALLOWANCE			
RESEARCHER	K35,000	14 days x 1 person	K490 000
RESEARCH BAGS	K35,000	1bag	K35,000
SUB TOTAL			<u>K645,000</u>
TYPING SERVICES			
TYPINIG THE REPORT	K2,500 per page		K700,000
PRINTING	K500 per page	70x4	K140,000
PHOTOCOPING	K200	70x4	K140,000
BINDING	K10,000	70*4	K56,000
		4	K40,000
			<u>K1 ,076 000.</u>
			K1 882,000
			<b><u>K188 200</u></b>
CONTINGENCY (10% OF GRAND TOTAL)		<b>SUBTOTAL</b>	
		<b>TOTAL</b>	<b><u>K2 , 070 000</u></b>



## **BUDGET JUSTIFICATION**

Stationary was needed to carry out the study, the stationary needed included pens and pencils for writing, Tipex for erasing mistakes, stapler and staples for putting the working an orderly manner.

I used a calculator for doing some mathematical calculations.

I used typing services for the research proposal and the final copy was typed.

The other secretarial services included printing, photocopying and binding of the final reports.

1.0 General information.

a, Serial No.....

b, Location.	Antenatal ward.	<input type="checkbox"/>
	Theatre	<input type="checkbox"/>
	Post natal.	<input type="checkbox"/>

c, Diagnosis.....

D, Nature of presenting illness;	Elective	<input type="checkbox"/>
	Emergency	<input type="checkbox"/>

1.1 Personal details .

1.2 Age of client. ....

- ◆ Occupation. ....
- ◆ Marital status, ....
- ◆ Parity, ....
- ◆ Previous c/s, ....
- ◆ Any Medical diseases, ....
- ◆ Malnutrition ....
- ◆ Anaemia ....
- ◆ HIV/AIDS ....
- ◆ Skin Diseases ....
- ◆ Diabetes ....
- ◆ Elderly age ....

**Serial No.** \_\_\_\_\_

**General information.**

- ◆ Type of operation,
- ◆ Date of operation,
- ◆ Firm.
- ◆ Time of operation,
- ◆ Duration of operation,
- ◆ Total No. of people in theatre
- ◆ Total No. of scrub- up members
- ◆ Theatre lighting system,
- Theatre ventilation system


**S ECTION B**

**1.2 Physical preparations**

♦

**OBSERVATIONS ON RECEIPTION**

- ♦ Big bath
- ♦ Shaving,
- ♦ Gowning,
- ♦ Catheterization,
- ♦ Gastric-intestinal cleaning,
- ♦ Prophylaxis antibiotics

**1.3 Intra-operative stage.**

**{Observations on the, Scrub Nurse}**

**SECTION C**

- ♦ Hand washing, {routine},
- ♦ Scrubbing prior to surgery,
- ♦ Gowning
- ♦ Gloving,
- ♦ Swab count
- ♦ Instrument count
- ♦ Draping of patient,
- ♦ Preparation of trolley,

Yes	No

YES		NO	
ADEQUATE		INADEQUATE	
4	3	2	1

- ◆ Use of sterile equipment, suction tubes,
- ◆ Adherence to sterile techniques
- ◆ Swab count
- ◆ Instrument count
- ◆ Wound dressing

Adequate		Inadequate	
4	3	2	1

**Intra-operative stage.**

**{Observations on the, Surgeon}**

- ◆ Hand washing, {routine},
- ◆ Scrubbing prior to surgery,
- ◆ Gowning
- ◆ Gloving,
- ◆ Skin preparations,
- ◆ Draping of patient,

ADEQUATE		INADEQUATE	
4	3	2	1

- ◆ Use of sterile equipment, suction tubes,
- ◆ Surgical approach, {Skin incision}
- ◆ Surgical approach,{delivery of baby}
- ◆ Adherence to sterile techniques
- ◆ Surgical tech.{wound closure}
- ◆ Drain insertion
- ◆ Wound dressing

Adequate		Inadequate	
4	3	2	1

**SECTION D**

**Post operative stage.**

**1.3 First day post operative.**

- a,** Temperature recording,  
{elevated/ not elevated}
- b,** Bleeding, {active},
- c,** Drainage, {active from drains}
- d.** Culture swab

**REMARKS**

.....

.....

.....

.....

.....

**1.4 Second day post operative**

**REMARKS**

**a,** Temperature recording,

{elevated / not elevated}

**b,** Bleeding, {active}

**C,** Wound dressing observations,

**1.4 Fourth day post operative**

**a,** Temperature recording,

**b,** Wound dressing observations,

**c,** Culture swab,

Any comments;

signature.....Date.....

