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The determinants and Prevalence of Post Cesarean Sepsis among Post-Operative Women in Kapchorwa District Hospital, Kapchorwa District

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ABSTRACT

This study assessed the determinants and prevalence of post-cesarean sepsis in post-operative women in Kapchorwa District Hospital between the periods of 1st June to 31st October 2022. A descriptive cross-sectional study was done among post-operative women at Kapchorwa District Hospital involving 215 mothers who consented to participate in the study. Structured questionnaires were used to collect data according to the study objectives. The study showed that only 41(19%) had developed sepsis and that being between 29 to 38 years of age was a significant factor in having sepsis, with an odds ratio of 0.35(0.92-12.20) and P- value of 0.001. The study showed among mothers who had post-cesarean sepsis majority of 22(53.7%) were peasant farmers and for those who didn't get sepsis majority of 77(44.3%) were peasant farmers as well. Furthermore, of those who had had sepsis, the majority 31(75.0%) were those of primary level of education, the study also showed that parity of the mothers did not influence the occurrence of sepsis, at an odd ratio of 2.42(1.47-8.50) and p-value of 0.875, The study also showed that lack of adequate post-natal care was a significant factor in leading to the occurrence of sepsis, with an odds ratio of 4.60(1.51-17.25) and p-value of 0.001, in which the majority 26(62.5%) of the those who got sepsis said they had not been given any health education with, those 26(62.5%) who developed sepsis saying the cost of care was high, those who did not get sepsis 113(64.7%) also could not afford the high cost of health care. The prevalence of post-cesarean sepsis according to the study above is still high among post-cesarean mothers admitted at Kapchorwa District Hospital. Mothers between the ages of 29 to 38 years remain the most common age group with post-cesarean sepsis according to the study above, mothers who had a primary school level of education had the highest cases of post-cesarean sepsis according to the study above, the researcher also found that there was no relationship between parity and occupation, and occurrence post cesarean sepsis among mothers from the study above. From the study above lack of adequate post-natal care was significantly associated with post-cesarean sepsis among mothers, also found that lack of health education was significantly associated with the occurrence of post-cesarean sepsis among mothers, the study also found that failure of mothers to receive prescribed drugs after the cesarean section had a significant association with the occurrence of post-cesarean sepsis, high cost of health care also remains a significant cause of post-cesarean sepsis according to the study above.

Keywords: Post-cesarean wound sepsis, Bacteria viruses or parasites, Health facility factors, peasant farmers, lack of adequate post-natal care.

INTRODUCTION

Caesarean section (CS) is a surgical treatment where an opening is made through a mother's abdomen and uterus to deliver babies [1]. It is mainly done when a vaginal delivery would be risky to the child and the mother or done on request for personal reasons [2]. The world health organization, (WHO) suggests caesarean section, should be done only for medical needs, [3]. Post cesarean sepsis is the invasion and multiplication of microorganisms such as bacteria, viruses or parasites that are not normally present within the body before operation [4]. In

2017, about 23 million CS were done globally. WHO estimated a caesarean section global rate of 10% to 15% [1]. Despite its importance, caesarean sections performed in limited resource settings were highly predisposed to a number of complications where infection is the major complication, particularly in settings that lacked the facilities to conduct safe surgeries or treat potential complications, and infections among others [1]. In Europe, post-cesarean sepsis was less than 5% in all European countries [1]. In Sweden and Australia 7% preferred caesarean section as a method of delivery, 24% in the United Kingdom (Institute of Nursing, 2015), and 26.7% in Ireland and Rome Italy, the mean incidence was around 44%, but could reach as high as 85% in some private clinics [5,6]. In Africa, there were fewer caesarean sections performed but the rate of post-cesarean sepsis was very high compared to the developed world. Hospital Acquired Infections (HAI) prevalence varied between 2.5% and 14.8% in Algeria, Burkina Faso, Senegal and Tanzania [7]. Post-cesarean sepsis had a cumulative incidence in surgical wards that ranged from 5.7% to 45.8% in Ethiopia and Nigeria. In Tanzania PCS was 2.6% in 2016, in Morocco, HAI was at 17.8%, urinary tract infections 35% surgical wounds 32.5% [1] and 14% in Northern Uganda. On average Caesarean section account for about 24% of 35,000 births per annum managed by Mulago Hospital. Women giving birth by Caesarean section present a 5- to 20-fold greater risk of infection than women giving birth by vaginal delivery. Rates of severe sepsis can be as high as 25%. One of the measures applied to prevent infectious complications following a caesarean section is the use of prophylactic antibiotics. According to the Kapchorwa District health report, 2020, it was noted that in 2017-2019 at Kapchorwa District Hospital, out the 483 of post-Caesarean mothers, 13.0 % (63/483) of these mothers developed post-Caesarean wound infection. Thus, need to assess the prevalence of post-Caesarean sepsis, and the possible predisposing factors in mothers undergoing Caesarean section as a mode of delivery in Kapchorwa District Hospital.

