FACTORS CONTRIBUTING TO SURGICAL SITE INFECTIONS AMONG POST-OPERATIVE PATIENTS ON SURGICAL AND MATERNITY WARDS AT ST. FRANCIS HOSPITAL MUTOLERE, KISORO DISTRICT

A RESEARCH REPORT SUBMITTED TO UGANDA NURSES AND MIDWIVES EXAMINATIONS BOARD

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE

AWARD OF DIPLOMA IN NURSING

IRAKIZA ISAAC

JUL19/U024/DND/001

MAY, 2023

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ABSTRACT

Surgical site infections remain one of the most frequently and reported post-operative complications in all health care associated infections leading to prolonged hospital stay, higher costs, readmissions, morbidity and mortality, and reopening of incision site among post-operative patients. The study determined factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district. The study involved a descriptive cross-sectional design using purposive and stratified sampling technique on a sample of 36 respondents. Data was collected using a pre-tested self-administered questionnaire for health workers and a pretested self-administered interview guide for post-operative patients and the collected data was analyzed using statistical package for social science and Microsoft excel 2010 and then presented in form of percentages and frequencies in tables and figures.

Findings showed that 100% of respondents had ever given care to patients with surgical site infections and 62.5% of respondents indicated that infections mostly affected post-operative patients above 40 years and female sex (55.0%) had high chance of developing surgical site infections. 66.7% of respondents indicated diabetes mellitus, 53.3% indicated obesity as underlying conditions contributing to SSIs among post-operative patients. Additionally 81.2% of respondents indicated heavy work load, 68.8% indicated duration of surgery and use of contaminated equipment's were health worker related factors contributing to SSIs. The study concluded that patients who got surgical site infections had underlying conditions, age of 40 years and above and female sex had high chances of developing SSIs. Therefore there is need for continuous professional development, organizing workshops about surgical site infection control and management and there should be division of tasks among health workers to reduce workload

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AUTHORIZATION PAGE

RULES GOVERNING USE OF STUDENTS WRITTEN WORK FROM MUTOLERE SCHOOL OF NURSING AND MIDWIFERY.

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DEDICATION

I dedicate this dissertation to my beloved **Mum NYIRAZIBONEYE ANCILLA** who spent everything and catered for me all I needed in my studies for the better of my future.

I also dedicate this research to my brothers and sisters, **NSHIMIYIMANA CRANIMA, NDAYIZEYE JACOB, NYIRANDIKUBWIMANA CHARITY AND IRANKUNDA JONAH** for their continuous prayers and support towards the journey of my course, May God grant them abundantly.

Sincere gratitude and thanks go to my friend **MUHIRE HILLARY** who also contributed to my studies and sacrificed to lend me a computer to use throughout this research process.

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With sincere heart and gratitude I appreciate all Tutors of Mutolere school of nursing and midwifery for adding on my knowledge and imparting me with their skills for the betterment of my future, may they continue to keep a good spirit and encourage others

I also extend my sincere thanks to all my class mates of whom we started the course together from July, 2019; **TUMUHAISE ALOYSIUS, KABAGAMBE RONALD, TUMUSHABE JONITA AND NAGABA RACHEL** without forgetting all diploma extensors especially **NAGGUT NIINAH RACHEAL** and others May God bless them for the work done.

DECLARATION

I **IRAKIZA ISAAC** declare that the work presented in research report entitled **FACTORS CONTRIBUTING TO SURGICAL SITE INFECTIONS AMONG POST-OPERATIVE PATIENTS ON SURGICAL AND MATERNITY WARDS AT ST. FRANCIS HOSPITAL MUTOLERE, KISORO DISTRICT** is my original work and has never been published and or presented by any one for partial fulfillment for award of diploma in any institutions of learning.

Signature.....

Date.....

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DEFINITION OF TERMS

Acute bacterial skin and skin structure infections. This refers to complicated skin and soft tissue infections.

Infections: The inversion and growth of microorganisms in the body

Incision site or surgical site: A cut that is made on part of the body during surgery.

Post-operative wound infections: This is where the cut part of the body after surgery appears red and may have pus draining from it.

Population: Is the group of individuals that share one or more characteristics where data can be gathered and collected.

Patients: Individuals receiving medical treatment.

Surgical site infections: This refers to microorganisms that enter the incision, organ or space after surgery and increases in number causing body reaction.

A LIST OF ACRONYMS

ABSSSIs: Acute Bacterial Skin and Skin Structure Infections

CDC: Centers for Disease Control and prevention

CPD: Continuous Professional Development.

HAIs: Health care Associated Infections

MCH: Maternal and Child Health

MRRH: Mbarara Regional Referral Hospital

MRSA: Methylene Resistant Staphylococcus Aureus

OPD: Out Patient Department

PNFP: Private Not for Profit

RRH: Regional Referral Hospital

SSIs: Surgical Site Infections

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter covered back ground of study, problem statement, purpose of study, specific objectives, research questions, and justification of study.

1.1 Back ground of study

Surgical Site infections (SSIs) are microorganisms that enter in the incision or organ or space after surgery and increases in number causing body reaction (Centers for Disease Control and prevention, CDC, 2015).Surgical site infections are directly related to surgical procedures and are currently one of the most common and frequently reported Health care Associated Infections (HAIs) (CDC, 2015).

Globally surgical site infections are public health problems as well as in developed countries and the second most hospital acquired infections in the world and account to 16% of nosocomial infections (Carvalho, Campos, Franco, Roch & Ercole, 2017). Furthermore Worldwide, it reports that more than one third (1/3) post-operative death are related to surgical site infections (Amoran, Sogebi,& Fatugase, 2013). In addition SSIs threaten millions of patient each year and contribute to the spread of antibiotic resistance (WHO, 2018). In United states of America (USA), 8500000 surgeries performed, shows that 1.9% get surgical site infections (leaper and Edmiston, 2017) and in Europe surgical site infections range from 3.5-14.8% hence causing an economic burden to the in patients (Allegranzi, 2014).

In Africa as a developing continent the effect of surgical site infections range from 6.8-26% with majority in general surgeries (Cheng, Chen, Soleas, Ferko, & Cameroon, 2017). At tertially hospital in Nigeria SSI incidence was 13% in 2012 (Osakwe, Nnaji, Agu and Chineke, 2014) and

in pediatric hospital is at 30.9% of all operation sites (Maurya A, 2012). Furthermore the prevalence rate of surgical site infections in Ethiopia ranges from 10.9-75% (Mulu, Kibru, Beyene & Damtie, 2013).

In sub Saharan Africa surgical site infections still have a significant burden on both the patient and health system (Mazemira, Seid, Gishu and Geize,2020) and studies show that surgical site infection rate in developing countries range from 23.2% incidences higher than in developed countries with 9.4% incidences of SSIs (Chu & Wiser, 2018). In South Africa surgical site infection rate is high in dirty surgeries at 60% compared to clean surgery at 14.3% (Dramowski, Whitelaw and Cotton, 2016) and in Algeria and Tanzania surgical site infection incidence is 11.9% and 19.4% respectively (Ntsama, et al. 2013)

In Uganda SSIs are the leading infections in hospitals and the prevalence of SSIs is 16.4% and In Mbarara Regional Referral Hospital (MRRH) major emergency operations contributed more than 43% of the total surgical operations in 2012 (Lubega A, Joel B, & Lucy NJ, 2017).

At St. Francis hospital Mutolere, surgical ward report shows that surgical site infections was at 3.67% in the month of September and October, 2022 (surgical ward records, 2022). However in maternity ward surgical site infections were at 3% in the months of September and October, 2022 (maternity ward records, 2022). Thus the researcher is interested in finding out factors contributing to surgical site infections among post- operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

1.2 Problem statement

Surgical site infections remain one of the most frequently and reported post-operative complication contributing to approximately 38.8% of all health care associated infections leading

to prolonged hospital stay, higher costs, readmissions, morbidity and mortality among post-operative patients (Pellegrini et al. 2017).

At St. Francis hospital Mutolere, post-operative wound infections has become a problem among post-operative patients on surgical and maternity wards leading to prolonged hospital stay, readmissions, anaemia and reopening of the incision site. According to surgical ward records (2022), it revealed that more than 80 patients were operated in the month of November, 2022 and out of them 6% developed post-operative wound infections (surgical records, 2022) and 5% out of 60 patients on maternity ward operated developed surgical site infections that lead to anemia, reopening of incision site and prolonged hospital stay in the months of November, 2022 (maternity records, 2022). Despite daily dressing of wounds with chlohexadine solution, pivodone solution, vinegar solution, Doctors reviewing the incision site, administering of antibiotics, sterilization of instruments, and enhancement of operating room practices, post-operative patients still get incision site infections on surgical and maternity wards. This has prompted the researcher to carry out a study on factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

1.3 Purpose of study.

To determine factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

1.4 Specific objectives.

1. To identify patient related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

2. To find out health worker related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

1.5 Research questions.

1. What are patient related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district?.

2. What are health worker related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district?.

1.6 Justification.

This study will be of importance because it will help to determine factors contributing to surgical site infections among post-operative patients therefore it will eliminate readmissions, long stay on the ward and even eliminate surgical site infections since stake holders will come up with new measures to manage post-operative patients.

The study will be use full to the Ministry of Health in laying new strategies on how to study, manage post-operative patients on surgical and maternity wards. More so the government will be able to use the results to revise the guidelines to follow during wound dressing procedures and will involve other stake holders to identify means of reducing the rate of surgical site infection among post-operative patients.

To the St. Francis hospital Mutolere; the study findings will provide a basis for the hospital and ward managers to put up continuous professional development (CPD) about wound management and health workers will gain more knowledge about surgical site infections and how to prevent

them. More so the hospital will also allocate adequate resources to surgical and maternity team that will help them to minimize surgical site infections among post-operative patients on ward. Theatre team will also revise the sterilization system to identify whether the sterilization system is done properly.

To the nursing education and research; study findings will help the nursing education to identify where there is a gap in wound care for improvement. It will also be a basis for others on research.

To the researcher; the findings will be compiled into report that will be a partial fulfillment for award of diploma in nursing

CHAPTERTWO: LITERATURE REVIEW

2.0 Introduction

This chapter presented factors contributing to surgical site infection. It was arranged following specific objectives of the study that included patient related factors and health worker related factors contributing to surgical site infections among post- operative patients on surgical and maternity wards. The literature was obtained from medical journals, text books, internet and published research reports.

2.1 Patient related factors contributing to surgical site infections among post- operative patients on surgical and maternity wards

Georgios, et al. (2015) revealed that sex contributes to surgical site infections among patients on surgical ward where by male gender has been identified as an independent risk factor for SSIs in total hip arthroplasty. Similarly in a study by Aghdassi and others (2019) revealed that sex is a factor where by surgical site infections occur more frequently in men than women on surgical ward; however they also reported that infections are more frequently in women compared to men in heart surgeries.

