

Prevalence, Causes and associated factors for Postpartum haemorrhage (PPH) at St. Joseph referral hospital Peramiho-Songea, Tanzania; A hospital-based retrospective cross-sectional study.

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Research Article

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Abstract

Background

The prevalence of postpartum haemorrhage (PPH) is increasing globally that is from 6.5% in 2000 to 11% in 2016. But there are regional variations where there is decrease of PPH in some parts of Asia and increase in Africa and developed countries.

Objectives

The main objective of this study was to assess the prevalence, causes and associated factors for postpartum haemorrhage at St. Joseph referral hospital in Peramiho- Songea from November 2017 to December 2019.

Method

The retrospective cross-sectional hospital-based study was used and data was obtained from maternity hospital registry book/data base of St. Joseph mission hospital in Peramiho Songea, from November 2017 to November 2019. Descriptive data was analysed by tables and graphs.

Results

The prevalence of PPH in Peramiho referral hospital was 1.3% in 2017, 1.26% in 2018 and 1.4% in 2019. The overage prevalence for the three years is 1.3%. However, 73.3% of total prevalence is from home deliveries in rural areas. The main cause of PPH in the hospital was uterus atony (42%), retained placenta (15.5%), 3rd and 4th grade tears (11.2%), uterine rupture (8.1%) and coagulopathy (5.6%). The main attributing factors were age > 35years (34%), other antenatal pregnancy complication (27%), previous PPH (18.6%), Antenatal anaemia (16%), placenta previa, Eclampsia, preeclampsia (12%) each.

Conclusion

The prevalence of PPH from this study is slightly high with the main cause being uterine atony and affected mainly those undergone SVD where about two quarter were home deliveries. However further research studies are needed to investigate the main reason for higher home deliveries in Peramiho residence and nearby area.

Introduction

Annually, about 41 million cases of PPH are reported globally, among these case 127,000 died due to PPH.^[1,2,3] Globally, the prevalence of PPH is increasing though there is inter-regional and intra-regional variation^[4]. A study showed global increase of PPH by 4.71% in 2012 ^[4]. The highest prevalence of PPH revealed in Africa (25.7%) followed by Latin America and Asia (18%), North America and Europe (13%) and Oceania (7.2%) ^[4].

Study done in Netherlands shows that the prevalence was 4.1% (2000) ^[5] which raised to 6.4% in 2013^[6]. In Ethiopia 2015 it was 16.6% ^[7] compared to Japan 2015 which was 13% ^[8]. The situation of PPH in Tanzania seems to be the second most cause of high maternal mortality. ^[9] The prevalence of PPH has been raising between 10% 2013 to-32% 2014 ^[6]. Studies done in three regions including Mbeya, Dar es Salam and Shinyanga showed gradual increase in incidence, that is 11.9%, 14.9% and 50% respectively. ^[10,11]

Postpartum Haemorrhage accounts for the majority of the maternal deaths occurring annually.^[12] The burden of PPH has been shown to increase in current years ^[9]. In Senegal PPH raised between 10% in 2007 to 23% in 2008 ^[4] while in Quarite PPH was 5.4% in 2015 ^[13]. In Tanzania a study conducted by Zonal Consultant Hospitals reported the prevalence of PPH to be 1% to 32% in 2017 ^[14]. However in Bugando Medical Centre it was 5.8% in 2015 ^[15].

World health organization, The Ministry of Health, Community development, Gender, Elderly and Children recommended guidelines for management of PPH.^[1,16,17] The ministry of Health Tanzania formulated major interventions and guidelines to reduce the burden of PPH and finally to be eliminated but still there is significant rise of PPH in different regions in Tanzania ^[16,7].

Proper care during antenatal, Labour and child birth and Active management during third stage of labour is a critical phase in the lives of mothers. Most maternal deaths occur during this time. In rural settings like Peramiho the case may be the same but it has not been explored to give clear evidence of PPH. Despite all measures taken by the Tanzanian government, high prevalence of PPH is still a challenge necessitating critical measures to control it. Therefore, this study aims to determine the Prevalence, Causes and Factors Associated with Post-partum Haemorrhage among Women Delivered at St. Joseph Mission Referral Hospital in Peramiho at Songea Ruvuma Tanzania.

