

Prevalence and Factors Associated with Puerperal Sepsis among Women Attending the Postnatal Ward at Fort Portal Regional Referral Hospital

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ABSTRACT

Puerperal sepsis is a global problem. It causes maternal morbidity in every hospital in the world. Some people acquire the sepsis after they have been admitted to the hospital maternity ward. Usually about 4-6 percent of patients who come into the hospital and maternity ward acquire some kind of clinical infection. The study aimed to determine the factors contributing to puerperal sepsis in postnatal mothers in maternity ward at Fort Portal Regional Referral Hospital. A cross sectional study was conducted whereby questionnaires were availed to mothers in maternity ward to fill. All mothers who delivered from Fort Portal Regional Referral Hospital and develop puerperal sepsis were included in the study. Quantitative data was analyzed using Microsoft excel manually and interpreted into average and percentages and presented on tables, graphs and pie charts. The study found out that the prevalence of puerperal sepsis at fort portal regional referral hospital is 22.4% and most respondents were multiparous (80.6%, 49.4% delivered from the hospital, 41.7% from home while 8.8% delivered from the traditional birth attendant. 64.7% had spontaneous vaginal delivery, while 35.3% had caesarean section, and 58.8% were assisted by doctors while 41.2% were assisted by midwives/nurses, 57.6% took the normal period of labor and 42.4% had prolonged labor and 12.9% experienced antepartum hemorrhage. The prevalence of puerperal sepsis was found to be 22.4% and it as associated to factors such as parity, mode of delivery, place of delivery, duration of labor and other medical conditions like diabetes, hypertension and HIV infection. Government through the Ministry of Health should partner with hospitals creating affordable costs to mothers whenever serious conditions a rise. Aseptic technique should be practiced when assisting mothers during delivery.

Keywords: Puerperal sepsis, Clinical infection, Patients, Postnatal mothers, Caesarean section, Vaginal delivery.

INTRODUCTION

Puerperal sepsis has been described since the time of Hippocrates. Puerperal fever (from Latin, puer means child) also called child bed fever is contracted by a woman during or shortly after child birth, miscarriage or abortion leading to septicemia and death. Along with pre-eclampsia and obstetrical hemorrhage it has formed the lethal triad of causes of maternal death for many decades. It is the leading cause of preventable maternal morbidity and mortality not only in developing countries but developed countries as well [1]. It is ranked 3rd after hypertensive disorders and hemorrhage in Pakistan [1]. Puerperal sepsis is an abnormal condition that results from infections of placental site following delivery and is characterized; in mild form by fever of 38.6 degrees Celsius but may progress to endometritis or pass on to blood stream and produce septicemia. [2]. Puerperal sepsis occurs in a period of six weeks after delivery, during this period, the

woman's body reverts into its pre-gravid state [3]. Puerperal sepsis is a global problem. It causes maternal morbidity in every hospital in the world. Some people acquire the sepsis after they have been admitted to the hospital maternity ward [4]. Usually about 4-6 percent of patients who come into the hospital and maternity ward acquire some kind of clinical infection [5]. There is also tissue trauma during labor, open wound of placental site, surgical incision and increased vaginal roomy after birth are all increased risks of postpartum hemorrhage [6]. Therefore, puerperal sepsis is an infection of the genital tract after child birth [7]. [8] marked that it's probably the major cause of maternal morbidity throughout the world. Although the extent of puerperal sepsis on maternity ward is poorly understood in developing countries including Uganda, puerperal sepsis is one of the top five causes of maternal mortality [9]. Puerperal sepsis occurs

when Streptococci colonizing the genital tract or acquired nosocomial invade the endometrium, adjacent structures, lymphatic and blood stream. Postpartum birth canal remains susceptible to invasion for several days after delivery. Predisposing factors leading to puerperal sepsis include home births in unhygienic conditions, low socioeconomic status, poor nutrition, primiparas, prolonged rupture of membranes, prolonged labor and postpartum hemorrhage [1].