According to Mohammed, Nurzelam and Adam (2020) about surgical site infections and associated factors among adult patients revealed that diabetes mellitus is a factor contributing to SSIs among post-operative patients on surgical ward because it delays wound healing due to high glucose that favors bacterial growth hence causing infections at the site. In addition Kee and Samantha (2019) in their study indicated that diabetes mellitus is an independent factor that contributes to surgical site infections in general surgery department because it impaires wound healing and poorly controlled diabetes mellitus inhibit the action of phagocytosis thus causing

more entry of microorganisms to incision site causing infections. More so Rimaye (2018) in his study at Jinja Regional Referral hospital (RRH) found out that diabetes mellitus is a factor contributing to surgical site infections among patients in surgical ward due to decreased sensitivity of tissue to insulin and high blood glucose level. Furthermore diabetes mellitus or gestational diabetes contribute to surgical site infections among post-operative patients on maternity ward (pathak, et al. 2017)

Georgios, et al. (2015) on risk factors for surgical site infections after total hip arthloplasty found out that age is a contributing factor for SSIs. Older people of 80 years and above have high chances of acquiring infections due to decreased inflammatory and immune responses. Similarly younger maternal age has been shown to be a risk factor for surgical site infections following cesarean section and also their study results showed that older age of above 40 years increases the chances of developing surgical site infections due to reduced immunity (Pathak, et al. 2017)

In a study done in Rwanda by Debora, et al. (2022) about prevalence of surgical site infections among adult patients, reported obesity as one of the contributing factors for SSIs because it is associated with low tension of oxygen in the adipose tissue as well as poor immune response is observed when open surgery is done. The same study results revealed that 17.9% of obese patients developed SSIs. Joel (2012) in his study found out that obese patients have a high risk of nosocomial infections because these patients are usually immobilized due to heavy weight that can cause gaping of sutures when mobilized thus contracting infections. Furthermore obesity is independent risk factors for SSIs among mothers who deliver by cesarean section because obese mothers are vulnerable to pathogens that cause infections (Kvalvic, et al. 2021).

Mukagendaneza, et al. (2019) revealed that smoking contributes to surgical site infections among post-operative patients where by 37.1%patients who smoke developed SSIs. Furthermore it was indicated that smoking is a contributing factor to surgical site infections and it should be screened before surgery because it causes wound dehiscence (Giancarlo, et al.2022 & Azoury, et al.2015). Similarly tobacco use among post cesarean mothers contributes to surgical site infections because it leads to impaired wound healing (Naibei, 2019).

Shakira and others (2021) in their study revealed that use of immune suppressive medication increases SSIs because such medications suppresses body's immunity which fights against the inversion of microorganisms that have entered the body causing infections. Amona (2021) in his study at Gulu RRH on comparative study proportions of post-operative sepsis maternity versus general surgical ward indicated that the suppression of immune system is directly related to the direct effects of an aesthetic drugs, hormonal changes related to stress, effects of hemorrhage and extend of surgical trauma.

According to Salahuddin, et al. (2022) in their study on epidemiology and risk factors of post-operative surgical site infections in surgical patients revealed that methylene- resistant staphylococcus aureus is responsible for surgical site infection where by it causes resistance to many first line antibiotics. Similarly study by Sganga, et al. (2017) reported that methylene resistant staphylococcus aureus (MRSA) is a bacterial pathogen that commonly causes acute bacterial skin and skin structure infections (ABSSSIs) and SSIs. Furthermore Kavanagh, et al. (2014) indicated that rate of MRSA colonization in patients admitted to hospitals tend to range from 1.3 to 7.6% hence developing higher risk of MRSA infections. Furthermore MRSA colonization in pregnancy is considered as a major contributing factor for infections after delivery since it is responsible for multiple human infections (Cigaran, et al. 2021).

Pre-existing comorbidity such as homological like anemia among post-cesarean mothers on maternity ward contributes to surgical site infections because of inadequate supply of white blood cells to the site to fight against infections (Kvalvik, et al. 2021). More so sickle cell anemia is a contributing factor for surgical site infections among post cesarean mothers on maternity ward (Naibei, 2019).

Molla et al. (2019) in their study reported that wound contamination class III among mothers who went cesarean delivery contribute to surgical site infections because these wounds are improperly cared for giving more gaps for pathogens to enter the site causing infections. More so surgical site infections were higher in contaminated wounds among post- operative patients in surgical ward (Lubega A, Joel B, & Lucy NJ, 2017).

2.2 Health worker related factors contributing to surgical site infections among post-operative patents on surgical and maternity ward

In a study done by Pinchera, et al. (2020), Salmonov et al. (2019), and Belayneh, et al. (2020) reported that not giving drugs especially antibiotics in time causes antimicrobial resistance hence surgical site infections respectively.

In a study by Kalode and others (2017) on knowledge attitude and practice of surgical site infection prevention among post-operative nurses revealed that knowledge and attitude is a contributing factor for surgical site infections where by inadequate knowledge and poor attitude by health workers lead to poor quality care among post-operative patients. Similarly Tamene, et al. (2022) reported that poor attitude and inadequate knowledge among health workers contribute to surgical site infections.

According to Abdul, Kugbee, and Der (2021) their study results showed that use of contaminated equipment's contribute to surgical site infections because contaminated equipment's harbors microorganisms which cause infections. More so Shoming, et al. (2020) indicated that there was intra-operative contamination via gloves, air and preoperative contamination due to inadequate reprocessing contribute to surgical site infection.

In a study done in Netherlands by Tartari, et al. (2017) on patient engagement with surgical site infection prevention revealed that patient participation in SSIs preventive programs is paramount therefore failure to engage patients in these programs by health workers lead to SSIs infection due to failure to handle the site further more Vanessa (2020) in his study revealed that engaging the patient to participate actively in preventive programs gives an opportunity to design and implement preventive interventions for SSIs and thus health workers failure to involve patients in preventive programs for SSIs including making decisions concerning their healthy contributes to surgical site infections.

Azoury, et al. (2015) found out that inadequate surgical scrub or antiseptic preparations as well as hair removal from patients among health workers contribute to surgical site infections. Similarly leaper and Edmiston (2017) in their study revealed that hair removal of patients by health workers contributes to surgical site infections because it results in microscopic cuts and abrasions thus acting as a disruption of skin's barrier defense against microorganism.

According to Rei, et al. (2020) found out that poor hand hygiene is one of the most important factor affecting the risk of surgical site infections. Similarly Baier, et al (2022) revealed that good hand hygiene is one of the important measure to prevent nosocomial infections especially SSIs

therefore failure to carryout hand hygiene by the health workers during dressing of the incision site will contribute to incision site infections which can lead to prolonged hospital stay and deformities causing more worries and anxiety to the patients and their families.

Mengesha, et al. (2020) on factors regarding prevention of surgical site among nurses working in surgical units revealed that training on job of health workers contribute to surgical site infections since training it is not sufficient and it duration and its duration is not well defined besides it does not follow the proper steps of standard training such predisposes patients to surgical site infections.

Oluwakemi, et al. (2017) in their study reported that heavy work over load among health workers affect the quality of nursing care given to post-operative patients because it can lead to errors in administration of medications resulting in acquisition of infections. More so Famakinwa, et al. (2014) revealed that work demand among health workers can result into patients being mismanaged hence contributing to surgical site infections among post-operative patients leading prolonged hospital stay.

According to Cavalho and others (2017) on incidence of surgical site infection in general surgeries reported duration of surgery to be a contributing factor to SSIs due to prolonged wound exposure. More so longer duration of operation contributes to SSIs where by Shiferaw in her study found out that duration of operation for greater than one hour were nearly two times more likely to develop surgical site infections compared to patients whose operation was completed within one hour (Shiferaw, et al. 2020).

CHAPTERTHREE: METHODOLOGY.

3.1 Introduction.

This chapter explained the methods and techniques that were used by the researcher to investigate the factors contributing to surgical site infections among post- operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district. It described study design, study setting, study population, inclusion criteria, definition of variables, research instruments, data collection procedure, data management, data collection analysis, ethical considerations, limitations of study and dissemination of results.

3.2 Study design and rationale

The researcher used a cross sectional design which employed both qualitative and quantitative methods of data collection. The design was selected because data would be collected at a single point in time without following respondents. Qualitative method of data collection helped respondents to express their views and quantitatively some responses would be predetermined

3.3 Study setting and rationale

The study was conducted in surgical and maternity wards within St. Francis hospital Mutolere which is a private hospital not for profit (PNFP) hospital.

The hospital is found in Gasiza parish, Nyakabande Sub County, Kisoro district in south western Uganda and is 4km from Kisoro town, 500km from Kampala the capital city of Uganda, and 17km from both Democratic Republic of Cong (DRC) and Republic of Rwanda. It belongs to the registered trustees of Kabale Diocese under Roman Catholic Church and receives students majorly nursing students who study from Mutolere School of nursing and midwifery. In addition hospital has abed capacity of 210 beds and departments which include outpatient department

(OPD), Pediatric, Maternity, Surgical, Medical, Gynecological, maternal and child health (MCH). Surgical ward is chosen because it is active and well equipped ward with both male and female wards. More so it receives patients with different conditions that require operation. Maternity ward is also chosen because it receives a good number of mothers for cesarean section. These patients are not only from Kisoro District but also from neighboring districts like Rubanda, Kabale, Kanungu and neighboring countries like Democratic Republic of Congo (DRC) and Republic of Rwanda

3.4 Study population

The study included all post- operative patients with surgical site infections receiving care and health workers who worked on surgical and maternity wards for two (2) years at St. Francis hospital Mutolere, Kisoro district.

3.4.1 Sample size determination

The study involved 36 respondents where by 20 was post- operative patients with surgical site infections; 12 were from surgical ward and 8 were from maternity ward, 16 health workers; 9 working on surgical ward and 7 working on maternity ward. The sample size selected will provide a reasonable data to generalize the findings

3.4.2 Sampling procedure

Purposive sampling method was used to select respondents from patients with SSIs because these patients had knowledge compared to patients without surgical site infections on ward. Stratified sampling method was used to select health workers on both surgical and maternity wards whereby they were grouped into strata and the researcher would select in each strata by Simple random method of sampling because it would eliminate selection bias

3.4.3 Inclusion criteria

The study included only patients with incision site infections on surgical and maternity wards only and Health workers who had worked on surgical and maternity wards for two years.

3.5 Definition of variables

3.5.1 Independent variables

Factors contributing to surgical site infections refer to elements that increase the risk of developing infections after operation and these include;

1. Patient related factors which include obesity, diabetes mellitus, and tobacco use

2. Health worker related factors which include not giving drugs in time and poor attitude of health workers

3.5.2 Dependent variable

Surgical site infections refer to microorganisms that enter in the incision, organ, or space after surgery and increases in number causing body reaction.

3.6 Research instruments.

The researcher used a pre tested semi-structured questionnaires for health workers to collect data. Both open and closed ended questions was used and written in simple language that was understood by the respondents in order to fill them correctly. Pre-tested interview guide which was translated by the researcher into simple local language to collect data from respondents

3.7 Data collection procedure

Following successful recruitment of respondent's self-administered pretested questionnaires were distributed to health workers since they were literate and would answer by writing and the

researcher would agree with respondents to pick the questionnaire every evening. The researcher conducted face to face interviews among the post-operative patients with incision surgical site infections at surgical and maternity wards using interview guides which were translated by the researcher one at time to prevent sharing of information.

3.7.1 Data management

Questionnaires were checked for completeness before the respondent leaves the site.

The number of questionnaires given out at the same time would be recorded to ensure that they are all returned. Data editing and coding was also done for error correction and easy entry into the computer respectively for proper analysis. The researcher would manage the filled questionnaires under lock and key to be only accessible by the researcher to ensure privacy and confidentiality.

3.7.2 Data analysis

Data was computed using Statistical package for social science (SPSS) and micro soft excel program 2010 and results were presented in form of frequency tables, pie charts, and graphs for easy interpretation according to objectives.

