



College of Medicine and Health Sciences
School of Health Sciences

**HIGH RATE OF POST CESARIAN SECTION INFECTION IN
MATERNITY OF BUSHENGE PROVINCIAL HOSPITAL**

A dissertation submitted in partial fulfillment of the requirements for the degree of
Master of Hospital and Health Care Administration

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DECLARATION

This capstone dissertation is submitted in partial fulfillment of the Master of Hospital and Health Care Administration.

I confirmed that:

- This capstone dissertation represents my own work.
- The contribution of any supervisor and others to the research and to the capstone dissertation was consistent with normal supervisor practice.
- External contributions to the research are acknowledged.

Candidate -----signature-----Date-----

DEDICATION

Firstly, I dedicate this capstone to Almighty God. I dedicate and grant particular thanks to my dear wife, brothers and sisters who supported me in my academic crossing and provided me many encouragements. I also dedicate this capstone to my friends and others families members who supported me for more progress. Thank you and May God bless you All.

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ABSTRACT

BACKGROUND

The post cesarean section infection occurs after deliver by cesarean section, it is an important problem that increases maternal morbidity, cost and length of stay.

Post cesarean section infection (PCSI) has an impact on increased cost of inpatient care, causing overcrowding and a long term disabilities for mother and increase burden of patient and hospital.

The availability of wound dressing material is among preventive measures to post cesarean section infection. The shortage of materials was a main cause of the post cesarean section infection in Bushenge Hospital. The objective was to decrease post cesarean section infection rate by increasing the wound dressing materials from 7.2% in December 2016 to 3% by March 2017.

METHODOLOGY

A Pre and post intervention design was used in this project. By increasing wound dressing materials (individual kit) helped in decreasing the rate of post cesarean section infection.

RESULTS

Out of 69 cesarean section per month in the pre intervention period, 5 (7.2%) developed the Post cesarean section infection. In the post intervention period, 2 out of 59 (3.3%) developed post cesarean section infection. The PCSI rate decreased from pre intervention of 7.2% to 3.3% post intervention, with $P < 0.001$. There was a 3.9% statistically significant decrease in the rate of post cesarean section site infection.

The overall wound dressing material (individual kit) was 25% in pre intervention and increased to 100% in post intervention, with $P < 0.08$.

The performance in wound dressing was 25% in pre intervention and increased to 90% in post intervention, with $P < 0.05$

CONCLUSION AND RECOMMENDATION

As conclusion, there was a reduction of the the percentage of Post cesarean section infection rate from 7.2% to 3.3%..

It is necessary to continue the data monitoring on Post cesarean section infection. Availing and increasing all necessary wound dressing material in order to enhance the aseptic procedure is recommended.

Regular and continuous in service training in order to refresh the staff and uptodate them is also very important.

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LIST OF ACRONYMS AND ABBREVIATION

C/S: Cesarean section

HAIs: Hospital Acquired Infection

IPC: Infection Prevention and Control

MHA: Master of Hospital and Health Care Administration

MOH: Ministry of health

NGO: Nongovernmental organization

PBF: Performance Based Financing

PCSI: Post Caesarean Section Infection

QI: Quality Improvement

SSI: Surgical Site Infection

WHO: World Health Organization

DEFINITION OF KEYS TERMS

C-section: A cesarean section is the delivery of a baby through incisions made in the mother's abdomen and uterus.²

Post-cesarean section infection: A hospital acquired infection that occurs after deliver by cesarean section which could be emergency or elective. They cause excess morbidity, double the cost of treatment and increase patient's length of stay.³

Surgical Site Infection: The infection occurs after deliver by cesarean section, it is an important problem that increases maternal morbidity, cost and length of stay.³

CHAPIRER 1: INTRODUCTION

1.1 BACKGROUND

BUSHENGE hospital is a public hospital located at NYAMASHEKE District, Western Province of RWANDA. The hospital has 250 beds, and a catchment area 175,928. Whin its catchment area, there are 7 public health centers and 6 health posts.

It also receives patient from neighboring district hospitals (Gihundwe, Kibogora, and Mibirizi).

The hospital provides the several services including Maternity, Surgery, Theater and Minor Surgery, Internal Medicine, Pharmacy, Pediatrics, Laboratory, Mental health, Emergency, OPD, ARV, Medical Imaging Service, Physiotherapy, Dentistry, Nutrition and Ophthalmology. The staff are summarize in the table number 1

TABLE 1: CATEGORIES OF STAFF AT BUSHENGE HOSPITAL

Category of staff	Number (%)
Specialist	5 (2.9%)
Physicians	10 (5.8%)
Nurses	55 (31.9%)
Midwives	15 (8.7%)
Paramedical	25 (14.5%)
Administrative staff	30 (17.4%)
Support staff	32 (18.6%)
Total	172(100%)

Source: From administrative manual of Bushenge provincial hospital in December 2016

The maternity unit is staffed by 2 doctors, 15 midwives. It has 50 beds distributed in five different rooms. The post-cesarean recovery (room1) has 12 beds for woman immediately after cesarean section. The room 2 has 14 beds and this room hospitalizes women with Post cesarean section infection (PCSI). Room 3 has 14 beds for gynecological conditions. Room 4 has 6 beds and it serves as a waiting room for labor. There is a labor ward with 4 beds for women ready for delivery as well as and post partum surveillance. The theater is next to the labor room. The theater and maternity are located in the same building.