Methods

Study design.

A retrospective Cross-sectional hospital-based study design was conducted by using hospital delivery registry book/database and Patients files from January 2017 to December 2019 with aim of determining the prevalence, causes and associated factors for postpartum haemorrhage.

Study Setting

The study was conducted at St. Joseph Mission Referral Peramiho Hospital in Songea District in Ruvuma region- southern part of Tanzania. This is a rural part of the country, and the facility selected is the one with high standard hospital in the area. The hospital serves more than twelve nearby villages, and patients from different areas of the country. It admits between 1500-2000 patients per month. It serves about 250 to 300 deliveries per month and about 60 to 70 patients attending at Obstetric gynecology per day.

Study sample and population.

The Kish-Leslie (1965) formula ($n=Z^2 pq/e^2$) was used to calculate the sample size from population of interest to be reviewed. The Z (variate from normal distribution that represents the level of confidence) was 1.96; p (estimated proportion of attribute present in a population; and $q = 1 - p$). The desired level of precision (e) was set at 95% (minimum acceptable errors at 5%) giving a total sample to be reviewed. This study included all files from record department and register from Labour ward of woman who delivered at St Joseph Referral Hospital Peramiho at a specified period of time.

Inclusion and exclusion criteria

In this study were including the records of women who delivered at St Joseph mission Peramiho Hospital and developed PPH with adequate information required for this study and all patient files with incomplete information were excluded in the study.

Data collection tools and procedure

During data collection patients' files, delivery registry book/database and formulated Check list were tools used in collecting data, then data were extracted from hospital delivery registry book/database and patients' files from January 2017 to December 2019. There was a check list which was prepared according to the specific objectives.

Data Processing and analysis

Data was entered in the computer program statistical packages for social science data analysis (SPSS version 20). Descriptive statistical measure ranging from tables to charts was used to present the data obtained from this study. Chi square (X^2) test was used to show the association between variables, a significance level of 5% ($p < 0.05$) were used to compare and conclude for statistical significance of the association. The statistics was compared between the three years that is January 2017 –December 2019.

Results

Social demographic characteristics of study population

This study involved 161 PPH cases delivered at St. Joseph Mission Referral hospital in Peramiho at Songea from January 2017 to December 2019. The age of the participants recruited in this study ranged from 15 to 45 years with the mean age of 29.12 years and median of 29 years. One quarter were the peasants and half of them had only primary education and 9.3% had higher education while 5.6% had no formal education. Three quarter of the participants live in rural areas while only less than one quarter live in urban. (Table 1)

Table 2
Socio-demographics characteristics of study population (N = 161)

Variable	Frequency	Percentage
Age		
15–25	60	37.3
26–36	67	41.6
37 and above	34	21.1
Occupation		
Student	11	6.8
Employee	17	10.6
Businesswoman	15	9.3
Peasant	59	36.6
House wife	48	29.8
Self-employment	11	6.8
Education level		
No formal education	9	5.6
Primary	87	54.0
Secondary	50	31.1
College & university	15	9.3
Residency		
Urban	43	26.7
Rural	118	73.3

Prevalence of PPH and mode of delivery

The total number of 12123 mothers were delivered at St Joseph Mission Hospital Peramiho between year 2017 and 2019, where 3703, 3930 and 4490 in 2017, 2018 and 2019 respectively. The occurrence of PPH increases consequently in those three consecutive years. The prevalence of PPH in year 2017, 2018 and 2019 was 13, 13 and 14 per 1000 women respectively. However, the overall prevalence for those three year was 13 per 1000 women (**Table 3**).