3.8 Ethical consideration

Following the approval of the research proposal by the research committee, introductory letter from the principal Mutolere school of nursing and midwifery was obtained and sub mitted to medical director of St. Francis hospital Mutolere who would sign and recommend the researcher to the research site and then would be taken to surgical and maternity ward in charges who would then recommend the researcher to access surgical and maternity wards. Informed consent was obtained from the respondents which was both verbal and written. To maintain

confidentiality, privacy, anonymity, patients were encouraged to use thumb print, health workers would use their initials and all information was kept under lock and key only accessible to the researcher.

3.9 Limitations of the study

The researcher met challenges of limited interests and unwillingness of the patients to participate in the study due to pain, miss understanding the purpose of study and thus would be minimized by explaining the purpose of the study that it would help to find out the cause of SSIs. Some health workers would refuse to give sensitive information regarding on factors contributing to SSIs since the study was directly to their practice and care given to the patients which would be minimized by explaining that information would only be used for research purposes.

3.10 Dissemination of results

The results of this study were disseminated as follows, 3 copies of final research were produced whereby one copy was submitted to Uganda Nurses and Midwives Examination board (UNMEB) for academic award, another copy to school library, and third copy to researcher.

CHAPTER 4: RESULTS

4.0 Introduction

This chapter presents study findings, analysis and interpretation of data collected from the study on factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

Data was obtained gathered from 36 respondents of whom 16 were health workers, 9 working on surgical ward and 7 working on maternity ward and 20 post-operative patients, 12 patients on surgical ward and 8 patients in maternity ward.

The researcher used self-administered pre-tested questionnaire to collect data from health workers and self-administered pre-tested interview guide to collect data from post-operative patients and data was analyzed using statistical package for socio science. Responses from the respondents were presented in frequency tables, graphs, pie charts and in form of percentages.

4.1 Distribution of health worker respondent's Socio demographic data

Table 1: showing demographic data of respondents.

Variables	**Frequency(N)=16**	**Percentage (%)**
Age		
20-25 years	5	31.2
25-31 years	8	50.0
32-37 years	3	18.8
Sex		
Male	9	56.2
Female	7	43.8
Working experience		
2 years	5	31.2
3 years	2	12.5
4 years	3	18.8
5 years and above	6	37.5
Religion		
Catholics	11	68.8
Protestants	5	31.2
Cadre		
Certificate nurse	6	37.5
Certificate midwife	4	25.0
Diploma nurse	3	18.8
Diploma midwife	2	12.5
Bachelors nurse	1	6.2
Working department		
Surgical ward	9	56.3
Maternity ward	7	43.7

Majority 6 (37.5%) of respondents had working experience of 5 years and above, 5 (31.2%) of respondents had working experience of 2 years, 3 (18.8%) had working experience of 4 years and only 2 (12.2%) had working experience of 3 years. Furthermore 6 (37.5%) were certificate nurses, 4 (25.0%) of respondents were certificate midwives and only 1 (6.2%) had bachelors in nursing whereas most 10 (62.5%) were working on surgical ward and 6 (37.5%) were working on maternity ward.

4.2 Patient related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

Table 2 showing health workers that had ever given care to patients with surgical site infections and sex that has high chance of developing surgical site infections age that is mostly affected by surgical site infections.

Health that had ever given care to patients with surgical site infections (N)=16		
Variable	**Frequency**	**Percentage (%)**
Yes	16	100.0
No	0	0
Sex that has high chance of developing surgical site infections (N)=16		
Male	6	37.5
Female	10	62.5
Age that is most affected by surgical site infections (N)=16		
20-24 years	1	6.2
24-29 years	1	6.2
30-34 years	2	12.5
35-39 years	3	18.8
40 years and above	9	56.3

Table 2 shows that all respondents 16 (100%) had ever given care to patients with surgical site infections whereas majority of the respondents 10 (62.5%) reported that females had high chance of developing surgical site infections and less than half 6 (37.5%) of respondents said that male had chances of developing surgical site infections as well as 9 (56.3%) of respondents reported that post-operative patients with in the age bracket of 40 years and above were mostly affected by surgical site infections and only 1 (6.2%) of respondents said patients with in the age bracket of 20-25 years.

Table 3 showing patients who got surgical site infections whether they have underlying conditions and their conditions.

Respondents that reported patients who got surgical site infections had underlying conditions (N)=16		
Variable	**Frequency**	**Percentage (%)**
Yes	15	93.8
No	1	6.2
Underlying conditions for patients with surgical site infections (N)=15		
Obesity		
Yes	8	53.3
No	7	46.7
Diabetes mellitus		
Yes	10	66.7
No	5	33.3
Cancer		
Yes	2	13.3
No	13	86.7
HIV/AIDS		
Yes	5	33.3
No	10	66.7
Tuberculosis		
Yes	1	6.7
No	14	93.3
Malnutrition		
Yes	1	6.7
No	15	93.3
Medical conditions		
Yes	2	13.3
No	13	86.7
Infections		
Yes	2	13.3
No	13	86.7

Table 3 show that nearly all respondents 15 (93.8%) mentioned that post-operative patients who got surgical site infections always had underlying conditions whereas only 1 (6.2%) said post-operative patients who got surgical site infections did not have underlying conditions. In addition more than half of respondents 10(66.7%) reported diabetes mellitus as one of the underlying diseases among patients with surgical site infections, 8(53.3%) of respondents reported obesity

whereas majority of respondents 5(33.3%) revealed that HIV/AIDS was also among the underlying diseases in post-operative patients with surgical site infections and 2(13.3%) of respondents indicated cancer was among the underlying diseases.

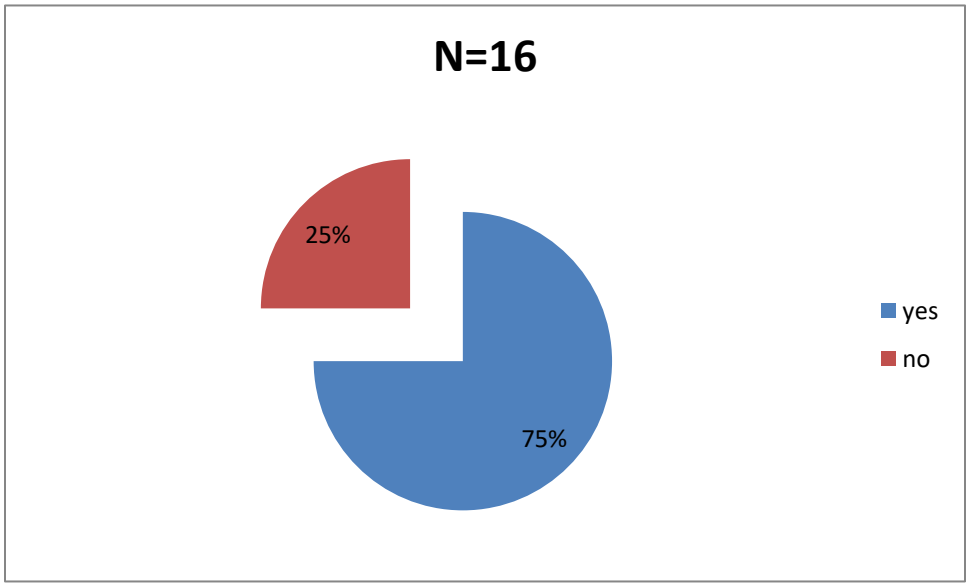

Figure 1 showing number of staffs who answered that there were habits that predisposed post-operative patients to surgical site infections.

Figure 1 show that more than half 12 (75.0%) of respondents reported that they were aware of habits that predisposed post-operative patients to have surgical site infections whereas 4(25.0%) of respondents were not aware of any habits that predisposed post-operative patients to surgical site infections.

Table 4 showing habits that predisposed post-operative patients to surgical site infections

Variable	**Frequency(N)=12**	**Percentage (%)**
Poor hygiene	3	25.0
Poor nutrition	2	16.7
Contamination of incision site	2	16.7
Not ambulating	3	25.0
Overcrowding	1	8.0
Inadequate preparation of surgical site prior to operation	1	8.0

Table 4 above shows that all 3 (25.0%) of respondents reported that patients who suffered surgical site infections were not ambulating, 2 (16.7%) of respondents reported poor nutrition and only 1 (8.0%) of respondent reported overcrowding.

Table 5 showing other patient related factors contributing to surgical site infections

Variable	Frequency(N)=16	Percentage (%)
Pre-existing commodity		
Yes	4	25.0
No	12	75.0
Smoking		
Yes	5	31.2
No	11	68.8
Religion		
Yes	3	18.8
No	13	81.2
Taking alcohol		
Yes	4	25.0
No	12	75.0
Methylene Resistant Staphylococcus Aureus (MRSA)		
Yes	5	31.2
No	11	68.2
Wound contamination		
Yes	13	81.2
No	3	18.8
Poor hygiene		
Yes	3	18.8
No	13	81.2
Patient immunity		
Yes	2	12.5
No	14	87.5
Malnutrition		
Yes	1	6.2
No	15	93.8
Applying herbs at incision site		
Yes	1	6.2
No	15	93.8

According to study findings from table 5, it showed that most of respondents 13(81.2%) indicated that wound contamination was a patient related factor that contributed to surgical site infections whereas 5(31.2%) specified methylene resistant staphylococcus aureas as a patient related factor for surgical site infections. In addition some respondents 5(31.2%) reported

smoking, 4 (25.0%) of respondents said taking alcohol and only 1 (6.2%) of respondent reported applying of herbs to the incision site.

4.3 Health worker related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro District

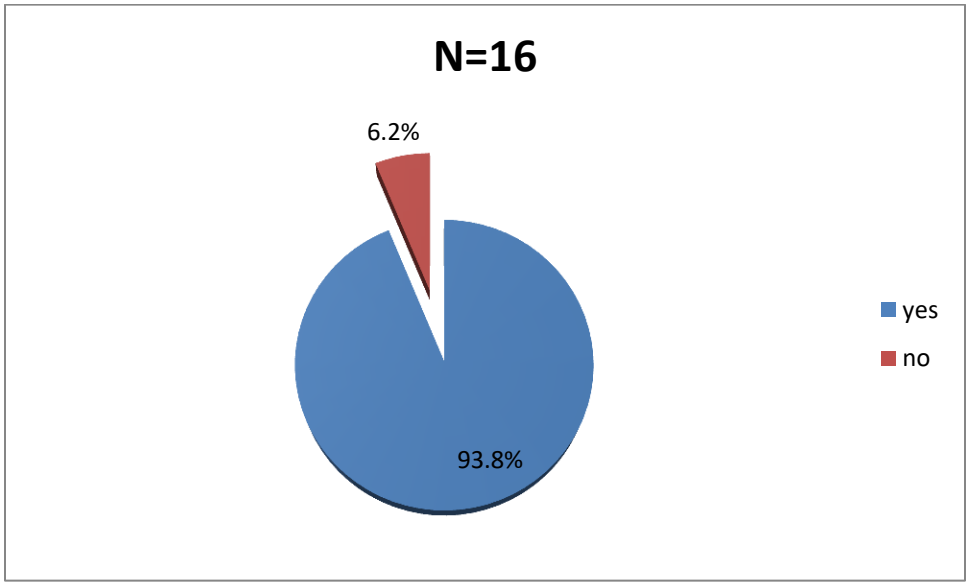

Figure 2 A pie chart showing health worker practices contributing to surgical site infections.

Figure 2 shows that majority 15(93.8%) of respondents agreed that there were health worker practices contributing to surgical site infections while only 1 (6.2%) did not agree that there are health worker practices contributing to surgical site infections.