1.2 PROBLEM STATEMENT

There is a high post-cesarean section infection rate in maternity of Bushenge provincial hospital

The post cesarean infection occurs after deliver by cesarean section, it is an important problem that increases maternal morbidity, cost and length of stay.¹

Post cesarean section infection (PCSI) is a worldwide problem and is among the most hospital acquired infection reported in Low-and middle-income countries.⁴

It was also observed in the maternity unit of Bushenge Hospital. This problem has evidential during daily ward round. The staff of maternity ward discovered that there were a large number of women who had developed PCSI; this resulted in increased length of stay and cost.

The infection prevention and control officer (IPC), clinical staff and administration have discussed on it during morning staff meeting. These stakeholders felt that this problem had a big consequence as it is has been shown by literature that it can considerably effect the patient's quality of life and safety by increasing morbidity and cost, length of stays and even the death.³

It becomes a burden of our hospital. However, it is feasibly to resolve within the hospital.

1.3 OBJECTIVE

The objective of this study was to decrease post cesarean section infection rate by increasing the wound dressing materials from 7.2% in December 2016 to 3% by March 2017.

1.4 HYPOTHESIS

1.4.1 H₀: Establishing a quality improvement to avail wound dressing material (individual kit); will not reduce the rate of post cesarean section infection in the maternity department of Bushenge hospital.

1.4.2 H₁: Establishing a quality improvement to avail wound dressing material (individual kit); will reduce the rate of post cesarean section infection in the maternity department of Bushenge hospital.

1.5 JUSTIFICATION OF THE PROJECT

There are several reasons pushed to select this topic.

The post cesarean section infection is a frequent cause of maternal morbidity and mortality and increases the length of stay.³

This study helped us to identify the required strategies to reduce the post-cesarean surgical site infection. The strategic problem solving method used in this study could be applied to others situations to resolve other health care related issues in all health activities in our hospital.

The findings of this study could be used by the IPC and the senior management of our hospital for decision making and continuous follow up .It will be also the source of information by

further researches. The success of this project can help to reduce PCSI and contribute to the upgrading the level of quality and patient safety standard in maternity.

1.6 ORGANIZATION OF THE PROJECT

This capstone is divided into six main chapters. Chapter one introduces the background of the hospital, illustrates the staff number and show localization of maternity ward.

Chapter two contains literature review deals with the outline of the context of hospital acquired infection showing how quality improvement projects can improve hospital effectiveness especially in PCSI reduction. It also provides a summary of some findings about the risk factors, common causes, and impact of increasing the individual kit. Some interventions used in other countries and their result were discussed in this study .chapter three expresses the methodology including the study design, identification of possible causes for PCSI. The method of various data were collected and described. The selected intervention, outcome measures for this study and methods of data analysis are described in this chapter. The result is presented in chapter four. Chapter five contains the outcome of our intervention based on results, the factors challenges of implementation. Chapter 6 is the last one that summarizes the capstone and recommendation according to the discussed challenges and limitation of the study were listed.

CHAPTER 2: LITERATURE REVIEW

A post cesarean infection is a hospital acquired infection that occurs after deliver by cesarean section which could be emergency or elective.

2.1 PREVALENCE OF POST CESAREAN INFECTION

The hospital acquired infections are one leading causes of maternal death, they increase the length of stay and cost.² A post cesarean infection occurs when pathogenic organisms multiply in a wound giving rise to local signs and symptoms, for example heat, redness, pain and swelling, and (in more serious cases) with systemic signs of fever or a raised white blood cell count. Infection in the surgical wound may prevent healing taking place so that the wound edges separate or it may cause an abscess to form in the deeper tissues. There are three types of surgical site infection: superficial, deep and organ/ space.¹

A research done at Estonian university Hospital in Europe shown the following risk factors of post cesarean infection: chorioamnionitis, duration of labor, internal fetal monitoring and inappropriate antibiotic prophylaxis. The measures used were quantification of and description of the characteristics of healthcare-associated infections, application of prevention interventions and judicious antimicrobial use.⁶

The post cesarean infection is a leading cause of health care-associated infections resulting in length of hospitalization, increase in readmission rates, morbidity and mortality. For example in Canadian hospitals the studies reported that the average of cost per case (patient developed Post cesarean section infection) ranges from 1,174\$ to 21,392\$ and the length of hospital stay ranges from 11 to 28 days due to surgical site infection.⁷

A post cesarean section infection rate is significantly elevated worldwide, both in developed and developing countries.⁵

2.2 COMMON CAUSES OF POST CESAREAN INFECTION

According to the literature, the common causes of Post cesarean section infection include: inappropriate pre operative care and post operative care like lack of antibiotics prophylaxis, the skin preparation and lack of material of wound dressing.⁷