Statement of Problem

Puerperal sepsis is still a public health concern in developing countries, including Uganda. It's one of the leading causes of maternal morbidity and mortality [5]. There are no clear standardized guidelines for controlling the condition in most maternity wards and at Fort Portal Regional Referral

Hospital. Similarly, the factors contributing to puerperal sepsis and its preventive measures have not been studied in institutions in Bundibugyo district. The available data on the occurrence of puerperal sepsis on maternity wards in Uganda is insufficient. Prevention of puerperal sepsis on maternity ward remains a big challenge given inadequate health care resources. Most mothers come to the hospital with puerperal sepsis or develop it in the hospital or at home after delivery. Puerperal sepsis has been a major cause of anemia, puerperal psychosis, and poor lactation leading to poor infant feeding. Therefore, it was very necessary to examine the prevalence and factors associated with puerperal sepsis among women attending postnatal ward at Fort Portal Regional Referral Hospital.

METHODOLOGY

Area of Study

The study was conducted at Fort-Portal Regional Referral Hospital. Fort Portal Regional Referral Hospital, commonly known as Fort Portal Hospital, sometimes referred to as Buhinga Hospital, is a hospital in the town of Fort Portal, in Kabarole District, Western Uganda. It is the referral hospital for the districts of Bundibugyo, Kabarole, Kamwenge, Kasese, Ntoroko and Kyenjojo. It is a public hospital, funded by the Uganda Ministry of Health and general care in the hospital is free. It is one of the 13 "Regional Referral Hospitals" in Uganda. The hospital is designated as one of the 15 "Internship Hospitals" where graduates of Ugandan medical schools can serve one year of internship under the supervision of qualified specialists and consultants. The bed capacity of Fort Portal Hospital is quoted as 333.

Study Design

A cross-sectional quantitative design was used to assess the prevalence and factors associated with puerperal sepsis among women attending postnatal ward at fort portal regional referral hospital. Every mother who was present at the post-natal clinic during the period of the study, who met the criteria and consents, was asked to respond to a researcher administered questionnaire.

Sampling Method

Consecutive sampling method was used to obtain participants' responses by the use of questionnaires.

Sample size determination

The sample size formula [10] used, which is

$$n = \frac{Z^2 P(1-P)}{d^2}$$

Where;

Z = the **Z**-score corresponding to 95% confidence interval is 1.96

P=expected prevalence of puerperal sepsis in Uganda thus **P** is 7.2%

D=precision (d is considered 0.05 to produce good precision and smaller error estimate)

$$n = \frac{(1.96)^2 \times 0.072 \times 0.928}{(0.05)^2}$$

n= 1399

Using the finite population factor for sample size adjustment by [11].

$$n = \frac{n_0 \times N}{n_0 + (N-1)}$$

$$n = \frac{1399 \times 250}{1399 + (250-1)}$$

n= 212 participants

Data Collection

Structural intervention by administering the questionnaire.

Inclusion Criteria

For respondents to participated in the study, were mothers in the postnatal clinic /ward and also residents in Fort Portal.

Exclusion Criteria

- Non-residents of Fort Portal.
- Mothers who are not in either the postnatal ward/maternity ward.

Data Analysis

Data was collected, tailed and grouped in the form of tables and pie charts as found applicable and appropriate. A scientific calculator was used for accuracy.

Ethical Consideration

The participants' confidence was obtained by informing them that the information obtained from them was treated with confidentiality and that their consent was valued and given utmost respect. Also, an introductory letter was obtained by the researcher from the administration of Kampala International

University of Clinical Medicine and Dentistry and presented to relevant authorities in the area of study.