Globally, approximately 2% to 5% of the 16 million people undergoing surgical procedures each year develop post-cesarean sepsis globally ranging from 2.5% to 41.9% resulting in high morbidity and mortality with more recent data putting it at two-thirds of patients who undergo operations, [8]. It is reported that in Sub-Saharan Africa (SSA) sepsis rates are as high as 27.1% and are a major problem in obstetric and gynaecological surgery, especially following caesarean section. They are painful to the patient and costly to society [9], In Uganda, about 10% of the surgical procedures become septic accounting for increasing morbidity and mortality, with the commonest organism isolated being S. aureus (20-22), though data on the spectrum of bacteria isolated from hospitalized patients and their antimicrobial susceptibility patterns to guide PCS-therapy in Mulago National Hospital remains scanty [10]. One of the most important risk factors for postpartum infection in both developed and developing countries are caesarean section. This is the second most common cause of maternal mortality and it contributes to 15% of the causes of maternal mortality in Uganda, [11], however, there is no existing data study about post-cesarean sepsis in hospital district and the whole region, thus these research findings would be the establishment of the existing burden requiring address by the stakeholders.

METHODOLOGY

Study Design

A descriptive cross-sectional study was done where quantitative methods of data collection were employed on post-operative women at Kapchorwa District Hospital. A cross-sectional study was used because it involved interacting directly with these mothers so that the findings were generated from a raw source. Quantitative methods helped to ascertain the number of women who developed sepsis after the cesarean operation.

Area of Study

The study was carried out in Kapchorwa District Hospital. It was specifically conducted in the postnatal ward among mothers who attend the mentioned hospital following illness from post-caesarean

section sepsis. Kapchorwa District is in the Eastern region of Uganda. Kapchorwa District Hospital is a public hospital that serves the Eastern and North-Eastern districtsof Uganda. It is administered by the Uganda MOH.

Study Population

The study was done among post-cesarean operative women in Kapchorwa District Hospital whowere present during the time of the study and consented.

Inclusion Criteria

The study included all mothers on the ward or readmitted who had delivered by cesareansection and consented to study at Kapchorwa District Hospital.

Exclusion Criteria

- Post-cesarean women who were referred from other health units, due to limited access totheir medical records.
- Post-cesarean women who did not consent.
- All mothers who would have had a re-exploration due to cesarean section complications other than suspected sepsis.

Sample Size Determination.

The sample size was determined using Fishers *et al*, 2015 formula given by the method below,

$n= z^2pq/d^2$

Where;

n= minimum sample size

d = margin of error

z=standard normal deviation corresponding to 1.96

p= existing prevalence in Uganda, 16.8 % post cesarean sepsis (Ishmael Muhumuza et.al 2020).q=1-p

Therefore, taking

p = 16.8 /100=0.168z = 1.96

q=1-p = 0.832

d= 5% or 0.05 $n=\frac{1.96^2X0.168X0.832}{0.05^2}$

n= 214.784

n= 215 mothers were recruited into the study.

The sampling technique.

The study was carried out among post-operative women at Kapchorwa district Hospital in which a convenient method of sampling was employed. Convenient is a non-probability sampling method that entails using the most conveniently available subjects.