2.3 THE RATE A POST CESAREAN SECTION INFECTION ROUND THE WORLD AND RISK FACTORS

In Cambodia, the rates of SSI after caesarean deliveries range from 6% to 27% in a hospital with limited resources depending on the surveillance methods used to identify infections and the use of antibiotics. Factors which affect post-caesarean section infection(PCSI) rate include the maternal pre-operative medical and obstetric conditions, the type of surgical procedure, and the absence of antibiotic prophylaxis.⁷ The study shown that in the USA the PCSI rate was 4.8% in year 2012.³

The overall cumulative incidence of surgical site infection was 10.9% in Tanzania and 16.2% in Nigeria.⁴

The range of incidence in Burundi, DRC and Sierra Leone was 1.7-10.4%. Respectively the rate in Kebezi referral center (Curgo hospital) the rate was 10.4%, Lubutu General Hospital the rate was 1.7% and in Gondana Referral Center the rate was 7.3%.⁵

A high body mass index; severe wound class; diabetes; and a prolongation of surgery duration are the risks factors of PCSI.¹⁰

According to the studies done in Gabon, it was said that nosocomial infections pose substantial risk to patients receiving care in hospitals and also that the poor hygiene, resource and structural constraints, deficient surveillance data and lack of awareness regarding nosocomial infections were found to be the aggravating factors in Africa.¹¹ In addition there are multiple factors to contribute in increasing the cesarean section rate worldwide. Recognition of those risk factors such as modifiable that may be related to the woman, pregnancy, to the technique and treat infection in time helped in reducing the post cesarean infection and its consequences.¹⁵

2.4 IMPORTANCE OF WOUND DRESSING COMPLIANCE

As recommended by world health organization (WHO), using the advanced dressings in surgical patients is better than standard sterile wound dressing in order to prevent the surgical site infection.^{5, 12}

The literature shown that the later removal of the wound dressing as a risk factor of post-caesarian infection Advances in the basic science of wound healing and its clinical application have led to numerous new therapies, products, and modalities that are constantly changing the approach to wound management such as negative-pressure wound therapy has been one of the major innovations in wound care, an occlusive dressing, it may increase blood flow to the wound site, decrease edema, decrease bacterial contamination, and promote wound contraction.

Further strategies to enhance wound healing or scar formation still under investigation include growth factors or regenerative cell therapy.¹²

CHAPTER 3: METHODOLOGY

3.1 STUDY DESIGN

A pre and post intervention design was used in this project to study the PCSI rate. The pre and post monthly average of PCSI was measured. An assessment conducted to collect data from patients file audit, maternity register of PCSI and measure monthly the magnitude of the Post cesarean section infection rate. A detail root cause analysis was conducted in the year 2016. we implemented our intervention (availing sufficient individual kit in early December 2016).

An evaluation to assess to change of PCSI rate was conducted in the post intervention evaluation of January to March 2017.

3.2 MEASURING THE MAGNITUDE

The magnitude of this problem was measured retrospectively using cesarean patient file audit and extracting data from PCSI register of maternity of Bushenge provincial hospital (Year 2015). All patients underwent the cesarean sections between January and December 2015 (12 months) were listed based on the registers. The data were entered into MS Excel to calculate the PCSI rate. The study collected data from 827 patients who underwent cesarean section in the hospital during the 12- months study period since January to December 2015; averaging 143 deliveries, 69 Cesarean sections per month and 5 PCSI per month (7.2%). Table 2 summarized the audit result.

TABLE 2 SUMMARY OF THE RESULT OF PCSI

Month	Total deliveries	Number of c/s	Number of PCSI/month
January	117	66	2
February	132	64	5
March	162	83	3
April	146	62	4
May	150	72	8
June	156	79	2
July	143	72	3
August	152	69	1
September	125	56	2
October	158	56	3
November	140	80	10
December	131	68	12
Monthly average	143	69	5
Total	1712	827	55