RESULTS

Socio-demographics of the respondents

Table 1: Socio-demographics of the respondents

Age	Frequency	Percentage
15-25	88	27.9%
26-35	130	41.2%
36-45	80	25.4%
46 and above	17	5.4%
Total	315	100
Marital status		
Single	65	20.7%
Married	250	79.3%
Total	315	100
Religion		
Christian	190	60.3%
Muslim	100	31.7%
Other Religion	25	7.9%
Total	170	100
Level of Education		
Primary	88	27.9%
Secondary	130	41.2%
College	80	25.4%
Others	17	5.4%
Total	315	100

Most of the participants were between the age of 26-35 (41.2%) followed by those of 15-25 (27.9%) and 46 and above (5.4%). Most of the participants were married (79.3%) while (20.7 %) were single. Most of the respondents were of the Christian denomination (60.3%) followed by Muslims (31.7%) unlike (7.9%) were other religions. The findings indicated that the

majority of respondents who were involved in the study were Christians. For the case of education level, most of the respondents had secondary level (41.2%), (27.9%) had secondary level, (25%) had attained a college level unlike (5.4%) who had other qualifications.

Table 2: The prevalence of puerperal sepsis at Fort Portal Regional Referral Hospital- south-western Uganda

Obstetrics Data	Frequency	Percentage
Parity		
Primiparity	33	19.4
Multi parity	137	80.6
Total	170	100
Where do you normally deliver from?		
Health Center facility	84	49.4
Home	71	41.7
From Traditional Birth Attendant	15	8.8
Total	170	100
By what mode of delivery was your last delivery?		
Spontaneous vaginal delivery	110	64.7
Cesarean section	60	35.3
Total	170	100
Were you assisted during delivery?		
Yes	79	46.5
No	91	53.5
Total	170	100
If yes, who assisted you?		
Doctor	49	58.8
Mid wife/ Nurse	35	41.2
TOTAL	84	100
What was the duration of labour?		
Normal	98	57.6
Prolonged	72	42.4
Total	170	100
Was there APH?		
Yes	22	12.9
No	148	87.1
Total	170	100

In Table 2, the majority of (80.6%) respondents were multipara mothers and most participants (49.4%) delivered from health Centres, 41.7% from home and 8.8% delivered from other places. Most participants (64.7%) deliver by spontaneous vaginal delivery, or Cesarean section (35.3%). The majority (58.8%) were

assisted by a midwife/ Nurse unlike others (41.2%) were assisted by a doctor and 57.6% reported that their labor process was normal while 42.4% reported prolonged labor. 12.9 % of the participants reported antepartum haemorrhage.

Table 3: shows an association between factors contributing to puerperal sepsis and the prevalence of puerperal sepsis

Variable	Has Ever Suffered from Puerperal Sepsis		Pearson chi-square value	p-value
	Yes	No		
How many times have you had deliveries?				
Once (para1)	15%	85%	10.184a	0.035
Multipara	78%	22%		
Place of delivery				
Health facility	36.9%	63.1%	42.105a	0.008
Home	8.4%	91.6%		
TBA	6.7%	93.3%		
Mode of delivery				
SVD	34.5%	65.5%	26.694a	0.0000
CS	0%	100%		
Duration of labour				
Normal	0%	100%	66.612a	0.0000
Prolonged	52.7%	47.3%		
Was there APH				
Yes	37.5%	62.5%	87.781a	0.0000
No	10%	90%		
Have you ever suffered from these conditions?				
Diabetes	100%	0%	164.762a	0.000
Hypertension	100%	0%		
HIV	91%	9%		
None	0%	100%		

As shown in Table 3, a chi-square analysis revealed that there is a significant association between parity [$\chi^2(1)=10.746^a$; $p<0.035$], place of delivery [$\chi^2(1)=42.105^a$; $p<0.003$], mode of delivery [$\chi^2(1)=26.000^a$; $p<0.000$], duration of labour [$\chi^2(1)=66.612^a$; $p<0.000$], antepartum haemorrhage [$\chi^2(1)=87.781^a$; $p<0.000$] and medical conditions [$\chi^2(1)=164.762^a$; $p<0.000$]. where mothers who are multipara have a 33% chance of developing puerperal sepsis compared to mothers with only one parity (15%). Of mothers who delivered from the hospital

36.9% developed sepsis 8.4% of those who delivered from home developed sepsis and only 6.7% of those who delivered from the Traditional birth attendant developed sepsis. 34.5% of those who had deliveries through SVD develop sepsis and 52.7% of mothers with prolonged labour develop sepsis. 37.5% of mothers with APH develop puerperal sepsis and only 10% without puerperal sepsis. Medical conditions such as diabetes (100%), hypertension (100%) and HIV (91%) influenced puerperal sepsis among the respondents.