Most deliveries that complicate with PPH were from home which contributes 73% of total PPH, 70% of those were the mothers who resides in rural areas. Those delivered through spontaneous vaginal delivery (SVD) contributed to about 67.1% of those PPH cases which is twice that of C/S. Teen mothers contributes 12.4%, 20's mother 39.8% and mothers of 30 year and above contribute by 47.8%. (Fig. 1)

Table 4
PPH cases and prevalence in hospital from January 2017 to December 2019

Variables	2017	2018	2019	Total
No. of PPH cases (Per 1000 women)	13	13	14	40
Total deliveries	3703	3930	4490	12,123
Prevalence (%)	1.3	1.26	1.4	4.0

Causes of PPH among women delivered

Among women delivery in this study facility, different causes related to postpartum haemorrhage within three consecutive years were identified. However, the uterus atony, trauma, retained placenta, placental abnormalities, coagulopathy (4T's) were the major causes of PPH. The mothers with coagulopathy disorder were 6.8%, episiotomy 10%, ruptured uterus 10.6%, high grade tear 13%, retained placenta 17.4%, and atone uterus 42.2%. (Fig. 3)

The associated factors for postpartum haemorrhage

Although there is high management of third stage of labour in the hospital in which the study shows that 73.3% of those suffered PPH had received high management in the third stage of labour within 30minutes. Several other factors were contributing to the high prevalence of PPH in Peramiho hospital. These are delivery complications (27.3%), previous PPH (18.6%), anaemia (16.1%), multiple pregnancy (15.5%), placenta previa (12.4%), pre-eclampsia and eclampsia (12%). Other factors were macrosomia (8.1%), abruptio placenta (7.5%), and obesity (7.5%), malpresentation (7.5%). However, 62.7% of all PPH sufferers had Hb > 10g/dl, had parity less than 5(67.7%). Other non-medical associated factors which contributed to high prevalence of PPH at the hospital are Age at delivery that < 20 year and > 35 year (34.6%) show high prevalence, education level in which women with primary education (54.0%) showed high prevalence compared to high educated one. Living in rural area (73.3%) showed increased tare of PPH. (Table 5)

Table 6
The associated Factors of PPH among the women delivered at St. Joseph Mission referral hospital in Peramiho at Songea from January 2017 and December 2019.

Factors	Frequency	Percentage
Parity		
< 5	109	67.7
> 5	52	32.3
Multiple pregnancy	25	15.5
Genital mutilation	5	3.1
Previous PPH	30	18.6
Preeclampsia	20	12.4
Eclampsia	19	12.4
Duration of 3rd stage of labour		
< 30minutes	118	73.3
30-60minutes	31	19.3
> 60minutes	12	7.5
Complication during delivery	44	27.3
Macrosomia	14	8.7
Hb Level		
< 10	60	37.3
> 10	101	62.7

Discussion

The findings from the study shows that the St. Joseph Mission referral Peramiho hospital contributes about 1.3% of PPH cases in overall 25% PPH prevalence in Tanzania as per study done in 2019^[14] this results is about tenfold less than that found in Mbeya referral hospital in 2010^[9]. Two quarter of the PPH cases were from rural areas and delivery took place at home. However the main cause of PPH found in the study was uterine atony(42%) and placental abnormalities which seems to be the main causes the same as the result found in different studies in both developing and developed countries^[18, 8, 19].

The main associated risk factor found in this study were similar to the results found in many literature studies which risk factors were previous PPH, multiple pregnancy, anemia, preeclampsia and

eclampsia^[18, 10]. Furthermore, the study results indicate that the management of third stage of labor was not a really problem because 73.3% of those suffered PPH had attained safe third stage delivery within less than 30 minutes. As compared to the study done in 2010, the prevalence of PPH was higher in C/S but it found that SVD has as twice increased risk as C/section ^[20]. Social demographic factor found to be the main risk as well as large number of sufferers were from rural and had delivered at home (73.3%), this indicate the that the services in rural are either still poor, not adequate or not accessible.^[9] The other reason may be that the rural people lack good and adequate education and knowledge of reproductive health like delivering at health center, attending antenatal clinics and other.

Limitation of the study

Some of the limitations encountered in this study are incomplete or inappropriate client recording in delivery registry book/data.