Source: Maternity register 2015

The normal range of cesarean section, according to WHO is 10% to 15%.⁴

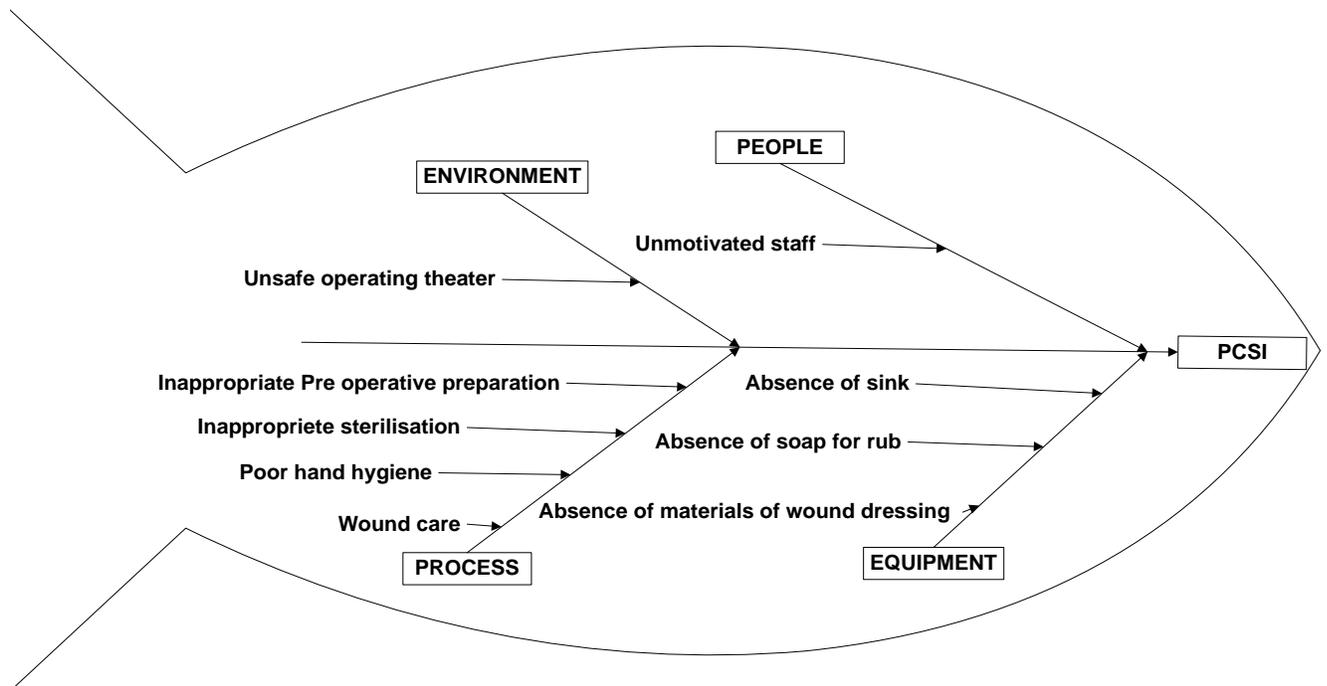
Below 10% is misuse and above 15% is overuse. In our hospital the range of cesarean section was 48%, which could be due to some received patients from nearest health facilities were referred with absolute indication of C-section.

Another research done in Israel, in the year 2017, showed that cesarean delivery is one of the most frequent surgical intervention performed worldwide and accounts for up to 60% of deliveries in a number of many countries.¹³

3.3 ROOT CAUSE ANALYSIS

A root cause analysis was conducted between June and October 2016 and its analysis included a literature review to identify the PCSI and their causes. Meetings with the staff working in the maternity unit were conducted to brainstorm their ideas to collect the possible causes of PCSI which were summarized on the fish bone (figure1). Some data and evidence were collected to verify suggested root causes.

Figure 1 Summary of potential root causes presented in an Ishikawa diagram (fishbone)



VERIFICATION PROCESS OF ROOT CAUSES

There were the motivation among staff (midwives) working in maternity unity. By interviewing 15 midwives with a questionnaire, the main questions asked were about: incentives including salary and performance based financing (PBF), workload, work conditions, shifting and their senior management's treatment, we found 2 (13%) unmotivated and 13 (87 %) were motivated.

There were appropriate pre operative preparations, antibiotics prophylaxis according to the literature, use of them was the main factor in preventing post surgical site infection.¹⁴

In 55 patients who got the infection, the 71, 4% received antibiotics while the 28, 6% did not receive antibiotics.

Through the observation during procedures the skin preparation was collected using a tally sheet, checklist and protocol. According to the literature the skin is a main source of pathogens causing SSI. Preoperative skin preparation with antiseptic agents has been proven to reduce the risk of SSI.¹⁶

The skin preparation was performed, appropriately. There was a lack of wound dressing materials. The shortage of materials causes the post cesarean infection through septic technique even though there are the qualified staffs. This barrier of infection control could confuse the attitude toward the staff working in the maternity during the procedure of wound dressing. The collection through observation using the check list, guidelines and a tally sheet in working hours 3 times a week, a period of 3 months in post cesarean ward. The results of findings are summarized in the table 3. Table 3 shows the considered elements.

TABLE 3 SUMMARY OF THE ASSESSMENT OF THE WOUND DRESSING

Items	Standard	Observed	Gap
Individual kit	75	19	56
Environment	Safe	Safe	No gap
Decontamination of materials	Decontamination using chlorexydine	Use of chlorexydine During decontamination	No gap
Procedure	300 procedures	Only 76 (25%) processes were well performed	224

Source: from researcher

There were a safe operating theatre according to the checklist and protocol, soap rub present at every hand hygiene station in maternity department. There were 2 functioning sinks in the theater and maternity department: One in the theater, one in the delivery room. The taps water was used as follow: 2 in post cesarean rooms, 1 in waiting room, in gynecological conditions room. There was sufficient sinks and soap for rub.

The Poor hand hygiene was collected through a WHO tool developed according to the WHO 5 moments of hand hygiene assessment tool (appendix 5). In October 2016 hand hygiene compliance was observed in the maternity department to assess the baseline, one in the morning and one hour in the afternoon. Each opportunity of hand washing (before touching a patient, before a clean/aseptic procedure, after body fluid exposure, after touching patient surrounding) was recorded as an opportunity. The percentage of compliance was calculated by dividing the actions by opportunities. Both physician and midwives were observed.