DISCUSSION

The study found Most of the participants were between the age of 26-35 (41.2%) followed by those of 15-25 (27.9%) while 46 and above (5.4%) and 79.3% of them were married. Most of the respondents were of the Christian denomination (60.3%) followed by Muslims (31.7%) and 7.9% were other religions. The findings indicated that the majority of respondents who were involved in the study were Christians.

41.2% of the participants attended up to secondary level education while 25% had attained college certificates and 5.4% had other qualifications. The study found that the prevalence of puerperal sepsis at Fort Portal Regional Referral Hospital is 22.4% and most respondents had more than one delivery (80.6%, 49.4% delivered from the hospital, 41.7% from home while 8,8% delivered from the traditional

birth attendant. 64.7% had a spontaneous vaginal delivery, 35.3% had a caesarean section, 58.8% were assisted by doctors while 41.2% were assisted by midwives/nurses, 57.6% took the normal period of labour and 42.4% had prolonged labour and 12.9% experienced antepartum haemorrhage.

Prevalence of Puerperal sepsis

Our study found the prevalence of puerperal sepsis to be 22.4% which implies there is a high rate of puerperal sepsis among mothers attending services at Fort Portal Regional Referral Hospital. This study is in line with the study done in Bushyenyi among mothers who deliver at KIU Teaching Hospital which found the prevalence to be 20.9% [12]. Another study in Zambia in 2014 showed a similar result of a 17% rate of puerperal sepsis in Zambia [13]. However, our finding varies with the one of [14] which found the prevalence to be 14.81% which is lower than our findings [14]. This indicates that the prevalence of puerperal sepsis varies from different countries depending on the factors influencing the occurrence.

Factors influencing the occurrence of puerperal sepsis

Our study found that parity influences the occurrence of puerperal sepsis where a mother with multiparity has a tendency to develop puerperal sepsis than mothers who are delivering for the first time, this is in line with the study done by Adams et al in 2020 Ethiopia which revealed that multiparous mothers are more likely to develop puerperal sepsis than

primiparous mothers [15]. This shows that more deliveries increase the risk of puerperal sepsis among mothers. Our study also revealed that the majority (49.4%) of the mothers who delivered from the hospital developed puerperal sepsis which is similar to a study by Khaskheli et al which found that the majority 26.35% of the mothers who delivered at the hospital developed puerperal sepsis [16] hence the hospital environment has a significant effect and exposes the post-partum mothers to the risk of infection. The participants who had SVD were more likely to develop puerperal sepsis than those who had a cesarean section, this is contrary to a study done in Ethiopia by [17] which indicated that mothers who delivered by cesarean section(c/s) 3.8 times more likely to develop puerperal sepsis compared to those delivered by spontaneous vaginal delivery (SVD) [17]. This indicates that hygiene could be the reason for the high risk of puerperal sepsis among mothers who underwent cesarean section in Fort Portal Regional Referral Hospital. Our study also revealed that prolonged labour is also associated with puerperal sepsis which is similar to the findings of the study done by [18] which found that prolonged labour can increase the risk of puerperal sepsis by 58.6%. [19]-[22] this could be associated with many vaginal examinations which expose the mothers to infections as a result of prolonged labour.

CONCLUSION

The prevalence of puerperal sepsis in Fort Portal Regional Referral Hospital was found to be extremely high compared to the global prevalence which is at 14.81% and factors such as parity, mode of delivery, place of delivery duration of labour and other medical conditions like diabetes, hypertension and HIV infection was found to significantly associated with puerperal sepsis. These factors are matching with some of the findings from other countries and it is attributed to hospital hygiene and exposure to vaginal examination.