Data collection tools

The research formulated multiple choice questions in form of a structured questionnaire. The questionnaire was designed to capture all the variables and hence answer all the research questions. A semi-structured questionnaire containing bio data of the respondents and questions assessing prevalence, social-demographic factors and health facility related factors was used.

Data Analysis

Data was collected manually, tallied and grouped in form of tables as found applicable and appropriate. Also, the acquired results were analyzed by Microsoft Excel and Statistical Package for Social Science (SPSS) then eventually presented using table formats.

Quality Control

The researcher will have to setup several controls; Tools were checked for completeness; tools were kept away after data collection awaiting analysis and final report writing. Tools were accessed by parties involved in the study to prevent adulteration of data.

RESULTS

Proportion of mothers who developed post cesarean sepsis

Table 1: showing proportion of mothers who developed post cesarean sepsis and those whodid not develop post cesarean sepsis.

Variable	Frequency	Percentage (%)
Clinical signs and symptoms present	41	19.0
Clinical signs and symptoms absent	174	81.0

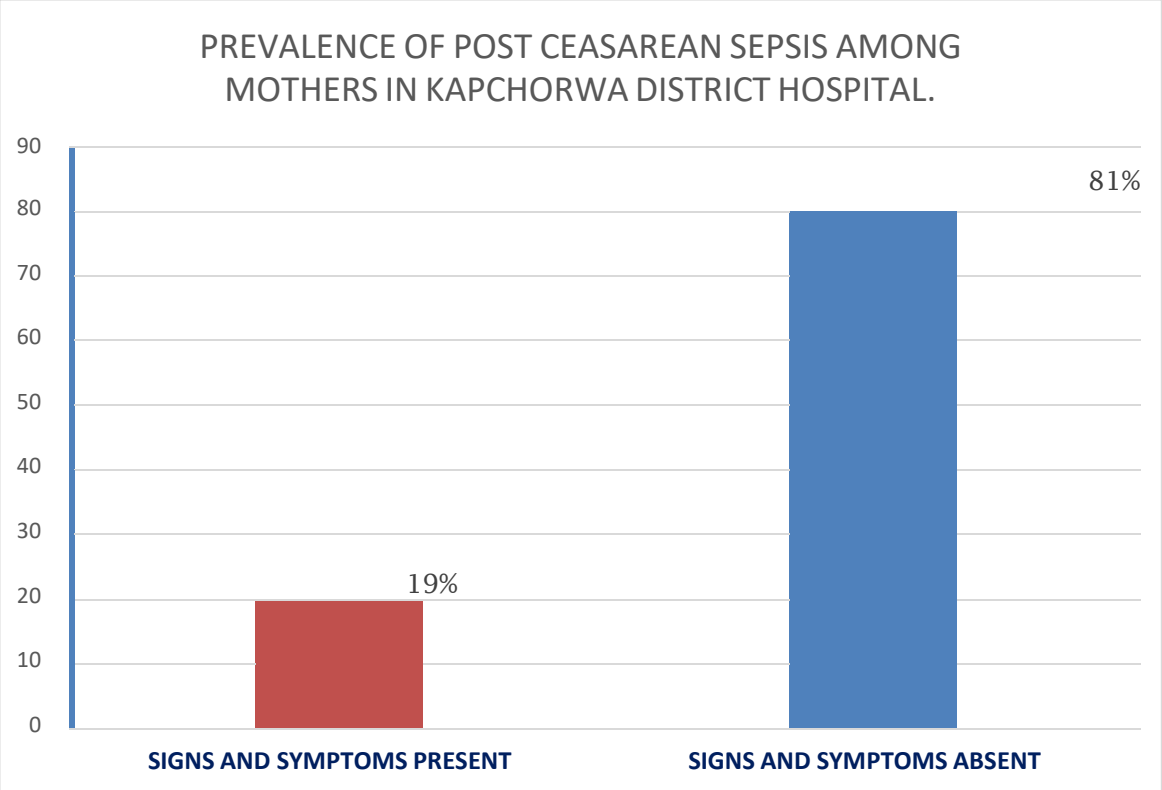

Figure 1: The participants were assessed for clinical signs and symptoms of sepsis, in which only 41(19.0%) haddeveloped sepsis while the majority 174(81.0%) never developed sepsis.