## **MARK SHEET.**

### **1. Hand washing.**

- |  |   |
|--|---|
| ◆ No hand washing at all.                                    | 0 |
| ◆ Hand washing under running water.                          | 1 |
| ◆ Hand washing with ordinary soap.                           | 2 |
| ◆ Hand washing with anti-septic soap.                        | 3 |
| ◆ Hand washing with anti-septic soap for at least 2 minutes. | 4 |

### **2. Scrubbing up hands and fore-arms.**

- |   |   |
|---|---|
| ◆ No scrubbing up at all.   | 0 |
| ◆ Scrubbing up under running water with no soap for less than 5 min.    | 1 |
| ◆ Scrubbing up with anti septic soap but no brush ,for less than 5 min. | 2 |
| ◆ Scrubbing up with anti septic soap and a brush for Less than 5 min    | 3 |
| ◆ Scrubbing up with anti septic soap and a brush for 5 min.             | 4 |

### **3. Gloving.**

- |  |   |
|--|---|
| ◆ Not wearing any gloves at all.                             | 0 |
| ◆ Wearing clean gloves only.                                 | 1 |
| ◆ Wearing reused but autoclaved gloves.                      | 2 |
| ◆ Wearing surgical gloves with acceptable aseptic technique. | 3 |
| ◆ Wearing gloves under strict aseptic technique.             | 4 |



#### **4. Gowning**

- |   |   |
|---|---|
| ◆ No gowning at all.  | 0 |
| ◆ Using a clean gown which not autoclaved.                                  | 1 |
| ◆ Wearing an autoclaved gown, but with mask or head dress not fitting well. | 2 |
| ◆ Gowning, mask and head dress, under acceptable aseptic technique.         | 3 |
| ◆ Wearing gown, mask and head dress under strict aseptic technique.         | 4 |

#### **5. Draping of Patient.**

- |   |   |
|---|---|
| ◆ No draping of patient at all.                             | 0 |
| ◆ Draping of patient with un sterile drapes.                | 1 |
| ◆ Draping of patients with sterile drapes but incompletely. | 2 |
| ◆ Full draping with acceptable aseptic precautions.         | 3 |
| ◆ Full draping with strict aseptic precautions.             | 4 |

#### **6 Adherence to aseptic technique.**

- |  |   |
|--|---|
| ◆ No aseptic techniques taken into account.                                  | 0 |
| ◆ Aseptic technique attempted but ending up with contamination all the time. | 1 |
| ◆ Aseptic technique attempted but with some contamination at times.          | 2 |
| ◆ Considerable effort taken to maintain the aseptic technique.               | 3 |
| ◆ Strict aseptic techniques taken.   | 4 |

◆ <b>7. Use of sterile equipment.</b>	
◆ Use of un sterilised equipment.	0
◆ Use of sterilised equipment but with no adherence to aseptic techniques.	1
◆ Use of sterilised equipment but with contamination at times.	2
◆ Use of sterilised equipment with considerable effort to maintain sterility.	3
◆ Strict adherence to use of sterile equipment.	4

### **7. Swab Instrument Count.**

◆ No swab, instrument Count done at all.	0
◆ Swab, instrument counts done only once.	1
◆ Swab, instrument Count done only before and after the procedure.	2
◆ Swab, instrument Count done before and every after closure of each cavity.	3
◆ Strict adherence to Swab instrument Count procedures.	4

### **8. Wound dressing .**

◆ No dressing of wound done.	0
◆ Dressing of wound with un sterile gauze.	1
◆ Dressing wound with sterile but soiled gauze.	2
◆ Dressing done with considerable effort to maintain asepsis.	3
◆ Strict adherence to aseptic techniques followed.	4

#### 4. Gowning

No gowning at all..	0
Using a clean gown which is not autoclaved.	1
Wearing an autoclaved gown, but with mask or head dress not fitting well.	2
Wearing autoclaved gown, mask and head dress under acceptable aseptic technique.	3
Wearing autoclaved gown, mask and head dress under strict aseptic technique.	4

#### 5. Draping of Patient.

◆ No draping of patient at all.	0
◆ Draping of patient with un sterile drapes.	1
◆ Draping of patients with sterile drapes but incompletely.	2
◆ Full draping with acceptable aseptic precautions.	3
◆ Full draping with strict aseptic precautions.	4

#### 6 Adherence to aseptic technique.

◆ No aseptic techniques taken into account.	0
◆ Aseptic technique attempted but ending up with contamination all the time.	1
◆ Aseptic technique attempted but with some contamination at times.	2
◆ Considerable effort taken to maintain the aseptic technique.	3
◆ Strict aseptic techniques taken.	4

◆ 7. Use of sterile equipment.	
◆ Use of un sterilised equipment.	0
◆ Use of sterilised equipment but with no adherence to aseptic techniques.	1
◆ Use of sterilised equipment but with contamination at times.	2
◆ Use of sterilised equipment with considerable effort to maintain sterility.	3
◆ Strict adherence to use of sterile equipment.	4

### 7. Swab Instrument Count.

◆ No swab, instrument Count done at all.	0
◆ Swab, instrument counts done only once.	1
◆ Swab, instrument Count done only before and after the procedure.	2
◆ Swab, instrument Count done before and every after closure of each cavity.	3
◆ Strict adherence to Swab instrument Count procedures.	4