Table 6 showing health worker practices that contributed to surgical site infection

Variable	Frequency(N)=15	Percentage (%)
Not giving drugs in time		
Yes	8	53.3
No	7	46.7
Use of unsterilized instruments		
Yes	15	100.0
No	0	0.0
Hair removal among patients by health workers		
Yes	2	13.3
No	13	86.7
Poor wound care		
Yes	5	33.3
No	10	66.7
Cross infection from one patient to another		
Yes	1	6.7
No	14	93.3
Not giving health education infection prevention and control		
Yes	2	13.3
No	13	86.7

Results from above table showed that all the respondents 15(100%) agreed that use of unsterilized instruments was a health worker practice that contributed to surgical site infections whereas more than half 8(53.3%) of respondents reported not giving drugs in time such as antibiotics was another practice that contributed to surgical site infection and only 2(13.3%) of respondents specified hair removal among patients by health workers was among health worker practices that contributed to surgical site infections.

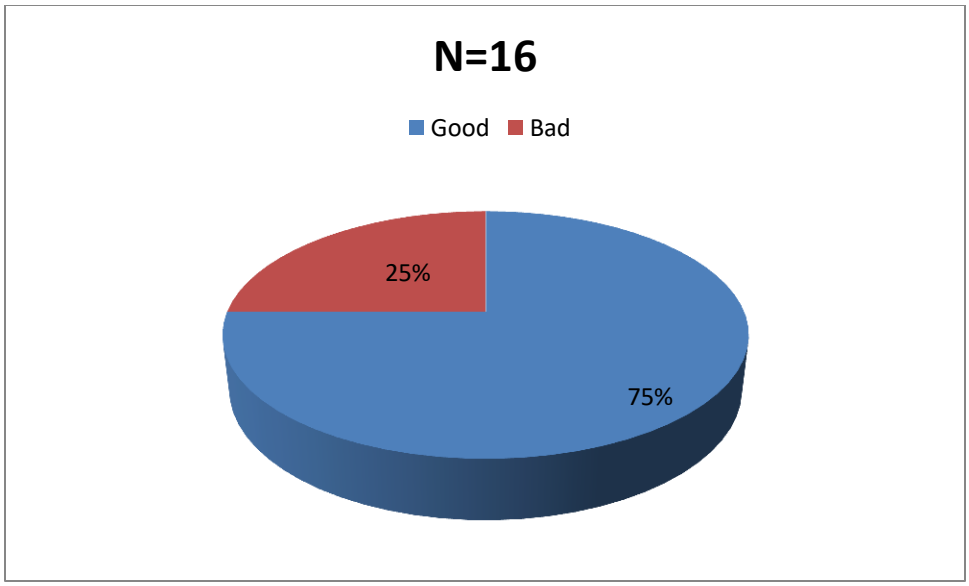

Figure 3 A pie chart showing attitude of health workers towards care of patients with surgical site infections.

Figure 3 above shows that when the respondents were asked to rate the attitude of health workers toward care of post-operative patients, majority 12(75.0%) of respondents reported health workers had good attitude towards post-operative patients with surgical site infections and minority 4(25%) reported a bad attitude of health workers.

Table 7: showing number of health workers that have ever engaged or involved post-operative patients in preventive measures for surgical site infections and those measures.

Number of health workers that have ever engaged patients in preventive measures for surgical site infections (N)=16		
Variable	**Frequency**	**Percentage (%)**
Yes	14	87.5
No	2	12.5
Preventive measures for surgical site infections (N)=14		
Taking drugs like antibiotics as prescribed by the Doctor.	1	7.1
Maintaining proper hygiene.	3	21.4
Maintaining proper nutrition	1	7.1
Avoiding wound contamination.	2	14.3
Early ambulation	7	50.0

Table 7 shows that majority 14 (87.5%) of respondents had ever engaged or involved post-operative patients in preventive measures for surgical site infection prevention whereas 2 (12.5%) of respondents had never. Furthermore all 7(50.0%) of respondents engaged or involved post-operative patients by doing early ambulation whereas other 3(21.4%) of respondents said to maintain proper hygiene and only 1(7.1%) of respondents encouraged patients to take antibiotics as prescribed by Doctor.

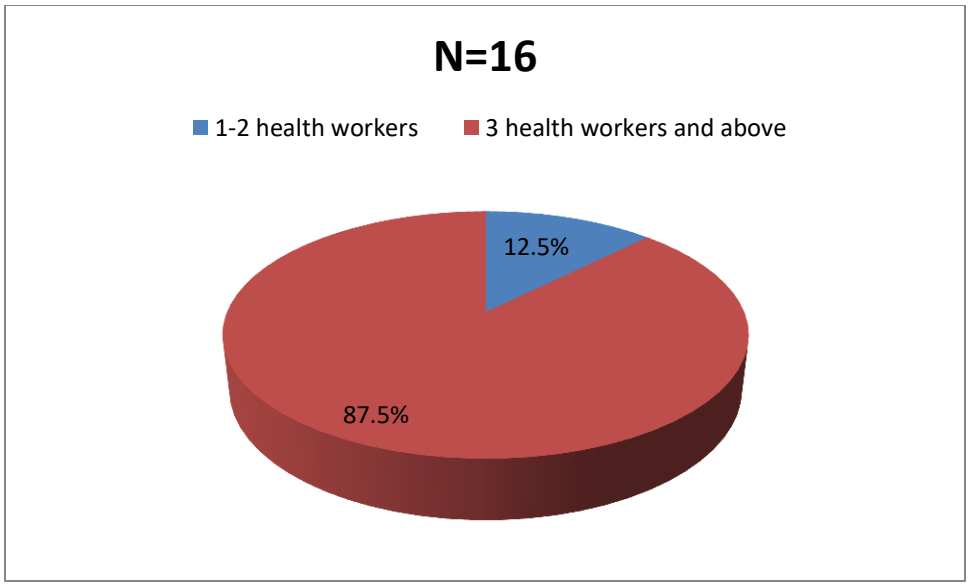

Figure 4 A pie chart showing health workers that manage a shift on both surgical and maternity wards.

Figure 4 showed that majority 14(87.5%) of respondents said that 3 health workers and above manage a shift on a specific ward whereas 2(12.5%) of respondents said 1-2 health workers manage a shift on a specific ward.

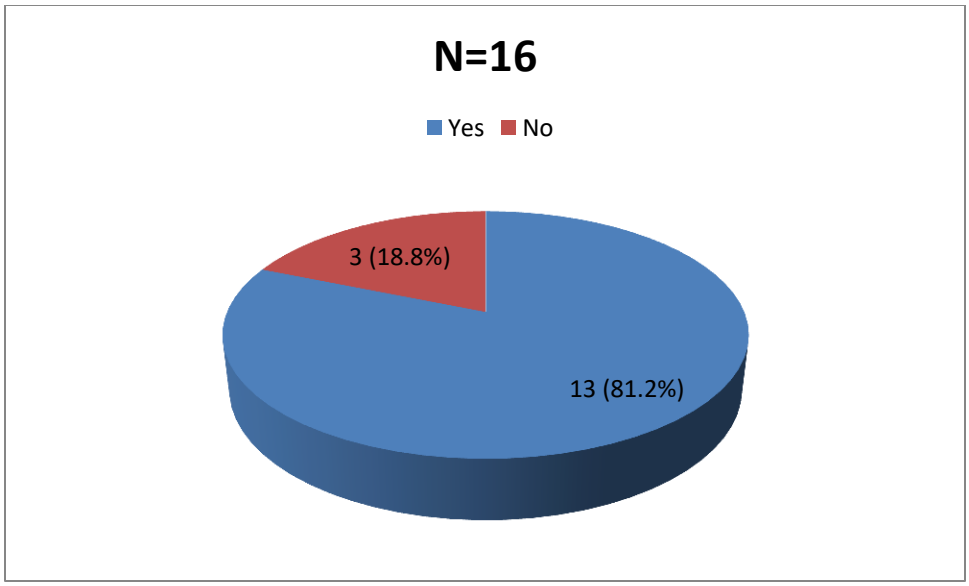

Figure 5: showing whether work load among health workers could lead to surgical site infections.

According to figure 5, results showed that more than half 13(81.2%) of respondents reported that heavy work load led to surgical site infections while minority 3(18.8%) of respondents said that heavy work load did not contribute to surgical site infections.

Table 8 showing how heavy work load affected care of post-operative patients with surgical site infections.

Variable	**Frequency(N)=13**	**Percentage (%)**
Patients missed drugs such as antibiotics		
Yes	9	69.2
No	4	30.8
Patient missed cleaning of the wound		
Yes	12	92.3
No	1	7.7
Patients are not told what to do in order to prevent surgical site infections		
Yes	7	58.8
No	6	46.2
Use of poor aseptic technique		
Yes	2	15.4
No	11	84.6

In table 8 above when asked how heavy work load affected care of post-operative patients with surgical site infections where by majority of respondents 12(92.3%) revealed that patients missed

cleaning of the wound due to heavy work load of health workers and other respondents 9(62.9%) said patients missed drugs such as antibiotics whereas 2 (15.4%) said there was use of poor aseptic technique due to fatigue and high work demand

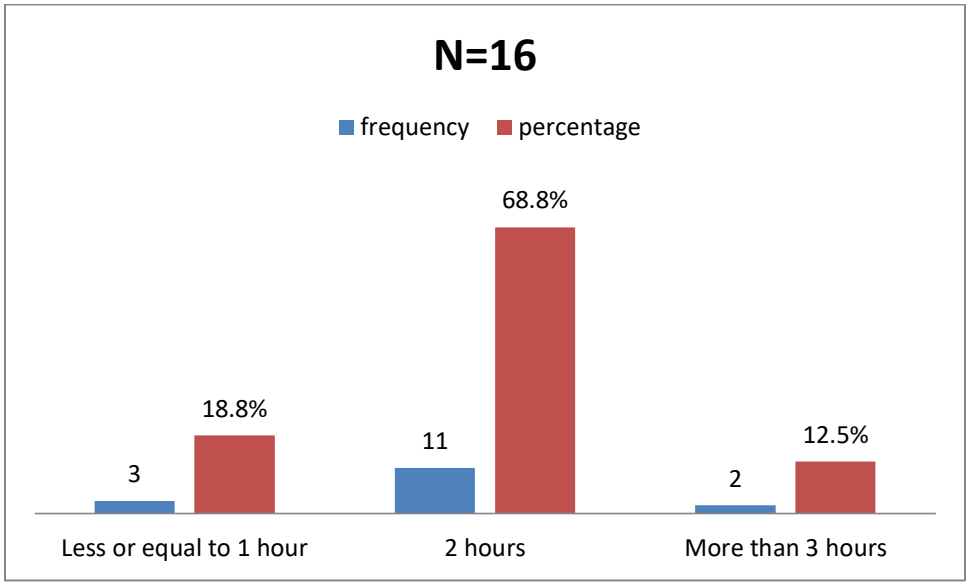

Figure 6: A graph showing how long the patients' operations took.

When the respondents were asked how long did operations take in their specific wards, majority of respondents 11(68.8%) reported 2 hours, other respondents 3 (18.8%) said less or equal to 1 hour and the minority, 2 (12.5%) said operations take more than 3 hours.

Table 9: showing number of health workers who reported that patient's hair is shaved before operation and those who revealed the site that is shaved, health workers that manage a shift and when respondents wash hands

Number of health workers that reported that patients hair is shaved (N)=16		
Variable	**Frequency**	**Percentage (%)**
Yes	4	25.0
No	12	75.0
Staffs that reported the site which was shaved before operation (N)=4		
Yes	4	100
No	0	0
Number of staff that washed hands on duty (N)=16		
Yes	16	100
No	0	0
When to wash hands (N)=16		
Before the procedure	1	6.2
After procedure	3	18.8
Before and after procedure	12	75.0

Table 9 showed that more than half 12 (75.0%) of respondents revealed that patients hair was not shaved before operation whereas 4 (25.0%) said that patients was shaved before operation as well as all 4 (100%) of respondents said that incision site is shaved before operation. More so all 16 (100%) of respondents reported that they washed hands while on duty whereas 12 (75.0%) washed hands before and after the procedure.