Recommendations of the study

There is more need to educate the community on hygienic practices especially for post-partum mothers so as to control infections through more community outreaches by community health workers. The

government through the Ministry of Health should partner with hospitals creating affordable costs to mothers whenever serious conditions arise. Also, the provision of both surgical and disposable gloves to health facilities should be considered highly as this will promote hygiene.

Increase recruitment and salary payment to health workers in time to motivate their work. Improving diet through a balanced diet to meet the body's demands especially during pregnancy and after delivery. Mothers' should be advised to always go for HIV screening tests during their ANC visits. Family planning methods should be emphasized as it gives time to cater for mothers' life and the child.

REFERENCES

1. Begum, S., Aziz-un, N. and Begum, I. (2003b). Analysis of maternal mortality in a tertiary care hospital to determine causes and preventable factors. *Journal of Ayub Medical College, Abbottabad: JAMC*, 15(2), 49-52.
2. Geerts, W., Cook, D., Selby, R. and Etchells, E. (2002). Venous thromboembolism and its prevention in critical care. *Journal of critical care*, 17(2), 95-104.
3. Aboyeji, O. S., Mogaji, K. A. and Oyinloye, R.O. (2012). Structural Interpretation of Remotely Sensed Sets, It Hydrogeological Implication over Ile-Life and Environs. *Ozen Journal of Applied Sciences*, 5, 43-54. [https://www.scirp.org/\(S\(czeh2tfqw2orz553k1](https://www.scirp.org/(S(czeh2tfqw2orz553k1)