Conclusion

The prevalence of PPH from this study is slightly high with the main cause being uterine atony and affected mainly those undergone SVD. The main risk factor being all medical, obstetric and demographic. Anemia contributing 16% can be intervened early before delivery. The previous PPH, multiple pregnancy, coagulopathy disorders, mal-presentation and other pregnancy complications can be picked up early and identify the mothers at risk for intensive interventions. The mother should be restricted not to deliver at home and the rural health services should be improved. However further research studies are needed to investigate the main reason for higher home deliveries in Peramiho residence and nearby area. Also, other study should be done to speculate the causes of uterine atony.

Recommendations

The medical team should ensure good health promotion and education concerning reproductive health in rural areas and emphasizing the women to deliver in health facilities, for their own safety and newborns especially for those who experienced antenatal pregnancy complication and those with previous history of PPH or any other complication of previous pregnancy.

Declarations

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Abbreviations

APH-antepartum haemorrhage; C/S- Caesarean section; PPH-postpartum haemorrhage; SVD-spontaneous vaginal delivery; WHO-World Health Organization.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Authors' contributions

SPM: conceived the idea, developed the proposal, participated in data collection, analysis, report writing and drafted the manuscript. CK: conceived the idea, participated in data collection, involved in proposal development, review of data collection instruments, final report and the manuscript. All authors read and approved the final manuscript.

Ethical approval and informed consent

The ethical clearance to perform this study were obtained from CREC and the permission to conduct this study were obtained from the Medical Officer in charge of St Joseph Mission Referral Peramiho Hospital, the patron of the Hospital and the Nurse in charge of Labor ward so as to have access to the registry data/book in labour ward. Confidentiality was maintained by using specific code or number to each check list.