Socio-demographic Characteristics.

Table 2: showing socio-demographic characteristics

Variable	Frequency (n=215)	Percentages (%)
Age		
<18	51	23.8
19-28	113	52.6
29-38	31	14.3
>39 years	20	9.3
Education		
Primary	196	91.2
Secondary	13	6.0
Tertiary	06	2.8
Occupation		
Peasant	88	41.0
Business	62	28.8
Employed	15	7.0
House wife	50	23.2
Parity		
Para 1 to para 2	71	33.3
Para 3 to para 4	103	47.7
Para 4 and above	41	19.0

The mothers were assessed for their social demographic characteristics, regarding the age of the participants, the majority 113(52.6%) were between 19-28 years while the least 20(9.3%)were more than > 39 years. The mothers were assessed for their education level, in which the majority 196(91.2%) had a primary level while the least 06(2.8%) were having a tertiary level of education. The participants were assessed for their occupations in which the majority 88(41%) were peasant farmers; while the least were 15(7.0%) and were employed. Majority 47.7% (103) of the participants were para 3 to para 4, while very few only 41(19.0%)were above para 4.

Table 3: compares social demographic characteristics among mothers who developed post-operative sepsis and those who didn't develop post-operative sepsis.

Variable	Sepsis n=41		No sepsis N=174		OR (95%CI)	P-value
Age	Freq.(n)	Per cent	Freq.(n)	Per cent		
< 18 years	09	22.0	74	42.5	Ref	
19-28	10	24.4	60	34.5		
29-38	16	39.0	28	16.1	0.35(0.92-	0.001
39 or more years	06	14.6	12	6.9	12.20)	
Education						
Primary	21	51.2	09	5.2	3.51(2.33-3.77)	0.002
Secondary Tertiary	13	31.7	55	31.6	Ref	
	07	17.1	110	63.2		
Occupation						
Peasant Business	22	53.7	77	44.3	0.65(1.04-	0.025
Employed Housewife	08	19.5	57	32.8	11.59)	
	05	12.2	30	17.2		
	06	14.6	10	5.7	Ref	
Parity						
Para 1 to para2 Para	31	75.6	112	64.4	2.42(1.47-8.50)	0.875
3 to para 4	6	14.6	47	27.0		
Above para 4	4	9.8	15	8.6	Ref	

When assessed for age, the study found out that the majority 16(39.0%) of those who had gotten sepsis were 29 to 38 years while those 70(42.5%) who had not gotten sepsis were below 18 years, the study established that being 29 to 38 years of age was a significant factor to having sepsis, with an odd ratio of 0.35(0.92-12.20) and P-value of 0.001. The study further showed that the majority 21(51.2%) of those who had had sepsis were those of primary level of education, while the majority 110(63.2%) of those who had not had sepsis had obtained at a tertiary education level, the study indicated that being of primary level of education had a positive significance to the occurrence of post-cesarean sepsis at a p-value of 0.002 and odds ratio of 3.51(2.33-3.77). The study also noted that the majority of both mothers 22(53.7%) who had post-cesarean sepsis were peasant farmers and those 77(44.3%) who didn't get sepsis were peasant farmers, the study showed that the nature of one's occupation did not have a significant impact on one developing post cesarean sepsis, there was an odd ratio of 0.65(1.04-11.59) and p-value of 0.002. The study further stated that the majority of mothers who developed sepsis 31(75.6%) and those who did not develop sepsis 112(64.4%), were delivered within para 1 and para 2 periods, the study showed that parity of the mothers did not influence the occurrence of sepsis, an odd ratio of 2.42(1.47-8.50) and p-value of 0.875.

Health facility-related factors and their association with sepsis.

Table 4: compares health-related factors among mothers who developed post-cesarean sepsis and those who didn't get post-cesarean sepsis.