A total of 314 opportunities were recorded, only 220 hand washing action were taken, thus the overall hand hygiene rate was 70%. The physician had slightly better compliance rate 75% than midwives 65%. The sterilization was assessed by observation using checklist and protocol.

TABLE 4: SUMMARY OF THE CONSIDERED ELEMENTS DURING STERILIZATION

No	Element consideration	Max	Score	Percentage
1	Appropriate package	50	50	100%
2	Indicator paper	50	50	100%
3	Time, Temperature, Pressure	50	50	100%
4	Qualified trained person	50	50	100%
Total		200	200	100%

Source: from the researcher

TABLE 5: SUMMARY OF THE ROOT CAUSES

ROOT CAUSES	SCORE	STANDARD	DECISION
motivated staff	87%	100%	Rejected
Antibiotic prophylaxis	71.4%	100%	Rejected
Skin preparation	100%	100%	Rejected
Availability of wound dressing materials	19%	100%	Accepted
Safety of operating theater	Safe	Safe	Rejected
Sterilization	100%	100%	Rejected
Hand hygiene	70%	100%	Rejected
Sink	100%	100%	Rejected
Soap for rub	100%	100%	Rejected

Source: from the researcher

Based on our root cause analysis, we found the lack of wound dressing materials (individual kit) leading to poor quality of wound care, is the true cause of post cesarean infection.

3.4 INTERVENTION

After having found the root cause of the problem, the following alternative solutions were suggested and comparative analysis was conducted.

- 1) Avail the wound dressing materials (individual kit) which Increases the quality in wound dressing by reducing risk factors (septic procedure) for wound infection.
- 2) To buy the wound dressing materials
- 3) To request an assistance of getting wound dressing materials from Ministry of Health.

Based on the comparative analysis (appendix 3), the chosen solution was to avail wound dressing material (individual kit). Therefore this intervention should help to increase the performance in wound dressing, reducing the risk for infection, increasing aseptic procedure and decrease the Post cesarean section infection in maternity.

TABLE 6: SUMMARY OF THE COMPARATIVE ANALYSIS

CRITERIA STRATEGIES	IMPACT	COST	TIME	FEASIBILITY	TOTAL
To buy the wound dressing materials	4	2	2	3	11
To avail wound dressing materials (individual kit)	4	4	4	5	17
To request an assistance of getting wound dressing materials from MOH or NGO	4	3	2	3	12

The best intervention is to avail wound dressing materials (individual kit)

JUSTIFICATION OF THE SCORE

To avail wound dressing materials scored 17. Its impact is to Increase the quality in wound dressing by reducing the risk factors of wound infection (septic procedure, and increases wound dressing performance) (4), required no cost to buy equipments (4), no long time of procurement process (4) and it is feasible and it requires no long time due to the procurement process (5). The materials are available in the hospital's store. It is only to request them.

To buy the wound dressing materials: Its impact is to provide the high quality care on wound dressing (4), high cost to buy the wound dressing materials (2), feasible because of capacity of the hospital (3), the long time due to procurement process , approximately 2 month (2). The total score is 11.

To request the support from MOH or NGO: Its impact is to increase the high quality care in wound dressing. (4), its cost is low (4) because to write a request there is no need of much money, long time (1) where the time could be more than 6months, feasibility (3). The total is 12.

3.5 IMPLEMENTATION

The implementation for increasing the availability of individual kit was composed by the tasks in Gantt's chart (appendix 5)

The senior management team was involved in availability of wound dressing materials (individual kit).

The understanding of maternity staff in infection prevention related to shortage of wound dressing materials (through septic technique), was raised in early December 2016.

The following staff was invited: Director General, hospital administrator, chief nurse, pharmacist, procurement officer, and physicians, nurses, midwives and logistics officer to discuss on how to avail the wound dressing materials. The decision of availing the materials was drawn. The responsible of maternity ensured that the individual kit is always available by each health care provider. Visual reminders (evaluation of wound dressing) Also a regular follow up of a well documented of PCSI in register and evaluation of PCSI was performed and this will continue even after this study in order to assess the decrease of PCSI at all the time.

3.6 MEASURES (INDICATORS)

Three indicators including 2 process indicators and 1 outcome was measured.

We measured the pre and post intervention PCSI rates, number of individual kit and wound dressing performance to evaluate the effectiveness of our intervention. The wound dressing performance was measured by using the wound dressing evaluation form (appendix7).

The evaluation form composed by twenty one activities (steps), of one wound dressing procedure Each wound dressing activity (steps) well performed was scored as Yes and activity Not performed was scored as no. The overall wound dressing performance was calculated by the total of yes multiply by one hundred then divide the total number of wound dressing performed (the total of yes and no).

The pre and post intervention of post cesarean infection was measured by collecting the total number of monthly cesarean section and the total number of women developed the post cesarean

infection. In pre intervention the total number was 827 in year (12months) 2015, averaging 69 cesarean sections per month and 55 of women developed the Post cesarean infection averaging 5 (7.2%) post cesarean infection (PCIs) per month. In the post intervention we collected the total number of cesarean section in four months (December 2016 up to march 2017). The average was 59 (236 cesarean section per four months) cesarean section per month and eight per four months, 2 (3.3%) infections per month. The comparison was performed to see if the effect of the solution of this problem.