- w0r45))/reference/references_papers.asp?reference id=1451324.
4. Moodley, J., Pattinson, R. C., Fawcus, S., Schoon, M. G., Moran, N. and Shweni, P. M. (2014). The Confidential Enquiry into Maternal Deaths in South Africa: a case study. *BJOG: An International Journal of Obstetrics and Gynaecology*, 121 Suppl 4, 53–60. <https://doi.org/10.1111/1471-0528.12869>.
 5. Ayzac, L., Caillat-Vallet, E., Girard, R. and Berland, M. (2017). The “RESEAU MATER”: An efficient infection control for endometritis, but not for urinary tract infection after vaginal delivery. *Journal of Infection and Public Health*, 10(4), 457–469.
 6. Admas, A., Gelaw, B., Belaytessema, Worku, A. and Melese, A. (2020). The proportion of bacterial isolates, their antimicrobial susceptibility profile and factors associated with puerperal sepsis among post-partum/aborted women at a referral Hospital in Bahir Dar, Northwest Ethiopia. *Antimicrobial Resistance and Infection Control*, 9(1), 1–10. <https://doi.org/10.1186/S13756-019-0676-2/TABLES/5>.
 7. Transmitted, S., Infections, O. and Disorders, S. (n.d.). (2018). Introduction to Maternity & Women's Health Care UNIT TWO Women's Health Complications of Pregnancy.
 8. Wathes, D. C., Brickell, J. S., Bourne, N. E., Swali, A. and Cheng, Z. (2008). Factors influencing heifer survival and fertility in relation to sepsis. *Animal*, 2(8), 1135–1143. <https://doi.org/10.1017/S1751731108002322>.
 9. Ambrose, B., Ambrose, B. M., Vivien, I. A., M, S. D., Deshpande, R. and Neel, G. R. (2016). Factors Contributing to Puerperal Sepsis at Kampala International University Teaching Hospital-Ishaka Bushenyi-Uganda. *World Journal of Pharmaceutical Research*, 5. <https://doi.org/10.20959/wjpr201610-6460>.
 10. Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A. B., Daniels, J., Gülmezoglu, A. M., Temmerman, M. and Alkema, L. (2014). Global causes of maternal death: a WHO systematic analysis. *The Lancet. Global Health*, 2(6). [https://doi.org/10.1016/S2214-109X\(14\)70227-X](https://doi.org/10.1016/S2214-109X(14)70227-X).
 11. Ahmed, S., Yousaf, M., Mothana, R. A. and Al-Rehaily, A. J. (2016). Studies on Wound Healing Activity of Some Euphorbia Species on Experimental Rats. *Afr J Tradit Complement Altern Med*, 13(5), 145–152. <https://doi.org/10.21010/ajtcam.v13i5.19>.
 12. Chisembele, M., Rodriguez, V. J., Brown, M. R., Jones, D. L. and Alcaide, M. L. (2018). Intravaginal practices among young HIV-infected women in Lusaka, Zambia. *International Journal of STD & AIDS*, 29(2), 164–171. <https://doi.org/10.1177/0956462417721438>.
 13. Johnson, A. N. and Buchmann, E. J. (2012). Puerperal infection after caesarean section at Chris Hani Baragwanath Academic Hospital, Johannesburg. *South African Journal of Obstetrics and Gynaecology*, 18(3), 90–91. <https://doi.org/10.7196/SAJOG.559>.
 14. Harunah, S. (2017). Prevalence and Factors Associated with Puerperal Sepsis Among Women Delivering at Kampala International University Hospital Western Campus, Ishaka Bushenyi A Research Dissertation Submitted to The School of Allied Health Sciences in Partial Fulfilment for The Requirements of Award of Diploma in Clinical Medicine and Community Health of Kampala International University Western Campus Ishaka Bushenyi.
 15. Maureen, C. (2014). The global incidence of puerperal sepsis -. https://www.gfmer.ch/Medical_education_En/PGC_RH_2004/chisembele_review.htm.
 16. Melkie, A. and Dagne, E. (2021). Burden of puerperal sepsis and its associated factors in Ethiopia: a systematic review and meta-analysis. *Archives of Public Health*, 79(1), 1–11. <https://doi.org/10.1186/S13690-021-00732-Y/FIGURES/8>.
 17. Ben Zakour, N. L., Venturini, C., Beatson, S. A. and Walker, M. J. (2012). Analysis of a Streptococcus pyogenes Puerperal Sepsis Cluster by Use of Whole-Genome Sequencing. *Journal of Clinical Microbiology*, 50(7), 2224. <https://doi.org/10.1128/JCM.00675-12>.
 18. Khaskheli, M. N., Baloch, S. and Sheeba, A. (2013b). Risk factors and complications of puerperal sepsis at a tertiary healthcare center. *Pakistan Journal of Medical Sciences*, 29(4), 972. <https://doi.org/10.12669/PJMS.294.3389>.
 19. Demisse, G. A., Sifer, S. D., Kedir, B., Fekene, D. B. and Bulto, G. A. (2019). Determinants of puerperal sepsis among postpartum women at public hospitals in west SHOA zone Oromia regional STATE, Ethiopia (institution Based case Control Study). *BMC Pregnancy and Childbirth*, 19(1), 1–6. <https://doi.org/10.1186/S12884-019-2230-X/TABLES/2>.
 20. Begum, S., Aziz-un, N. and Begum, I. (2003a). Analysis of maternal mortality in a tertiary care hospital to determine causes and preventable factors. *Journal of Ayub Medical College, Abbottabad: JAMC*, 15(2), 49–52.

21. Sayinzoga, F. and Bijlmakers, L. (2016). Drivers of improved health sector performance in Rwanda: A qualitative view from within. *BMC Health Services Research*, 16(1), 1–10. <https://doi.org/10.1186/S12913-016-1351-4/TABLES/4>.
22. Mulegi, T. (2022). An Overview of Performance of Health Workers in Uganda. *IDOSR Journal of Humanities and Social Sciences*. 7(1), 113-124.
23. Harunah, S. (2023). Assessments of Puerperal Sepsis in Women at Kampala International University Teaching Hospital Western Campus, Uganda. *IDOSR Journal of Biochemistry, Biotechnology and Allied Fields*. 8(1), 42-52.
24. Emmanuel, I., Obeagu, B., Kigabo, N., Okechukwu, P. C., Obeagu, G. U. and Ugwu, K. S. (2023). Neonatal Sepsis: Haematological Perspectives. *IDOSR Journal of Scientific Research*, 8(2), 161-166.

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