Competing interests

The authors declare that they have no competing interest

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Figures

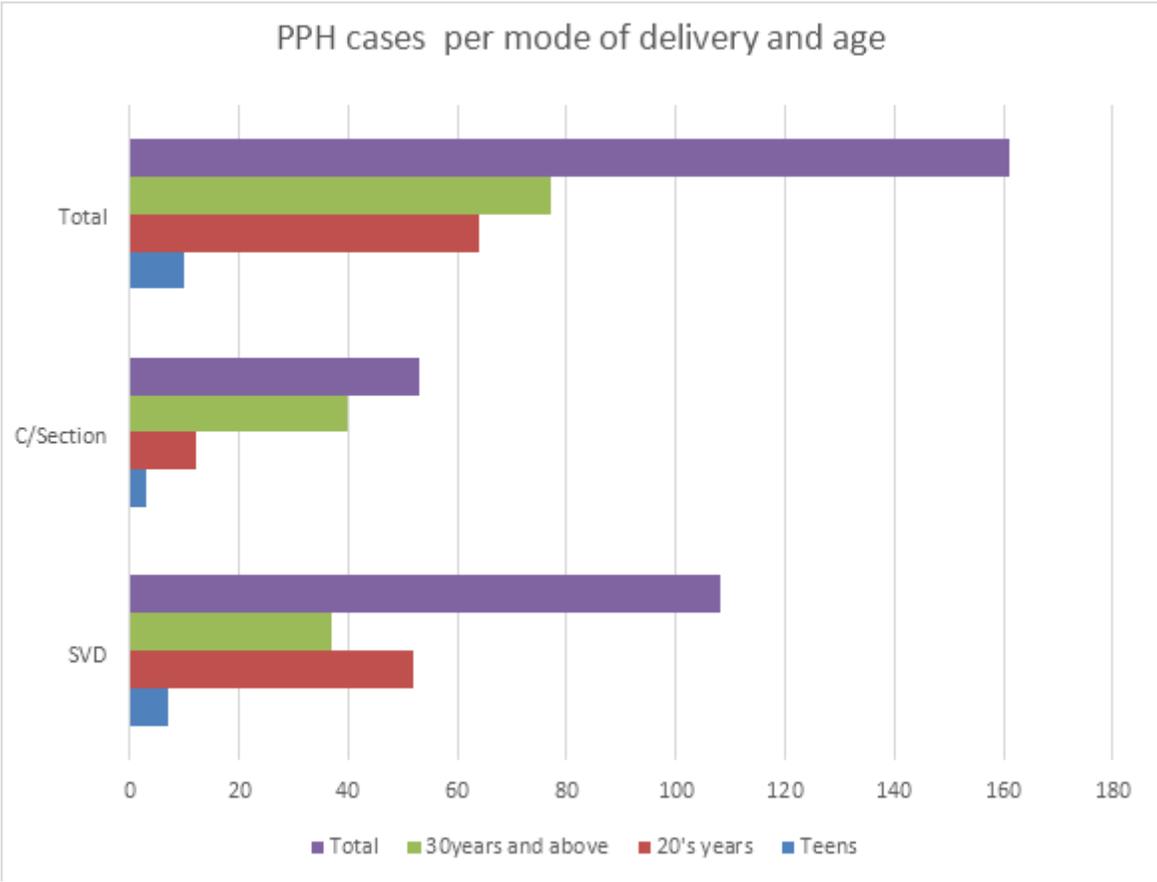


Figure 1

Figure 2: Showing trend PPH cases per mode of delivery and age from January 2017 to December 2019 at St Joseph referral hospital

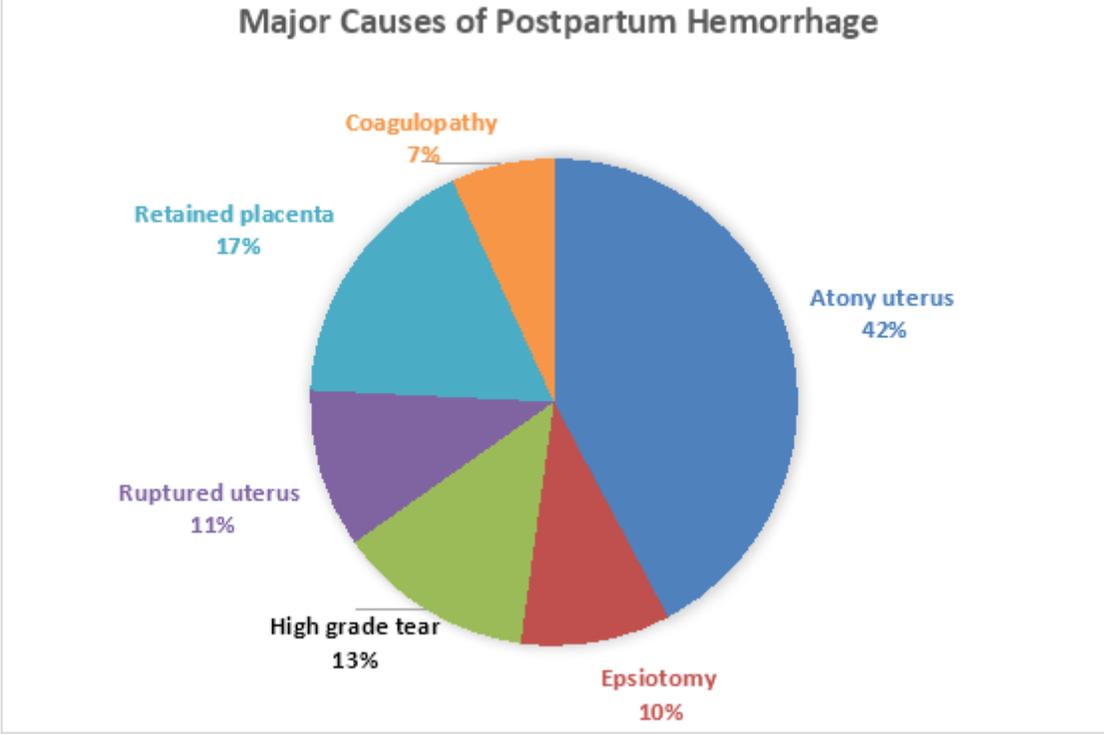


Figure 2

Figure 4: Causes of PPH among women delivered at St. Joseph Mission Referral hospital in Peramiho at Songea from January 2017 to December 2019