The number of wound dressing materials was measured by using the request form which contains the number of requested materials and delivered materials. All necessary wound dressing materials (kidney dish, personal protective equipment, clothes used as sterile field, forceps and pair of scissors) requested was received. An assessment has done to evaluate the availability of the required wound dressing material.

The detailed monitoring and evaluation (process and outcome indicators) can be found in appendix 6.

3.7 DATA ANALYSIS PROCEDURE

The pre and post intervention post cesarean section infection rates, as well as performance in wound dressing rates were analyzed using chi-square test.

All data analyses were performed using a data base created in Excel and SPSS statistics 20.0

The level of statistical significant was set at 0.05.

3.8 ETHICAL CONSIDERATION

The study included a file auditing, no patient identification was recorded and the identity of cesarean patients is not able to be reviewed. The wound dressing measure is an observation study; there was no interruption of staff and patient routine treatment. The study was approved by Bushenge Provincial Hospital senior management team.

CHAPTER FOUR: RESULTS

This chapter presents the pre and post interventions Post cesarean section infection and rate of performance in wound dressing in maternity, Rate of wound material increased, PCSI according to types and PCSI according to age.

Out of 827 (69/ month) cesarean section in the pre intervention period 55 PCSI (7.2%) developed the Post cesarean section infection. In the post intervention period, 2 out of 59 developed Post cesarean section infection (3.3%). The PCSI rate decreased from pre intervention of 7.2% to 3.3% post intervention, with $P < 0.001$. There was a 3.9% decrease in the rate of post cesarean section site infection; which is statistically significant.

The overall wound dressing material (individual kit) was 25% in pre intervention and increased to 100% in post intervention, with $P=0.082$.

The performance in wound dressing was 25% in pre intervention and increased to 90% in post intervention, with $P < 0.054$

TABLE 7 COMPARISON OF PRE AND POST INTERVENTION DATA

Indicators	Pre intervention (Monthly average)	Post intervention (Monthly average)	P-Value
Woman Underwent C/S	69	59	
Number of women who got infection	5	2	
Post cesarean section site infection rate (PCSI)	7.2%	3.3%	0.000
Performance in wound dressing	25%	90%	0.054
Availability of wound dressing materials	25%	100%	0.082

TABLE 8 SUMMARY OF THE PCSI ACCORDING TO TYPES

No	Types of infection	Number of cases	%
1	Superficial	31	56.4%
2	Deep	24	43.6%
3	Organ	0	0%
Total		55	100%

Source: from patients' file

Table 8 shows the Post-cesarean section infections according to their types, 31 (56.4%) were superficial, 24 (43.6%) were deep and 0 (0%) were organ

TABLE 9 SUMMARY OF THE PCSI ACCORDING TO AGE

AGE GROUP	NUMBER OF PCSI	PARCENTAGE
<18 years old	3	5.4%
18-24 years old	10	18.1%
25-31 years old	9	16.3%
32-38 years old	11	20%
39-45 years old	20	36.3%
46-52 years old	2	3.6%
>52 years old	0	0%
Total	55	100%

Source: Register of post cesarean section infection at maternity of Bushenge hospital

Table 9 shows the Post Caesarian Section Infection according to age group, 3 (5.4%) of patient less than 18 years old; 10 (18.1%) of patients with 18-24 years old; 9 (16.3%) of patient age group between 25-31years old; 11 (20%) of patients' age group 31-36 years old; 32- 38 years old; 20 (36.3%) of patients' age 39-45 year old, 2(3.6%) of patients' age group 46-52 and 0 (0%) of patients' age above 52 years old.

The above results show that the old age is higher than younger age. The literature shows the age as risk factor of post caesarian section infection. The older patients are more like to develop the post cesarean infection than younger patients.²

CHAPTER 5: DISCUSSION

The 55 PCSI according to age was 3 (5.4%) of patient less than 18 years; old; 10 (18.1%) of patients with 18-24 years old; 9 (16.3%) of patient age between 25-31years old; 11 (20%) of patients' age 31-36 years old; 32- 38 years old; 20 (36.3%) of patients' age 39-45 year old, 2(3.6%) of patients' age 46-52 and 0 (0%) of patients' age above 52 years old. The above results show that the old age is higher than younger age. The literature shows the age as risk factor of PCSI. The older patients are more like to develop the post cesarean infection than younger patients due to progressive reduction of immunity system, as long as age increased the immunity decreased.²

According to types of Post cesarean section infections, 31(56.4%) were superficial, 24(43.6%) were deep and 0 (0%) were organ. The result showed that the number of patients with superficial cesarean section infection was greater than of the patients with deeper post-cesarean section infection and zero post-cesarean section organ infection.

Based on the results, both PCSI and performance in wound dressing have improved. Our implementation successfully decreased the PCSI rate statistically significant. The number of wound dressing materials has increased significantly. The results showed by availing the individual kit, an improvement from 25% up to 100%. The wound dressing performance was significantly increased because; the shortage of wound dressing materials was resolved. The lack of wound dressing materials leading to the poor quality care such as inappropriate wound dressing not due to the staff, aseptic procedure which causes the post-cesarean section infection.