### 8. Wound dressing .

◆ No dressing of wound done.	0
◆ Dressing of wound with un sterile gauze.	1
◆ Dressing wound with sterile but soiled gauze.	2
◆ Dressing done with considerable effort to maintain asepsis.	3
◆ Strict adherence to aseptic techniques followed.	4

## 8. Skin Preparation.

- |   |   |
|---|---|
| ◆ No Skin preparation done.                               | 0 |
| ◆ Skin preparation done with non-anti-septic solution.    | 1 |
| ◆ Skin preparation done with savlon only.                 | 2 |
| ◆ Skin preparation done with savlon and povidone.         | 3 |
| ◆ Skin preparation done with savlon, povidone and spirit. | 4 |

## Appendix III

### WORK SCHEDULE.

	TASK PERFORMED	DATES	PERSONS ASSIGNED TASK	PERSON DAYS
1	Literature review	Continuous	Researcher, 1	Continuous
2	Data collection tool	1/06/02 to 31/07/02	Researcher, 1	2x7=14days
3	Finalise Research proposal	30/08/02	Researcher, 1	
4	Clearance from authority.	26/07/02 to 1/09/02	Exe. Director, supervisor PBN	2 x 7=14 days
5	Pilot study	30/08/02 to 02/09/02	Researcher, 1	1 x3 = 3 days
6	Collection tool amendment	03/09/02 to 04/09/02	Researcher, 1	1 x1 = 1 days
7	Data collection	06/09/02 to 23/09/02	Researcher, 1	1 x21 =21 days
8	Data analysis	2/10/02 to30/10/02	Researcher, 1	1 x 14 =14 days
9	Report writing	1/11/02 to 21/11/02	Researcher, 1	1 x 21 = 21 days
10	Draft report to PBN	23/11/02 to 7/12/02	Researcher, 1	1 x 14 =14 days
11	Finalise report	8/12/02 to 29/02/02	Researcher, 1	1 x 21 = 21 days
12	Monitoring	Continuous		

# Appendix IV

## GHANT CHART.

	TASK TO PERFORMED	PERSONS ASSIGNED TASK	June	July	Aug	Sept	Oct	Nov	Dec
1	Literature review	Researcher, 1							
2	Data collection tool	Researcher, 1							
3	Finalise Research proposal	Researcher, 1							
4	Clearance from authority.	Researcher, 1supervisor PBN							
5	Pilot study	Researcher, 1							
6	Collection tool amendment	Researcher, 1							
7	Data collection	Researcher, 1							
8	Data analysis	Researcher, 1							
9	Report writing	Researcher, 1							
10	Draft report to PBN	Researcher, 1							
11	Finalise report	Researcher, 1							
12	Monitoring	Continuous							



**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF MEDICINE**  
**DEPARTMENT OF POST BASIC NURSING**

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P.O. Box 50110  
Lusaka, Zambia

Dear Sir/Madam,

Re: PERMISSION TO COLLECT RESEARCH DATA

The bearer KASITICA GWIN is a forth year student at the Department of Post Basic Nursing, School of Medicine, University of Zambia. She/he is pursuing a Bachelor of Science in Nursing Degree. She/he is expected to carry out a research study in partial fulfilment of the requirements of the programme. Her/his research topic is SURGICAL WOUNDS INFECTIONS -

I am requesting your good office to avail her with the information she needs for her/his project. For any further clarifications you could contact the undersigned. Your continued support is highly appreciated


Thank you,

*[Signature]*  
Mweemba Prudencia (Ms).  
COURSE CO-ORDINATOR.



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Post Basic Nursing Department  
Box 50110  
LUSAKA

Dear Sir/Madam

Re: PERMISSION TO COLLECT RESEARCH DATA

I am a forth year student at the Department of Post Basic Nursing, School of Medicine, University of Zambia. Who is pursuing a Bachelor of Science in Nursing Degree. I am expected to carry out a research study in partial fulfilment of the requirements of the programme. My research topic is "a Study to Determine Factors Contributing to Caesareans Section Wound Infections at UTH Lusaka".

I am requesting your good office to avail me with the information.

Your continued support is highly appreciated.

Thank you,

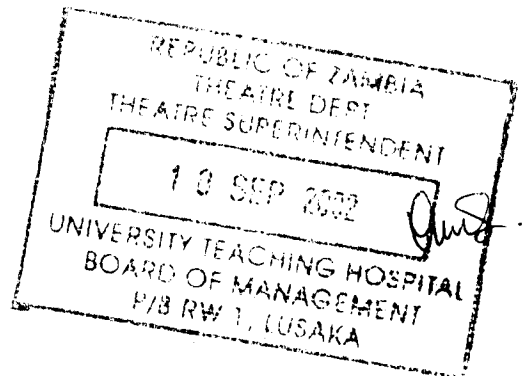
**Edwin Kashika**  
**IV STUDENT**

cc. C. Block in-charge  
Matron B. block

University of Zambia  
School of Medicine  
Department of Post Basic Nursing  
Box 50110  
LUSAKA

The Executive Director  
University Teaching Hospital  
LUSAKA

u.f.s. The Head  
Post Basic Nursing Department  
Box 50110  
LUSAKA



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