Variable	Sepsis n=41		No sepsis n=174		OR (95%CI)	P-valve
	Freq.	(%)	Freq.	(%)		
Post-natal health services Yes	19	47.4	97	55.9	Ref	
No	22	52.6	77	44.1	4.1(1.51-17.5)	0.001
Health education done to mothers Yes	15	37.5	102	58.8	Ref	
No	26	62.5	72	41.2	0.85(1.24-2.78)	0.004
Required drugs available Yes	10	25.0	92	52.9	Ref	
No	31	75.0	82	41.1	2.32(1.14-19.20)	0.002
Heath workers available Yes	36	87.5	123	70.6	1.22(0.54-36.50)	0.058
No	05	12.5	51	29.4	Ref	
Cost of care affordable Yes	15	37.5	61	35.3	3.32(0.87-5.36)	0.063
No	26	62.5	113	64.7	Ref	

The study shows that majority 22(52.6%) of those who developed PCS noted that they could notaccess post-natal health services, while many 97(55.9%) of those who did not get sepsis could access post-natal health services, the study established that lack of access to post-natal health services was a significant factor into leading to occurrence of sepsis, with an odds ratio of 4.50(1.51-17.5) and p-value of 0.001. The study further shows that majority 26(62.5%) of those who got sepsis said they had not been given any health education while at least 102(58.8%) of those who never developed sepsis said they had been health educated, the study established that lack of health education to post cesarean mothers was a contributing factor to occurrence of post cesarean sepsis, at an odds ratio of 0.85(1.24-2.78) and p-value of 0.004. In addition to the above, majority 31(75%) of those who developed sepsis noted that the drugs were unavailable, while at least 92(52.9%) of those who never developed sepsis said they had received their treatment, the study established that failure to receive the prescribed treatments after cesarean operation was a significant factor to the occurrence of post-cesarean sepsis with anodd ratio of 2.32(1.14-19.20) and a 0.002 p-value. The study furthermore shows that the majority of those 36(87.5%) who developed sepsis andthose 123(70.6%) who never developed sepsis said the health workers were always available. The study established that the availability of health workers at the hospital did not significantly affect the occurrence of sepsis among patients. Further, still, the study shows that the majority i.e. both, those 26(62.5%) who developed sepsis and those 113(64.7%) who did not develop post-cesarean sepsis, said the cost of care had become unaffordable, the study established that the cost of care did not significantly affect the occurrence of post-cesarean sepsis among mothers, at an odds ratio of 3.32(0.87-5.36) and a p-value of 0.063.

DISCUSSION

The proportion of mothers who developed post-cesarean sepsis

The participants were assessed for clinical signs and symptoms of sepsis, in which only 41(19.0%) had developed sepsis while the majority 174(81%) never developed sepsis, this couldhave resulted from poor care for the incision site or failure to observe aseptic techniques during operation, this study shows a lower percentage prevalence as compared to study results from Al Jama, FE in 2017 who indicated that in Mulago Hospital- Kampala, Uganda in 2015 a higher post cesarean sepsis cases of 21% of all women.