As a team we will continue to monitor the PCSI even after this project and the implementation has to be maintained in order to further reduce post cesarean infection. In addition, we will

continue to avail all required wound dressing materials and provide the continuous training on wound management to new hired staff in maternity to maintain the prevention of PCSI. As the accreditation process and in collaboration with IPC focal person and maternity department, regular follow up will be required to assess if improvement is sustained daily activities. The contributing factors to success of our intervention were to avail the wound dressing individual kit in maternity. The awareness and availability of individual kit were increased. The results were communicated to the staff in order to encourage them to continue their effort by maintaining this intervention and continue to prevent the PCSI.

As this project is teamwork (multi-disciplinary work), the maternity team, IPC committee, and senior management were involved. The senior management meeting agreed to provide the necessary support needed as long as it did not require much money. The planned activities of our intervention did not require a lot of money. It was to buy some material like kidney dish, forces, and the fields.

In general our intervention encountered some challenges during the implementation.

A first challenge was to avail all required material due to the procurement process, a regular follow up and concerned persons were contacted.

Secondly, we encountered resistance to change from some midwives in the first 2 weeks of implementation. This resulted in the midwives forgetting to respect the policy and procedure of wound dressing (using individual kit). Increased communications and face to face conversations were needed to break down resistance.

We will continue to collect the data even the after this project in order to get more data to analyze and take conclusion accordingly

The limitations in this project were:

1. The study design. The pre and post study design don't allow controlling other factors that may have contributed to our results. Therefore, it is not possible to say that 100% of our results are exclusively imputable to our intervention. However, this research has shown the evidence of the contribution to some extend of the observed improvement.
2. The 2nd limit is that we didn't put enough time after intervention before measuring the situation in post intervention. That means we should have waited a certain time (A reasonable time, not too close, not too far) after intervention before measuring the situation in post intervention. This was due to the deadlines of submitting the capstone to the University. However, we will continue not only implementing the intervention, but also measuring its gains. Therefore, any unexpected change of results will be monitored and documented.

CHAPTER 6: CONCLUSION AND RECOMMENDATION

6.1 Conclusion

As conclusion, there was a reduction of the the percentage of Post cesarean section infection rate from 7.2% to 3.3%. Although this reduction cannot be exclusively imputable to our intervention due to lack of controlling other possible contributing factors, it is undeniable that the implemented intervention contributed to the observed improvements.

This reduction shows the ultimate effort of teamwork, thus we will continue to fight the infection by using strategies and measures in order to improve the quality of care and services deliveries to our clients. In addition there are multiple factors to contribute in increasing the cesarean section rate worldwide. To recognize those risk factors such as modifiable that may be related to the woman, pregnancy, to the technique and treat infection in time helped in reducing the post cesarean infection and its consequences.(15)

6.2 Recommendation

It is necessary to continue the data monitoring on Post cesarean section infection.

Regular and continuous in service training in order to refresh the staff and update them is also very important. Further researches on this topic are needed. They should use a more convincing study design and explore other risk factors such as patient linen, mattress, patient's constitution and poor personal hygiene.

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APPANDICES

1) TOOL OF MAGNITUDE DATA

MONTH	NUMBER OF C/S	NUMBER OF PCSSI
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
Average		
Total		

2) FORMAT OF DATA COLLECTION TOOL

No	Names	Date of operation	Date of occurrence of infection	Observation			
				SI	DI	OI	NI

SI: superficial infection

DI: Deep infection

IO: Organ infection

NI: Non infection

3) TABLE 6 SUMMARY OF THE COMPARATIVE ANALYSIS

CRITERIA	IMPACT	COST	TIME	FEASIBILITY	TOTAL
STRATEGIES					
To buy the wound dressing materials	4	2	2	3	11
To avail wound dressing materials (individual kit)	4	4	4	5	17
To request an assistance of getting wound dressing materials from MOH or NGO	4	3	2	3	12

The best intervention is to avail wound dressing materials (individual kit)

JUSTIFICATION OF THE SCORE

To avail wound dressing materials scored 17. Its impact is to Increase the quality in wound dressing by reducing the risk factors of wound infection (septic procedure, and increases wound dressing performance) (4), required no cost to buy equipments (4), no long time of procurement process (4) and it is feasible and it requires no long time due to the procurement process (5). The materials are available in the hospital's store. It is only to request them.

To buy the wound dressing materials: Its impact is to provide the high quality care on wound dressing (4), high cost to buy the wound dressing materials (2), feasible because of capacity of the hospital (3), the long time due to procurement process , approximately 2 month (2). The total score is 11.

To request the support from MOH or NGO: Its impact is to increase the high quality care in wound dressing. (4), its cost is low (4) because to write a request there is no need of much money, long time (1) where the time could be more than 6months, feasibility (3). The total is 12.