Table 10: showing other health worker related factors contributing to surgical site infections.

Variable	Frequency(N)=16	Percentage (%)
On job training		
Yes	7	43.8
No	9	56.2
Inadequate knowledge of health workers about surgical site infections		
Yes	12	75.0
No	4	25.0
Use of contaminated equipment's		
Yes	11	68.8
No	5	31.2
Not observing aseptic technique		
Yes	13	81.2
No	3	18.8

Table 10 showed that majority 12 (75.5%) of respondents reported inadequate knowledge of health workers about surgical site infections, 11 (68.8%) of respondents said there is use of contaminated equipment's whereas 7 (43.8%) and 5 (31.3%) reported on job training and not observing aseptic technique respectively.

4.4 Data collected from post-operative patients using interview guide.

Table 11: showing post-operative patients demographic data

Variable	Frequency(N)=20	Percentage (%)
Respondents age		
10-19 years	2	10.0
10-29 years	7	35.0
30-39 years	6	30.0
40 years and above	5	25.0
Respondents sex		
Male	9	30.0
Female	11	70.0
Respondents level of education		
Did not attend	7	35.0
Primary level	5	25.0
Secondary level	4	20.0
Tertiary institution	4	20.0
Respondents occupation		
Peasant	15	75.0
Bodaboda	2	10.0
Business man	3	15.0
Respondents religion		
Catholics	9	45.0
Protestants	8	40.0
Adventists	3	15.0
Patients ward		
Surgical ward	12	60.0
Maternity ward	8	40.0

According to table 11 above, it showed that most respondents 15(75.0%) were peasants 12 (60.0%) of respondents were admitted on surgical ward whereas 8 (40%) of respondents were admitted to maternity ward. Majority 11 (70%) of respondents were female while 9 (30%) were females, 9 (45.0%) of respondents were Catholics, 5 (25.0%) and only 2 (10.0%) of respondents in age bracket of 40 years and above and 10-19 years respectively.

4.5 Patient related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district.

Table 12: showing post-operative patients who revealed that they had conditions before operation and their conditions, respondents who sometimes touched on their wound, washed hands and number of respondents that were provided with water to wash hands

Respondents who reported that they had underlying condition before operation (N)=20		
Variable	**Frequency**	**Percentage (%)**
Yes	**7**	**35.0**
No	**13**	**75.0**
Underlying conditions (N)=7		
HIV/AIDS		
Yes	2	28.6
No	5	71.4
Diabetes mellitus		
Yes	4	57.1
No	3	42.9
Peptic ulcer disease (PUD)		
Yes	1	14.3
No	6	85.7
Patients who sometimes touched on their wound (N)=20		
Yes	14	70
No	6	30
Number of patients who washed hands (N)=14		
Yes	4	28.6
No	10	71.4
Number of patients that were provided with water to wash hands (N)=4		
Yes	4	100
No	0	0

Study findings from above table shows that more than half 13 (65.0%) of respondents had no underlying conditions and only 7 (35%) of respondents had underlying conditions before operation whereas majority 4 (57.1%) of respondents had diabetes mellitus, 2 (28.6%) had HIV/AIDS and only 1(14.3%) of respondents reported peptic ulcer disease. Majority 14 (70.0%) of respondents sometimes touched on their wound, 6 (30.0%) did not touch on their wound, 4

(28.6%) of respondents washed hands before touching their wound whereas 10 (71.4%) did not wash hands and all 4 (100%) of respondents were provided with water to wash hands.

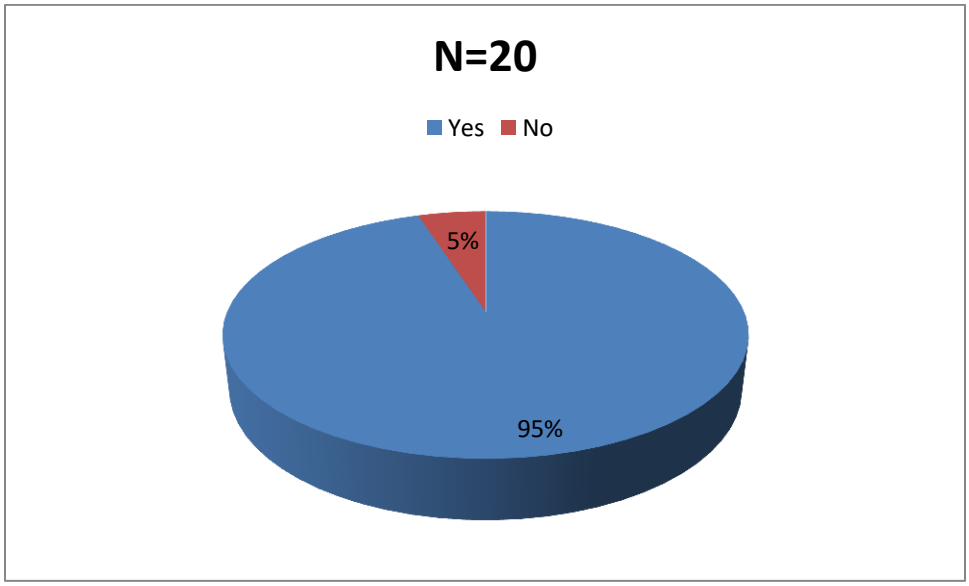

Figure 7: A pie chart showing number of patients that gathered with others for leisure.

According to figure 7 above, majority of respondents 19 (95.0%) said that they gathered with others for leisure and only 1 (5.0%) respondent did not gather with others for leisure.

Table 13: showing activities that helped post-operative patients to relax, how many times the activity was repeated and how patients managed their incision site when in pain

Variable	Frequency(N)=19	Percentage (%)
Taking alcohol		
Yes	4	21.1
No	15	78.9
Listening to music		
Yes	17	89.5
No	2	10.5
Sharing and telling a story.		
Yes	14	73.7
No	5	26.3
Ambulation		
Yes	19	100
No	0	0.0
How many time the activity is repeated in a day (N)=19		
Once a day	2	10.5
2 times a day	4	21.1
3 times a day and above	13	68.4
How patient managed incision site when in pain (N)=20		
Just touch		
Yes	5	25.0
No	15	75.0
Massage		
Yes	11	55.0
No	9	45.0
Scratching		
Yes	5	25.0
No	15	75.0

Table 13 shows that most respondents 19 (100%) said ambulation as the activity that helped them to relax, 14 (73.7%) of respondents reported sharing and telling stories whereas minority of respondents 4 (21.1%) said taking alcohol as well as majority 13 (684%) of respondents repeated the activity 3 times a day and above, 4 (21.1%) of respondents repeated the activity a day whereas 2 (10.5%) of respondents reported once a day. In addition most of respondents 11

(55.0%) massaged their incision site as the way of managing pain, 5 (25.0%) said just a touch whereas only 5 (25.0%) of respondents reported scratching around the incision site.

4.6 Health worker related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere, Kisoro district

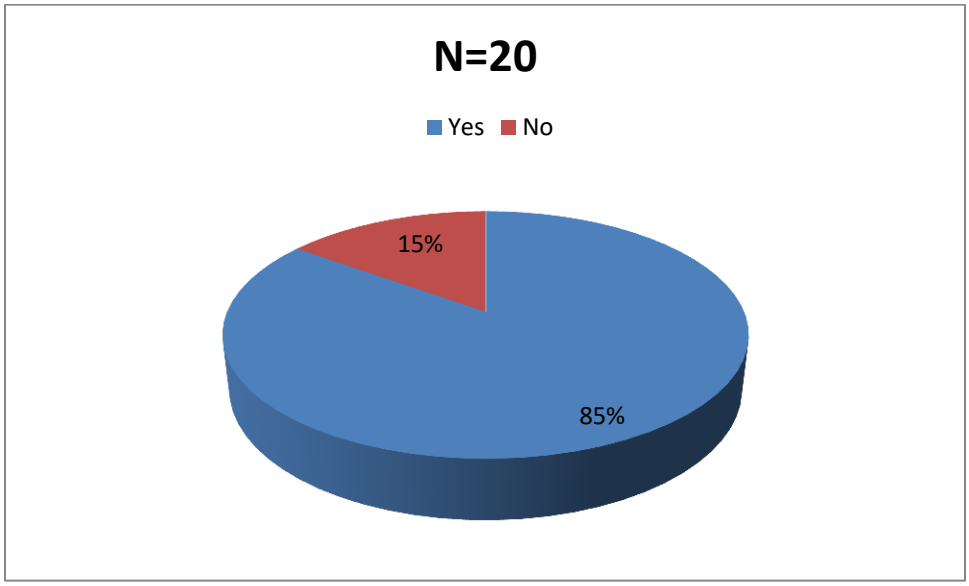

Figure 8: A pie chart showing whether health workers gave drugs to patients in time.

According to results from figure 8 above, it showed that majority of the respondents 17 (85.0%) said that health workers gave drugs in time whereas minority of the respondents 3 (15.0%) revealed that they did not give drugs in time.

Table 14: showing how post-operative patients saw health workers maintaining their hands clean.

Variable	Frequency(N)=20	Percentage (%)
Hand washing		
Yes	4	20.0
No	16	80.0
Sanitizing		
Yes	3	15.0
No	17	85.0
Gloving		
Yes	12	60.0
No	8	40.0
Health workers that changed gloves during dressing of incision site (N)=20		
Yes	20	100
No	0	0

Table 14 shows that more than half of respondents 12 (60.0%) said that health workers maintained their hands clean by gloving, 4 (20.0%) reported by hand washing and the minority of respondents 3 (15.0%) said that health workers maintain their hands by sanitizing. In addition when the respondents were asked whether health workers change gloves during dressing of incision site, all 20 (100%) of respondents revealed that health workers changed gloves during dressing of incision site.

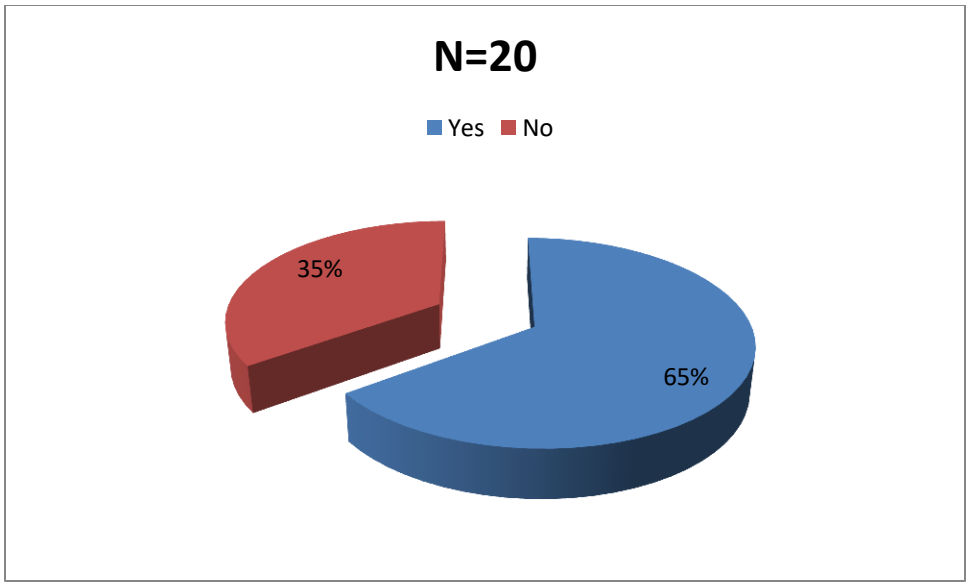

Figure 9: A pie chart showing number of patients that was involved or engaged in surgical site infection prevention and control.