Social demographic characteristics of Women with Post Cesarean Sepsis

The social demographic characteristics were assessed in association with sepsis occurrence, when assessed for age, the study found out that the majority 16(39.0%) of those who had gotten sepsis were between 29 to 38 years of age while those 74(42.5%) who had not gotten sepsis were below 18 years, the study established that being in the age group of 29 to 38 Years age was a significant factor to having sepsis, with an odd ratio of 0.35(0.92-12.20) and P-value of 0.001. The majority of those who got sepsis being between the age of 29 to 38 years could be due to poor wound healing among adult persons as a result of reduced body repair and healing, coupled with the fact that some of these mothers could be with previous scars which compromised woundhealing. When this study is compared with other studies, it shows a contradiction from a study by [12] who indicated that Post cesarean sepsis after caesarean section was associated with younger age and poor nutrition, their findings also indicated that, there was a higher incidence of premature rupture of membrane among young mothers which increased post cesarean sepsis rates. The education level of participants was also assessed in regard to sepsis, in which the study showedthat the majority 21(51.2%) of those who had had sepsis were those of primary level of education, while the majority 110(63.2%) of those who had not had sepsis had obtained at least a tertiary levelof education. The study indicated that being of primary level of education had a positive significance to occurrence of post-cesarean sepsis at a p-value of 0.002 and odds ratio of 3.51(2.33-3.77), the majority with sepsis being from primary level of education could be because this group of mothers have less access information about safe motherhood and wound care because they may not be able to receive all publication and media messages, which puts them atrisk of not knowing how to care for themselves, thus developing sepsis, when compared with other studies, this study shows a correlation with study results by [13] in which they showed that mothers with higher levels of education easily understood the instructions regarding hygienic wound management which resulted in less post-cesarean sepsis compared to mothers with low levels of education who did not easily understand the given information. The participants were assessed for their occupation status in correlation to the occurrence of post-cesarean sepsis, majority of mothers 36(87.5%) who had post-cesarean sepsis as well as those 164(94.1%) didn't get sepsis were peasant farmers, the study showed that the nature of one's occupation did not have a significant impact on one developing post cesarean sepsis, therewas an odd ratio of 0.65(1.04-11.59 and p-value of 0.002, majority of the participants being peasant mothers could be because the area under study is predominantly occupied by peasant farmers, however, a comparative correlative study carried out in Kenya [14] showed that mothers who did not have high paying jobs had a higher incidence of post-cesarean sepsis after caesarean section compared to their counterparts with highly paying jobs. The parity of the participants was also assessed, the majority i.e. both mothers who developed sepsis 31(75.0%) and those 112(64.4%) who did not, were para 1 to para 2 birth deliveries, the study showed that parity of the mothers did not influence occurrence of sepsis, at odd ratio of 2.42(1.47-8.50) and p-value of 0.832, the majority of the mothers having been delivering their less than fourth delivery, could be because majority were in their youthful reproductive years, coupled with the fact that many people use contraceptive methods and produce less children, this study shows a contradiction from study by [13] in maternity unit of Kiambu district hospital- Central province- Kenya, caesarean

section rate was 7.8% with overall post caesarean sepsis being quite high (19%), they noted that among the prime gravidae woman who labored for >12hours, the incidence of wound infections was 33% compared 15% among those who labored for 12 hours or less, only 5.5% of multigravida mothers who had labored for more than 12 hours developed sepsis.

Health facility-related factors and their association with sepsis.

Health-related factors were assessed for their association with post-cesarean sepsis in which the majority 97(55.9%) of those who never developed PCS had been given adequate post-natal care, while at least 19(47.4%) of those who developed sepsis citing that there was no adequate post-natal care extended to them, the study established that lack of adequate post-natal care was a significant factor into leading to the occurrence of sepsis, with an odds ratio of 4.60(1.51-17.25 and p-value of 0.001, post-natal care involves cleaning incision site, keeping personal hygiene and general good sanitation, when they are compromised, the patients becomes susceptible to bacterial inoculation that can lead to sepsis. When this study is compared with other studies, it shows a positive correlation with a study by [15]-[21]] in which they showed that most mothers in developing countries missed out on important antibiotic doses that would prevent wound infection, due to unavailability of drugs at health centres and lack of money to meet the costfor basic care; some mothers also used herbs which thus predisposed them to infections.

The participants were assessed if health education had been done to them after the cesarean operation on how to care for the incision site, majority 26(62.5%) of those who got sepsis said they had not been given any health education while at least 102(58.8%) of those who never developed sepsis said they had been health educated, the study established that lack of health education to post-cesarean mothers was a contributing factor to the occurrence of sepsis, at an odds ratio of 0.85(1.24-2.78) and p-value of 0.004, health education enables one to know what to do inorder to enable quick healing, some health workers barely have enough time to health educate patients or their caregivers and therefore they can't take adequate care of the incision site appropriately thus developing sepsis. When this study is compared with other studies, it shows a similarity with the study by [16],[22]-[28] on the incidence and risk factors of post-cesarean sepsis in a tertiary health institution in Kano, in which they reported that some of the cases with post-cesarean sepsis were due to poor personal hygiene and negligence to follow the instructions given to them on discharge and that Standards of personal hygiene, such as bathing every day, were culture-dependent. Post-cesarean mothers were assessed if they had received all the required drugs prescribed after their operation, majority of those who developed sepsis noted that they had not all the drugs because they were unavailable, while at least 92(52.9%) of those who never developed sepsis said they had received their treatment, the study established that failure to receive the prescribed treatments after the cesarean operation was a significant factor to the occurrence of post-cesarean sepsiswith an odd ratio of 2.32(1.14-19.20 and a 0.002 p-value. Shortage of drugs could be because being a government public hospital, with a lot of patients, the drugs get used up before another batch of supply to the hospital, and lack of key antibiotic drugs meant to prevent bacterial colonization at the incision site, leads to wound infection and sepsis when compared with other studies, this study shows a positive correlation with a study by [17] in a studyon the timing of antibiotics at cesarean which revealed that mothers who received antibiotics in time before and after the operation had fewer chances of developing infections. Antibiotics given before the operation helped to minimize the growth of pathogens around the surgical site which in the end led to serious infection that most cases that was not done due to drug unavailability, especially in public health care facilities in developing countries. The mothers were also asked if the health workers taking care of them were always available, themajority of both those 36(87.5%) who developed sepsis and those 123(70.6%) who never developed sepsis said the health workers were always available. The study established that the availability of health