4) IMPLEMENTATION PLAN

Create awareness of maternity staff in infection prevention using individual kit in wound dressing using	**			
Invite participants of meeting and discuss on individual kit	**			
Conduct the meeting	X			
Avail wound dressing material	XXXX	XXXX	XXXX	XXXX
Ensure availability of wound dressing material and use of protocol and standard of wound dressing in maternity		XXXX	XXXX	XXXX
Evaluate the percentage of PCSSI at the end of each month	*	*	*	*
Present a feedback on effect of using the individual kit to the staff			*	
Compare pre and post PCSSI rate			X	
Presentation of all results to the staff				*

5) HAND HYGIENETHECHNIQUE



6) MONITORING AND EVALUATION

Indicator	Definition of indicator	Who will collect the indicators	Where to get information	When	Achievement status
OUTCOME INDICATOR					
post cesarean surgical site infection rate	# of infection occurs after pregnant woman delivered under operation / Total # of cesarean.	Data manager, Researcher and IPC focal person	Maternity service through register (CS and PCSSI) /patient file.	4 months (December 2016, January, February and March 2017)	In process but the first months show a significantly reduction of PCSSI from 7.2% to 3.3%
PROCESS INDICATORS					
Number of equipment put in maternity for use of wound dressing	# of materials for wound dressing put in maternity service	Researcher / Chief nurse	Requisition Register and inventory form in Maternity service	Once in the 2 nd week of December	100%
Appropriate wound dressing rate	# of wound dressing well performed/ total wound dressing performed	Researcher	Observation study	3 months of implementation (January, February and December)	90%

Three indicators including 2 process indicators and 1 outcome was measured.

We measured the pre and post intervention PCSI rates, number of individual kit and wound dressing performance to evaluate the effectiveness of our intervention. The wound dressing performance was measured by using the wound dressing evaluation form (appendix7).

The evaluation form composed by twenty one activities (steps), of one wound dressing procedure. Each wound dressing activity (steps) well performed was scored as Yes and activity Not performed was scored as no. The overall wound dressing performance was calculated by the total of yes multiply by one hundred then divide the total number of wound dressing performed (the total of yes and no).

The pre and post intervention of post cesarean infection was measured by collecting the total number of monthly cesarean section and the total number of women developed the post cesarean infection. In pre intervention the total number was 827 in year (12months) 2015, averaging 69 cesarean sections per month and 55 of women developed the Post cesarean infection averaging 5 (7.2%) post cesarean infection (PCIs) per month. In the post intervention we collected the total number of cesarean section in four months (December 2016 up to march 2017). The average was 59 (236 cesarean section per four months) cesarean section per month and eight per four months, 2 (3.3%) infections per month. The comparison was performed to see if the effect of the solution of this problem.

The number of wound dressing materials was measured by using the request form which contains the number of requested materials and delivered materials. All necessary wound dressing materials (kidney dish, personal protective equipment, clothes used as sterile field, forceps and pair of scissors) requested was received. An assessment has done to evaluate the availability of the required wound dressing material.

7) WOUND DRESSING EVALUATION FORM

DRESSINGPREPARATION	TIME AND COMMENTS						
	D1	D2	D3	D4	D5	D6	D7
Does he /she introduce himself to the patient?							
Does he /she explain the proposed procedure?							
Does he/she prepare the material for the dressing individually?							
Does he/she prepare the material for more than one dressing?							
Does he/she heat the physiological serum?							
Does she wash hand before starting a dressing?							
Is there any need to position the patient for the dressing?							
Does he/she maintain the privacy and integrity of the patient during the procedure?							
DRESSING EXECTION							
Did he /she prepare the environment properly?							
Did she open the dressing package properly?							
Did he/she check the expiry date of the material?							
Did he/she check the position/ disposition of the material properly							
Did he/she keep the garbage distant from							

the wound or next to the nippers of the first time?							
Did she use the solution prescribed to clean the wound?							
Did he/she keep a logical sequence?							
Did she keep the asepsis principle during the dressing?							
Did she choose the cover recommended by the nurse or did he /she follow the nursing prescription?							
Does he/she consider the pain complaints of the patient taking conduct?							
UNIT ORGANIZATION							
Did he/she throw the used materials away right after the end of the dressing and into the right places?							
Did he/she throw the used materials away after the end of several dressing?							
Did he/she wash hands or use alcohol gel after the end of each dressing?							

8) WOUND DRESSING PROCEDURE

- 1) Inform patient about procedure.
- 2) Wheel trolley to bed and provide privacy.
- 3) Close nearby windows and switch off fans.
- 4) The dresser arranges bed clothes in order to gain access to wound
- 5) Wash hands under running tap.
- 6) Assistant help to remove lids of bowls and kidney dish on top shelf of pour out lotion.
- 7) Dresser takes a pair of dressing forceps and removes soiled dressings into kidney dish for used dressings and swabs.
- 8) Drop the dressing forceps into kidney dish for used instruments.
- 9) Using a pair of dissecting forceps and a 2 with antiseptic lotion.
- 10) Clean wound first then it's surrounding.
- 11) Discard cotton wool swabs used in cleaning after each stroke over the wound.
- 12) Remove plaster stain before discarding and before applying
- 13) Apply sterile dressing with fresh paste of forceps.
- 14) Discard forceps and apply stripping.
- 15) Place dressing towel and mackintosh.
- 16) Replace all lids.
- 17) Leave patient comfortable.
- 18) Return screens and open windows.
- 19) Clear trolley.