Figure 9 above shows majority of the respondents 13 (65.0%) reported that they were involved or engaged in surgical site infection prevention while minority 7 (25.0%) were not involved or engaged in surgical site infection prevention.

Table 15 showing preventive measures that were told to patients with surgical site infections by health workers.

Variable	Frequency(N)=13	Percentage (%)
Taking treatment as prescribed.	2	15.3
Avoiding wound contamination.	4	30.8
Maintaining proper hygiene.	4	30.8
Maintaining good nutrition.	3	23.0

Table 15 shows that most respondents 4 (30.8%) reported that they were told of maintaining proper hygiene as preventive measure for surgical site infections and only 2 (15.3%) of respondents said taking treatment as prescribed.

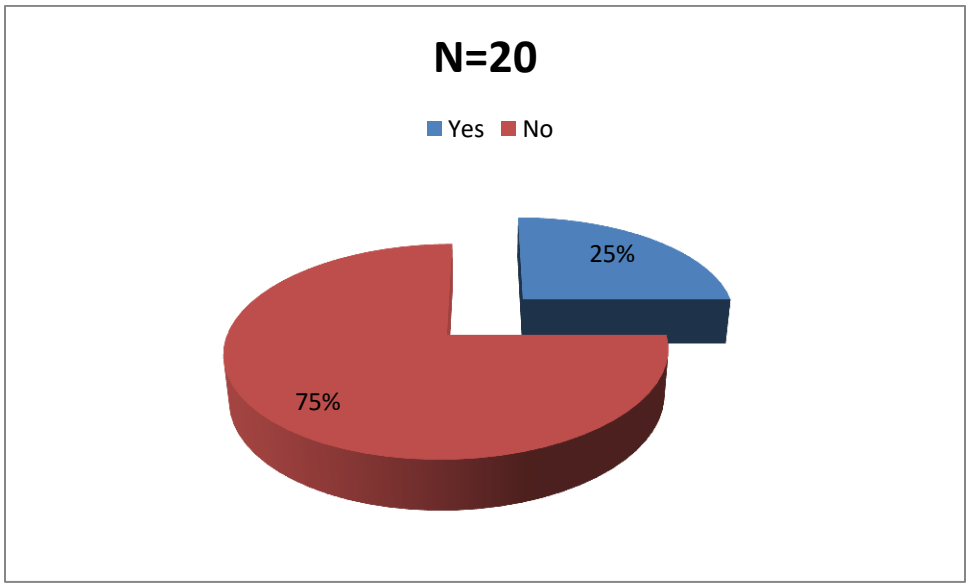

Figure 10: A pie chart showing number of post-operative patients whose sites were shaved before operation.

The figure above shows more than half 15 (75.0%) respondents were shaved before operation while less than half of respondents 5 (75.0%) of respondents said that they were shaved before operation.

Table 16: showing number of patients whom their operation took long time and how respondents judged health worker work load and how health worker work load affected patients care

Number of patients whom their operation took long time (N)=20		
Variable	**Frequency**	**Percentage (%)**
Yes	8	40.0
No	12	60.0
Approximately how long (N)=20		
Less or equal to 1 hour	12	60.0
2 hours	3	15.0
More than 3hours	5	25.0
How patient judged health worker load (N)=20		
Heavy	12	60.0
Average	8	40.0
How health worker work load affected patients care (N)=20		
Did not affect care	12	60.0
Came late to clean the site	5	25.0
Missed drugs like antibiotics	3	15.0

From the above table, majority 12 (60.0%) of respondents reported that their operation did not take long and 8 (40.0%) had their operation taking long time whereas more than half 12 (60.0%) of respondents said that their operation took approximately less or equal to 1 hour and only 3 (15.0%) of respondents reported 2 hours. Furthermore 12 (60.0%) of respondents judged health worker work load as heavy whereas majority 12 (60.0%) of reported that their care was not affected due to how they judged health worker work load.

CHAPTER FIVE: DISCUSSION, CONCLUSION, RECOMMENDATION AND IMPLICATION TO NURSING PRACTICE.

5.0 INTRODUCTION.

This chapter discusses the study findings in relation to specific objectives and explains the factors contributing to surgical site infections among post-operative patients on surgical and maternity ward at St. Francis hospital Mutolere Kisoro district. It provides conclusions as well as recommendations.

5.1 DISCUSSION.

The research findings are discussed under the following headings.

5.1.1 Socio demographic data

The study indicated 37.5% of health worker respondents reported that they had working experience of 5 years and above which implied that they had good experience in giving care to patients with surgical site infections and had knowledge concerning surgical site infection prevention and control whereas 40% and 60% of post-operative patients were admitted on maternity and surgical wards respectively. This is because surgical ward receives a number of patients with different conditions that require surgery and mothers for cesarean section on maternity ward.

5.1.2 Patient related factors contributing to surgical site infections among post-operative patients

According to the study results, 62.5% of respondents related that females had high chance of developing surgical site infections. This was observed by interviewer that surgical site infections were common in females compared to males. This was not supported by the study done by

Aghdas and others (2019) on gender related risk factors for surgical site infections which revealed that sex is a factor where he found out that surgical site infections occur more frequently in men compared to women however they also contradicted with their study by revealing that surgical site infections are more frequent in women compared to men in heart surgeries..

Results from the study revealed that 62.5% respondents said that post-operative patients with in the age bracket of 40 years and above were mostly affected by surgical site infections; this could be caused by reduced immunity. This was in line with the study done by Gorgious, et al. (2015) on risk factors for surgical site infections after total hip arthloplasty which revealed that age is a contributing factor for SSIs whereby older people of 80 years and above had high chances of acquiring surgical site infections due to decreased inflammatory and immune responses.

According to the study results, 66.7% of respondents reported that diabetes mellitus is a contributing factor to surgical site infections and is one of the underlying conditions among patients with surgical site infections. This was also revealed by 57.1% of post-operative patents who reported that they had conditions before operation such as diabetes mellitus. This was supported by the study done by Muhammed, Nurzelam and Adam (2020) about surgical site infections and associated factors among adult patients which revealed that diabetes mellitus is a contributing factor for surgical site infections among post-operative patients because it delays wound healing. Similarly Kee and Samantha (2019) supported the study by revealing that diabetes mellitus is an independent factor for surgical site infections in general surgery department since it impairs wound healing and poorly controlled diabetes mellitus inhibit the action of phagocytosis causing more entry of microorganisms to incision site

The same study findings revealed that 53.3% of respondents reported that obesity as an underlying condition among patients with surgical site infections is a contributing factor for surgical site infections. This was in line with the study done in Rwanda by Debora, et al. (2022) whose study revealed that obesity is associated with low oxygen tension in adipose tissue as well as poor immune response is observed when open surgery is done; the same study results revealed that 17.9% of obese patient developed surgical site infections. Similarly Joel (2012) reported that obese patients have a high risk of nosocomial infections because these patients are usually immobilized due to heavy weight that can cause gaping of sutures when mobilized. This was also in agreement with the study done by Kvalvic, et al. (2021) who reported that mothers who are obese and deliver by cesarean section are vulnerable to pathogens that cause infections.

Results from the study revealed that 33.3% of respondents reported that HIV/AIDS is among the underlying conditions in patients with surgical site infections and these patients are believed to take medication for rest of their life time especially HIV/AIDS drugs and these are immune suppressive medications. This corresponds to the study done by Shakira and others(2021) who reported that use of immune suppressive medications increases SSIs because such medication suppress body's immunity which fights against the inversion of microorganisms that have entered the body causing infections. Similarly Amona (2021) in his study at Gulu RRH on comperative study proportions of post-operative surgical site sepsis maternity versus general surgical ward reported that suppression of immune system is directly related to direct effects of anesthetic drugs, hormonal changes related to stress, effects of hemorrhage and extend of trauma.

According to the study results, it revealed that 41.3% of respondents reported contamination of incision site as a habit that predisposed post-operative patients to surgical site infections. This was also supported by 71.4% of post-operative patients who revealed that they would sometimes

touch on their wound with unwashed hands and this could be a form of contamination. This was related to the study done by Molla, et al. (2019) who reported that wound contamination among mothers who delivered by cesarean section contributed to surgical site infections because wounds are improperly cared for giving the gap for pathogens to enter the site causing infections.

5.1.3 Health worker related factors contributing to surgical site infections among post-operative patients

Study findings revealed that 100% of respondents reported use of unsterilized equipment as one of the health worker practice which contributed to surgical site infections among post-operative patients this could be related to work overload among health workers which made them not to get enough time to take instruments for sterilization. This was in line with the study done by Abdul, Kugbee and Der (2021) who indicated that use of contaminated equipment contribute to surgical site infections because they harbor microorganism which cause infections. Furthermore the study results were supported by the study done by Shoming, et al. (2020) who found out that there was intraoperative contamination via gloves, air, and preoperative contamination due to inadequate reprocessing.

According to the study results, 53.3% of the participants said not giving drugs in time was a practice among health workers which contributed to surgical site infections among post-operative patients due to inadequate health workers on shift and this would give the gap for microorganisms that cause infections to multiply. This was also reported by 35% of interviewee who participated in the study by saying that drugs were not given in time. This was in line with the study done Pinchera, et al. (2020), Salmono, et al. (2019) and Belayne, et al. (2020) who reported that not giving drugs especially antibiotics in time causes microbial resistance hence surgical site infections.

More so results from the study revealed that most 75.0% of respondents mentioned inadequate knowledge of health workers contributes to surgical site infections; this could be attributed to lack continuous professional development (CPD) on surgical site infection prevention control. This is in line with the study done by Kalode and others (2017) on knowledge, attitude and practice of surgical site infection prevention which reported that inadequate knowledge and poor attitude of health workers lead to poor quality of care among post-operative patients. Furthermore the study was supported by Tamene, et al. (2022) who reported poor attitude and inadequate knowledge contributed to surgical site infections.

The study findings show that most 87.5% of respondents involved or engaged post-operative patients in preventive measures for surgical site infections. This was supported by 65% of post-operative patients with surgical site infections who revealed that they were involved in preventive measures for surgical site infections. This was supported by the study done in Netherlands by Tartari, et al. (2017) that failure to engage patients in preventive programs by the health workers lead to surgical site infections due to failure to handle the site.

According to study findings, 81.2% of respondents reported heavy work load among health workers contribute to surgical site infections. This was also supported by 35.0% of post-operative patients who judged health workers work load as heavy and also reported that they missed drugs like antibiotics and even came late to clean the incision site. This could be related to inadequate health workers on duty. This is in agreement with study done by Oluwakemi, et al. (2017) who reported that heavy work among health workers affect the quality of care given to post-operative patients because it can lead to errors in administration of medicines resulting in acquisition of infections. Similarly Famakinwa, et al. (2014) supported the study by specifying that work demand among health workers can result into patients being mismanaged hence

contributing to surgical site infections among post-operative patients leading to prolonged hospital stay.