workers at the hospital did not significantly affect the occurrence of sepsis among patients, health workers could have been available but if key drugs and other accessories to use on patients are not available, still, sepsis would occur, when compared with others studies, [18] had also noted that, the amount of health care given to caesarean section mothers in health facilities further much determined their healing process and that good health care, the health workers had to periodically administer the necessary antibiotics or changes the course of treatment depended on the healing process of the wound, maintained the plaster at the wound site for about 48 hours avoided invasion of foreign organisms, and advised on the feeding to ensure good immunity. The cost of care was also assessed, and its impact on development of post cesarean sepsis, the majority among those 26(62.5%) who developed sepsis could not afford health care as compared to only a very small percentage 61(35.3%) who did not develop sepsis could afford health care services, the study however established that the cost of health care significantly affected occurrence of post cesarean sepsis among mothers, at an odds ratio of 3.32(0.87-5.36) and a p- value of 0.063, this could be due to the cost of operation and other necessities required in pre and post-operative arrangements, and after the operation if the patient runs bankrupt and cannot afford the cost of care, then she becomes susceptible to wound infection and sepsis, a comparative study by [19],[29] had reported that the cost of health care determined the times and amount of medication received by the patients and also that, in rural areas of Tanzania caesarean section mothers with low incomes could not afford private health care where they would be given adequate care [30]. Another correlative study by [10] further noted that Private healthcare facilities were known to provide quality care to patients because they were paid highly which enabled them to buy quality medicines and equipment [31].

CONCLUSION

The prevalence of post-cesarean sepsis according to the study above is still high among post-cesarean mothers admitted at Kapchorwa District Hospital. Mothers between the ages of 29 to 38 years remain the most common age group with post cesarean sepsis according to the study above. Mothers who have primary school level of education have the highest cases of post cesareansepsis according to the study above. The researcher also found that there was no relationship between parity and occupation, and occurrence post cesarean sepsis among mothers from the study above. From the study above lack of adequate post-natal care was a significantly associated with postcesarean sepsis among mothers. The study above also found that lack of health education was significantly associated withoccurrence of post cesarean sepsis among mothers. The study also found that failure of mothers to receive prescribed drugs after cesarean sectionhad a significant association with occurrence of post cesarean sepsis. High cost of health care also remains a significant cause of post cesarean sepsis according to the study above.

Recommendations

- A study should be done to find out why many mothers in the age group of 29 to 38years are susceptible to post cesarean sepsis.
- Government should introduce with health education media programs in the local languages so as address the problem of low level of education since majority of the mothers with post cesarean sepsis had only primary level of education.
- Government should expand the coverage of free secondary and tertiary education since the mothers with only primary level of education were majority according to the study above.
- The post cesarean mothers should be health educated on the incision site care toprevent infection occurrence.
- A study should be done to find out the relationship between health education and thelevel of education of mothers in the causation of post cesarean sepsis.
- Post cesarean mothers should be strictly followed up on prescribed antibiotics and drugs by the health

workers.

- Post-cesarean mothers should be encouraged and provided with adequate post-natal care services by the health workers and caretakers.
- Non-governmental aid organizations should be incorporated into the healthcare system to enable post-cesarean mothers to access expensive healthcare services easily.

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