Furthermore findings of the study indicated that 40.0% of post-operative patients reported that their operation took long time; this could be attributed to the magnitude of trauma and exposure to the environment. This corresponds to the study done by Cavalho and others (2017) on incidents of surgical site infections in general surgeries who reported that duration of surgery contributes to surgical site infections because of prolonged wound exposure. Similarly Shiferaw, et al. (2020) agrees with them that longer duration of operation for patients greater than one hour were nearly two times more likely to contribute to surgical site infections due to prolonged wound exposure compared to patients whose operation was completed in one hour.

5.2 CONCLUSION

The study determined factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis hospital Mutolere. The study identified patient and health worker related factors contributing to surgical site infections among post-operative patients on surgical and maternity wards. The study revealed that surgical site infections mostly affected post-operative patients with in the age bracket of 40 years and above and female sex had high chance of developing surgical site infections. It also indicated that most post-operative patients who got surgical site infections always had underlying conditions before operation like diabetes mellitus and obesity and how big the trauma is.

The study revealed that 100% of respondents had ever given care to patients with surgical site infections and 93.8% of respondents indicated that there are health worker practices like not giving drugs in time and unsterilized instruments contributing to surgical site infections. The

study further identified good attitude of respondents towards care of post-operative patients and 75% of health workers maintained their hands clean before and after procedure while on duty. The study found out that most 70.0% of respondents sometimes touched on their wounds, 65% of patients were engaged or involved in preventive measures for surgical site infections whereas 100% of post-operative patients reported that health workers changed gloves during dressing of incision site. Furthermore the study established patient related factors as obesity, diabetes mellitus, methylene resistant staphylococcus aureus colonization, pre-existing comorbidity, smoking, use of immunosuppressive medications wound contamination whereas health worker related factors include duration of surgery, heavy work load, training on job, poor hand hygiene and cross-infections from one patient to another. Therefore there should be continuous health educations about surgical site infection management and patients should be involved in preventive measures for surgical site infections to maintain a good health.

5.3 RECOMMENDATIONS

- The ministry of health should put up new policies and guidelines in management of surgical site infections.
- Ministry of health should encourage in service training so that stake holders gain more knowledge about surgical site infection management and control so as to reduce surgical site infection related complications like anemia among post-operative patients
- The hospital administration should study the findings and identified factors contributing to surgical site infections to lay out others strategies to prevent and minimize surgical site infections which will reduce prolonged hospital stays, higher costs among post-operative patients.

- More so the hospital should schedule time for continuous professional development (CPD), participate in workshops and seminars about surgical site infection prevention and control.
- Hospital administration should add more health workers to those who manage shift to prevent work overload since it contributes to surgical site infections.
- Health workers should also maintain their hands clean before and after procedure, and use sterilized equipment on post-operative patients, divide the work among themselves to prevent work overload.
- To the research and education, similar studies in different settings should be carried out on the same topic to generate more supportive evidence.
- Similar studies using a larger sample size should also be carried out to compare the findings.

5.4 IMPLICATIONS TO THE NURSING PRACTICE.

If surgical site infections are not prevented and controlled, it will lead to morbidity and mortality, readmissions and increased costs due to long hospital stay, therefore knowing factors contributing to surgical site infections should identify weaknesses, challenges and knowledge gap in surgical site infection prevention and management

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APPENDICES

APPENDIX I: CONSENT FORM

My name is **IRAKIZA ISAAC** a student of Mutolere School of nursing and midwifery studying a diploma in nursing. I am conducting a study on **factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis Hospital Mutolere, Kisoro District**. This study is purely academic, will not cause any harm to you as a respondent and it will help to determine patient and health worker related factors contributing to surgical site infections among post-operative patients. The findings will provide baseline information for formulating preventive measures that will help to minimize surgical site infections among postoperative patients. Therefore you are chosen to participate in this study, the information provided will be kept confidential and to only be accessible to the researcher and supervisor. Your name will not be indicated anywhere for privacy and security purposes. You are free to answer questions to your level of understanding and participation is voluntary. You are free to withdraw from the study at any time without fear of any penalty.

Respondent's signature.....

Date.....

Researchers Signature: …….....

Date.....

APPENDIX II: QUESTIONAIRE FOR HEALTH WORKERS

My name is **IRAKIZA ISAAC** a student of Mutolere School of nursing and midwifery studying a diploma in nursing. I am conducting a study on **factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis Hospital Mutolere, Kisoro District**.

This questionnaire is to help the researcher collect data for above mentioned study. All information collected will be kept confidential and is for academic purposes only.

Instructions

1. Do not write your name (s) anywhere on this questionnaire.

2. Circle your answer and fill in blank space.

3. Answer all questions in order to obtain accurate and quality data.

SECTION A: BIO DEMOGRAPHIC DATA

1. What is your age in years?

A. 20-25 B. 26-31 C. 32-37

2. What is your gender?

A. Male B. Female

3. What is your working experience?

A. 2 years B. 3years C. 4 years D. 5 years and above

4. What is your religion?

A. Catholics B. Protestants C. Others specify……..

5. What is your cadre?

A. Certificate nurse B. Certificate midwife D. Diploma nurse. E. Diploma midwife F. Bachelors nurse

6. Which is your ward?

A. Surgical ward B. Maternity ward

SECTION B: PATIENT RELATED FACTORS CONTRIBUTING TO SURGICAL SITE INFECTIONS AMONG POST-OPERATIVE PATIENTS.

7. Have you ever given care to patients with surgical site infections?

A. Yes B. No

8. If yes to number 7, according to your experience which gender has high chances of developing surgical site infections?

A. Male. B. Female.

9. According to your experience which age (years) is mostly affected by surgical site infections?.

A. 20-24 B. 25-29 C. 30-34 D. 35-39 E. 40and above.

10. Do these patients who get SSIs always have underlying conditions?

A. Yes. B. No

11. If yes to number 10, which underlying diseases are common among patients with surgical site infections? (Circle all appropriate)

A. Obesity B. Diabetes mellitus C. Cancer D. HIV/ AIDs E. Tuberculosis

E. Others specify

.....

.....

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.....

12. Basing on your knowledge of surgical site infections are there habits that mostly predisposes patients to have surgical site infections

A. Yes B. No

13. If yes to number 12, which are those habits?

…….

…….

……

14. Identify other patient related factors contributing to surgical site infections among postoperative patients (circle all appropriate)

A. Pre-existing commodity B. Smocking C. Religion D. Taking alcohol

E. Methylene resistant staphylococcus aureus colonization F. Wound contamination

F. If others specify.....

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……

SECTION C: HEALTH WORKER RELATED FACTORS CONTRIBUTING TO SURGICAL SITE INFECTIONS AMONG POST-OPERATIVE PATIENTS.

15. According to your experience are there some health worker practices that contribute to surgical site infections among patients.

A. Yes B. No

16a. if yes to number 15, what are they? (Circle all appropriate)

A. Not giving drugs in time

B. Use of unsterilized equipment's

C. Hair removal among patients by health workers

b. If others specify

……..

……...

……

…….

17. How do you relate the attitude of workers to words caring patients with surgical site infections?

A. Good B. Bad

18. Have you ever engaged patents in preventive measures for surgical site infections?

A. Yes B. No

19. If yes to number 18, what are those measures?

…….....

……..

……..

20. Approximately how many health workers manage a shift on this ward?

A. 1-2 health workers

B. 3 health workers and above.

21. Is it true that heavy work load of health workers can lead to surgical site infections?

A. yes B. No

22. If yes to number 21, according to your experience, how does it affect care to post-operative patients? (Circle all appropriate)

A. Patients miss drugs especially antibiotics B. Patients miss cleaning of wound

C. patients are not told what to do in order to prevent surgical site infections.

D. Others specify…….

……

……

23. Considering this specific ward, how long do operations take?

A. 2 hours B. More than 2 hours C. Others specify.....

24. Do health workers always shave patients before operation?

A. Yes B. No

25. If yes to number 24, which sites are always shaved?

.....

.....

.....

26. Do health workers always wash hands while on duty?

A. Yes B. No

27. If yes to number 26, when (circle all appropriate)

A. Before the procedure

B. After the procedure

C. Before and after procedure

28. What are other health workers related factors contributing to surgical site infections among post-operative patients (circle all appropriate)

A. On job training

B. Inadequate knowledge of the health workers about surgical site infections

C. Use of contaminated equipment's

D. others specify.

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.....

THANK YOU FOR YOUR PARTICIPATION

APPENDIX III: INTERVIEW GUIDE FOR POST OPERATIVE PATIENTS WITH SURGICAL SITE INFECIONS.

My name is IRAKIZA ISAAC a student of Mutolere School of nursing and midwifery studying a diploma in nursing. I am conducting a study on **factors contributing to surgical site infections among post-operative patients on surgical and maternity wards at St. Francis Hospital**

NUMBER	**QUESTIONS**	**ANSWERS**
SECTION A	**BIO DEMOGRAPHIC DATA**	
1	Respondent age.	A. 10-19 years B. 20-29 years C. 30-39 years D. 40 and above
2	Respondent occupation.	A. Peasant B. Bodaboda C. Business man/woman D. Others specify **.....**
3	Patient sex.	A. Male B. Female
4.	Respondent level of education.	A. Did not attend any level

		B. Primary level C. Secondary level D. Tertiary level
5	Respondent religion?	A. Catholic B. Protestant C. Others specify……
SECTION B	**PATIENT RELATED FACTORS**	
6	Apart from operation done on you, did you have any condition before?	A. Yes B. No
7	If yes to number 6, what is that condition?	A. HIV/AIDS B. Cancer C. Diabetes mellitus D. Others specify……
8.	Do you sometimes touch on your wound?	A. Yes B. No
9	If yes to number 8, do you wash hands before touching your wound?	A. Yes B. No
10	If yes to number 9, for the period you have been	A. Yes

	here are you provided with water to wash hands?	B. No
11a	Do you sometimes gather with others for leisure time?	A. Yes B. No
B	If yes to number 10a, which activity helps you to relax?	A. Ambulation B. Taking alcohol. C. Others specify……
C	How often do you repeat it in a day?	A. Once a day B. 2 times a day C. 3 a day and above
12	How do you manage your incision site when there is pain?	A. Just touch B. Massage C. Scratch D. Others specify……
SECTION C	**HEALTH WORKER RELATED FACTORS**	
13	Do health workers always give you drugs in time?	A. Yes B. No

14	How have you seen health workers maintaining their hands clean?	A. Hand washing B. Sanitizing C. Gloving
15	Do health workers change gloves as they are cleaning the wound?	A. Yes B. No
16	Do health workers teach or involve you on how to care for surgical site?	A. Yes B. No
17	If yes to number 18, What has health workers told you?	…… …….. ……
18	Did you have part of the body shaved by the health workers before operation?	A. Yes B. No
19	Did you operation take long time?	A. Yes B. No
20	Approximately how long? Basing on attendance sharing.	…… …….
21	How do you judge health worker work load on this ward?	A. Heavy B. Average

22	How does it affect your care?	A. Did not affect the care B. Came late to clean the site C. Missed drugs like antibiotics D. Others specify……. …….

THANK YOU FOR PARTICIPATION

APPENDIX IV: PROPOSAL APPROVAL FORM

PROPOSAL APPROVAL FORM

Name of a student: **IRAKIZA ISAAC**

Title of the research study: **FACTORS CONTRIBUTING TO SURGICAL SITE INFECTION AMONG POST-OPERATIVE PATIENTS ON SURGICAL AND MATERNITY WARDS AT ST. FRANCIS HOSPITAL MUTOLERE KISORO DISTRICT.**

I hereby accept this proposal for the research study and approve it for submission to school of Nursing and other concerned organizations review board (Research and ethics committee)

Supervisor: **SR. CATHELINE KEMIGISHA**

Signature:.....

Date:.....10/3/2023.....

Principal: **SR. CATHELINE KEMIGISHA**

Signature:.....

Date:.....10/3/2023.....

MUTOLERE SCHOOL OF NURSING & WIDWIFERY ST. FRANCIS HOSPITAL 10 MAR 2023 P.O BOX 26 KISORO

APPENDIX V: INTRODUCTORY LETTER

Keep the Candle Burning and Pass on the Light

WE TRAIN FOR QUALITY CARE

MUTOLERE SCHOOL OF NURSING
AND MIDWIFERY
P.O. BOX 26, KISORO
Email: mutolerehti@ucmb.co.ug

Your Ref: .....

Our Ref: **NMT/023**

DATE: 16/3/2023

TO:
THE MEDICAL DIRECTOR,
ST. FRANCIS HOSPITAL MUTOLERE,
PO BOX 26,
KISORO.

16.03.2023

Dear Sir,

RE: RESEARCH PROJECT FOR DIPLOMA NURSING DIRECT:

This is to introduce **IRAKIZA ISAAC** who is a student Nurse at Mutolere School of Nursing and Midwifery in his final year of study.

He is required to prepare an individual research project as part of the requirements for the award of Diploma in Nursing Direct. He has written his research proposal and is at the stage of data collection. He is interested in the area of "**FACTORS CONTRIBUTING TO SURGICAL SITE INFECTIONS AMONG POST-OPERATIVE PATIENTS ON SURGICAL AND MATERNITY WARDS AT ST. FRANCIS HOSPITAL MUTOLERE, KISORO DISTRICT"**

He seeks to collect data in your health facility/Department and therefore requests for your support.

I will be grateful for any relevant support you shall accord him regarding his research study.

Thank you.

MUTOLERE SCHOOL OF NURSING & MIDWIFERY ST. FRANCIS HOSPITAL 16 MAR 2023 P.O. BOX 26 KISORO

Yours Sincerely,

.....

SR. KEMIGISHA CATHELINE

PRINCIPAL

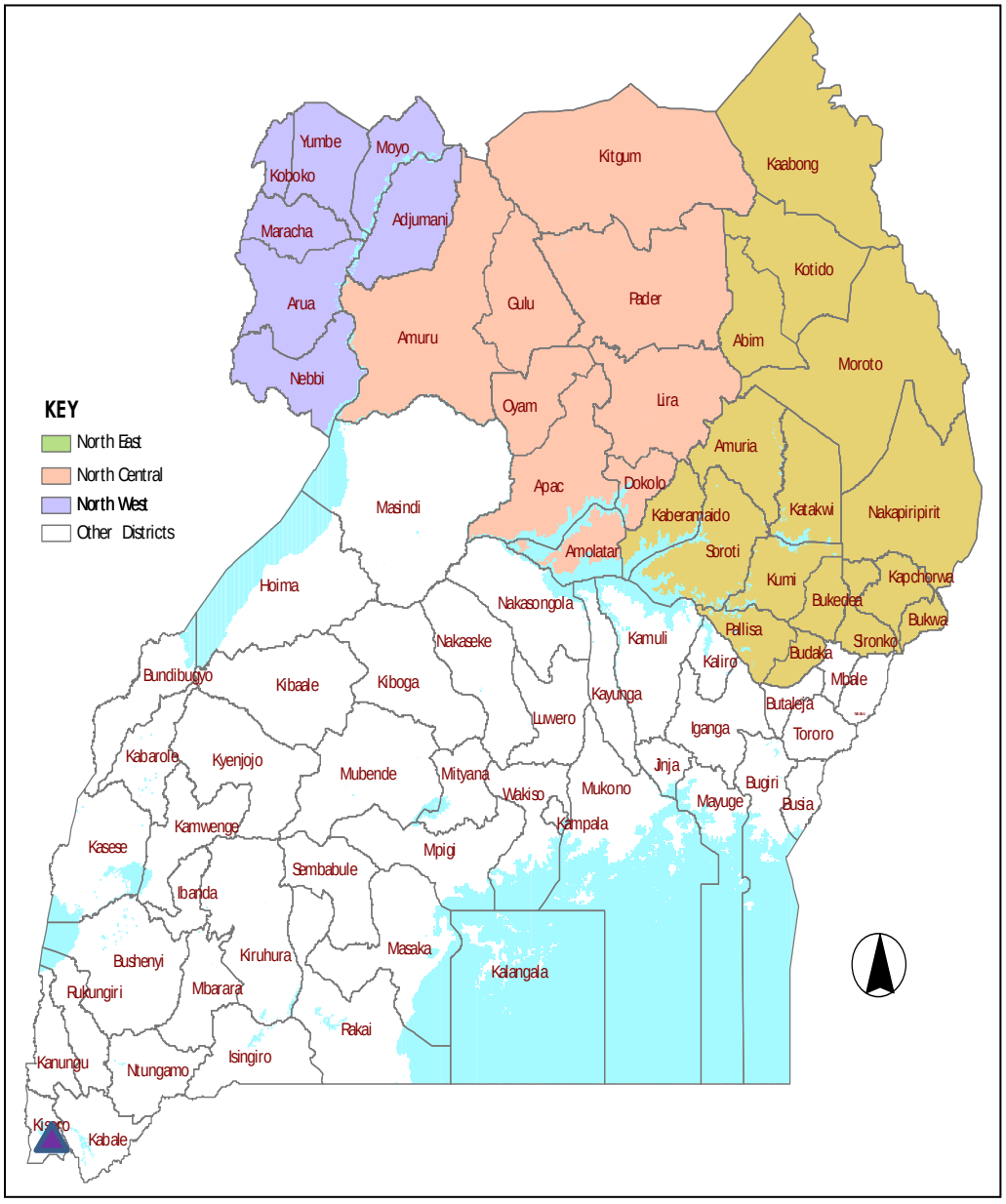
APPENDIX VI: BURGET

ITEM	QUANTITY	UNIT (Ugshs)	TOTAL COST (Ugshs)
STATIONARY			
Ream of ruled papers A4	3	15,000	45,000
Folder file	1	6,000	6,000
Pens	5	600	3000
Flash disc	1	20,000	20,000
SUB TOTAL			**74,000**
COMUNICATION			
Transport			10,000
Interment			60,000
SUB TOTAL			**70,000**
SECRETARIAL			
Printing of proposal corrections		25,000	25,000
Printing of questionnaires and interview guide	360	200	72,000
Binding of proposal books	3 copies	5000	15,000
Printing and photocopying dissertation	3 copies	30,000	90,000
Research supervisor	1	200,000	200,000
Miscellaneous			50,000
SUB TOTAL			**452,000**
GRAND TOTAL			**596,000**

APPENDIX VII: A PROPOSED RESEARCH PLAN

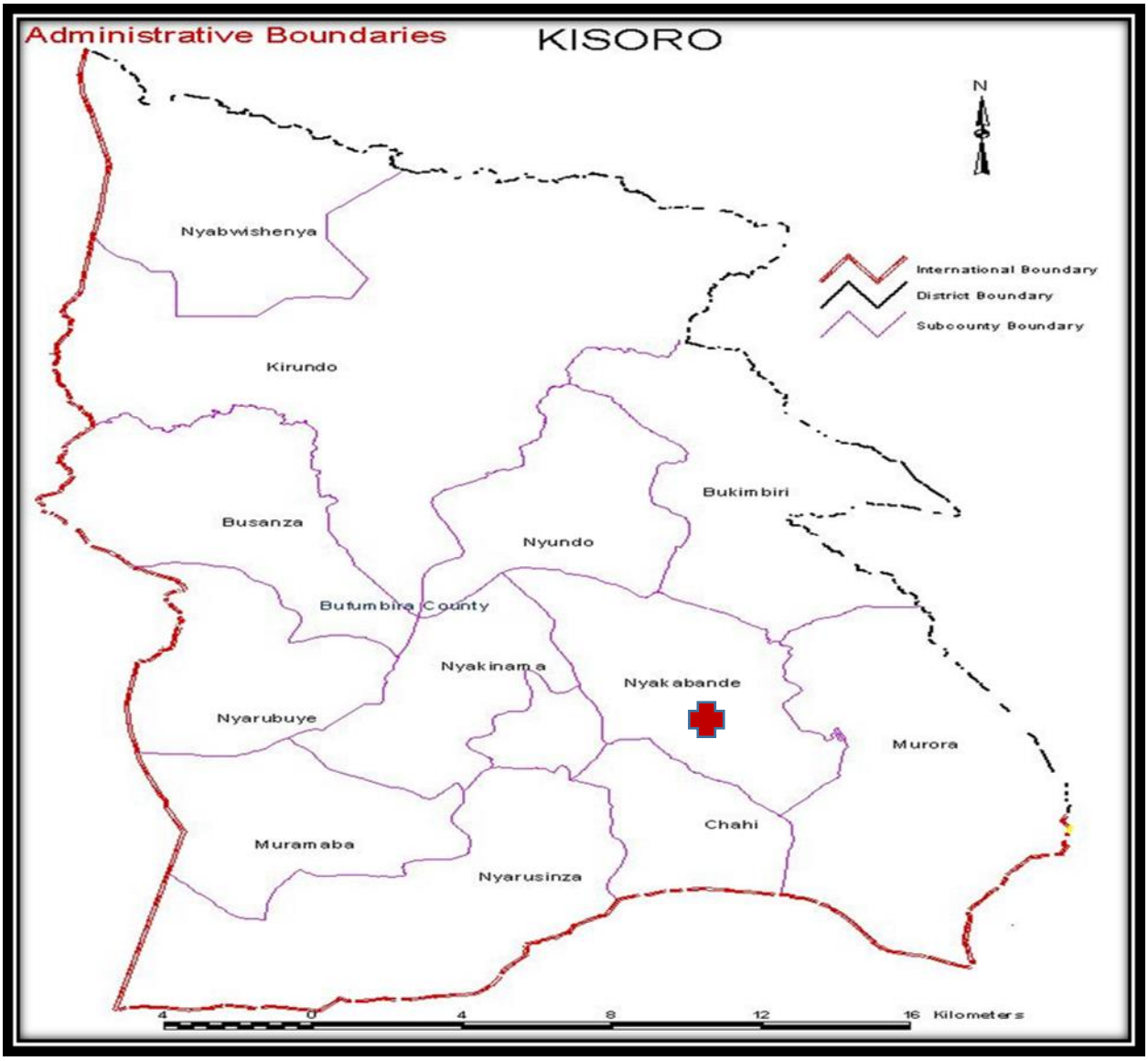
ACTIVITY	**OCT 2022**	**NOV 2022**	**DEC 2022**	**JAN 2023**	**FEB 2023**	**MARCH 2023**	**APRIL 2023**	**MAY 2023**	**Responsible person**
Topic identification and approval									Researcher and supervisor
Proposal writing									Researcher and supervisor
Proposal defense and submission									Researcher and research committee.
Data collection									Researcher
Data entry and analysis									Researcher
Report writing									Researcher and supervisor
Report approval and submission									Researcher, supervisor and school administration

APPENDIX VIII: MAP OF UGANDA SHOWING THE LOCATION OF KISORO DISTRICT



KEY; ▲ Location of Kisoro District.

APPENDIX IX: MAP OF KISORO DISTRICT SHOWING THE LOCATION OF ST. FRANCIS HOSPITAL MUTOLERE



KEY; ✚ ST. FRANCIS HOSPITAL MUTOLERE.