©IDOSR PUBLICATIONS
International Digital Organization for Scientific Research ISSN: 2579-0781
IDOSR JOURNAL OF EXPERIMENTAL SCIENCES 9(2) 64-77, 2023.
https://doi.org/10.59298/IDOSR/JES/101.1.7005

Evaluation of factors that contributes to post-partum haemorrhage in Pregnant Women at KIU-TH

Piranok, Jilda Martha

Department of Nursing Science, Kampala International University, Uganda.

ABSTRACT

Postpartum haemorrhage (PPH) is the world's leading cause of maternal death and accounts for an estimated 127,000 deaths each year. Identification of some of the risk factors such as; previous postpartum haemorrhage, multiple pregnancies, macrosomia, induction of labour, operative vaginal deliveries and cesarean section would help in preventing PPH. The aim of this research was to assess the factors contributing to postpartum haemorrhage (PPH) among pregnant women who attend delivery services in Kampala International University Teaching Hospital (KIU-TH). This study used a cross-sectional descriptive design where by a cross-section of respondents involving 68 respondents were sampled to represent the target population, in these case women who received maternity service from KIU-TH. Only quantitative methods of data collection using questionnaires with closed ended questions were employed for both mothers and health workers. During the study period, 58 women who delivered in the unit and 20 women developed postpartum haemorrhage giving the frequency of postpartum haemorrhage 34.6%. The majority of the women 30% were between 30-34 years of age. Among the women who developed PPH retained placental tissues was the most common cause 50% followed by uterine atony which was 30%. The rest of the causes of PPH were laceration 20%. Postpartum haemorrhage is still a leading but preventable cause of maternal morbidity and mortality in our country due to underutilization of health facilities, the major cause is retained placental tissues followed by uterine atony.

Keywords: post-partum haemorrhage, pregnant women, delivering, Uganda

INTRODUCTION

Obstetric haemorrhage is the World's leading cause of maternal death [1-31] and accounts for an estimated 127,000 deaths each year [32-33]. World Health Organization [34] defined Postpartum Haemorrhage as excessive bleeding from the genital tract after delivery of the child. PPH is classified by World Health Organization as primary and secondary. It's primary when there is a blood loss of 500ml or more within the first twenty-four hours after child birth and secondary if the excessive loss of blood occurred at any time after the first day to 42 days of puerperium.

In a study conducted in Sweden, PPH was found to be the leading cause of maternal death and the overall prevalence of postpartum haemorrhage was 4.6% after vaginal deliveries [35-40]

In Africa, studies have shown that the major cause of maternal death is postpartum haemorrhage (especially primary postpartum) accounting for 25.7%. In a study in Cameroon by [36] showed haemorrhage at (38%) as the main cause of maternal deaths. Studies conducted in the General Hospital and the Yaoundé central Teaching Hospitals in 2008 and 2013 reported prevalence of primary postpartum haemorrhage of 1.68% and 4.1% respectively [36].

It is estimated that each year 10,000 women die and 130,000 – 400,000 suffer from disabilities in Uganda as a result of pregnancy related complications. In Uganda PPH contributes to estimated 13.5% of all maternal deaths [37].

METHODOLOGY

Study Design & Rationale

This study used a cross-sectional descriptive designed where by a cross-section of respondents was sampled to represent the target population in this case women who receive maternity

service from KIU-TH. Only quantitative methods of data collection using questionnaires with closed ended questions were employed for both mothers and Health Workers. A cross sectional study is the one that is carried out at one point in a time or over a short period of time. It's good when the purpose of the study is descriptive because it helps to find the prevalence of the outcome for the target group in a population. It was chosen because it's simple and the nature of the study which is descriptive. This method also is relatively inexpensive for the researcher and takes little time to conduct.

Study Setting

This study was conducted in (Obs/Gyn) department at KIU-TH. Kampala International University Teaching Hospital is located in Ishaka Bushenyi Municipality, Igara County, Bushenyi District, Western Uganda. It is located approximately 52miles West of Mbarara town by road.

Study Population

The study population included sample of enrolled Midwives and Nurses, Registered Nurses and Midwives who work in the Obs/Gyn department, mothers who delivered in KIU-TH and mothers attending postnatal clinic.

Sample Size Determination

The actual sample size for the study was determined using the formula of single population (Kish Leslie, 1965)

To determine the initial sample size the following assumption was used: assuming 5% margin of error (d), 95% confidence level =0.05, and the prevalence of postpartum haemorrhage to be 7%. So, based on the above information the total sample size was calculated by using the following formula

$$Equation 1: Kish and Leslie Formula; n = \left(\frac{Z^2 p\, q}{d^2}\right)$$

Where;

n = sample size, **Z**= value corresponding to 95% level of significance=1.96

p =expected proportion of cases 7%=0.07

q= (1-p) = (1-0.07) =0.93, d=absolute precision 5%=0.05,

Therefore, from the above formula,

By substitution:

n=$\{1.96^2 x 0.07 x 0.93\}/0.05^2$

n=$\{0.25008816\}/0.0025$

n=68

A minimum of 68 participants is required.

Sampling Procedure

A non-probability purposive technique, meaning that, the chance of being selected to participate is not known for some members of the population and selection of only those who meet selected criteria of interest was employed for the selection of the staff and the mothers who attended delivery for the study. The subjects were obtained from the maternity ward, Obs/Gyn clinic, ANC and PNC according to those present during data collection and questionnaire was administered on a face to face to Health Staff. A total of 10 Staff out of the 68 participants were interviewed. Because of the 8 hour schedules, bringing all the staff together for briefing about the study was not possible meaning that, Staff were working in different shift in the department selected, therefore the researcher visited the departments at the different shift to obtain respondent at the ward level were the subjects were selected from the population voluntarily consenting to participate in the study, where by 10 Enrolled/Registered Midwives and Nurses were obtained, and oriented on the research objectives/purposes.

Inclusion criteria

The inclusion criteria specify the necessary characteristics of subjects to be included in the study sample. In this study, criteria for being considered as a study participant included that, the participants must be Staff of Obs/Gyn department with at least one year working experience, women who attended delivery at KIU-TH and mothers attending postnatal clinic. Only the respondents who consent were considered

Exclusion criteria

Newly employed staff with less than one year of work experience in the Obs/Gyn department. Those who did not consent to participate in the study and those with severe medical problems preventing their participation.

Data Collection Procedure

Following final approval of the research proposal by the research Committee School of Nursing, the researcher visited

the study site, and introduced herself to the Staff (medical staff) and any other staff working in the department, as well as to nurses working in the postnatal clinic. An introductory was issued which the researcher used for seeking permission from the study area.

A full explanation on the research study was given to the nursing staff and the mothers to create rapport and gain their co-operation during data collection and become familiar to the ward as well. There after the respondents who met inclusion criteria were recruited for the study and data collection took place from August 2016.

Data analysis

On completion of data collection, the data generated was analyzed, coded and then entered directly from the code book into the computer software using the statistical package for social sciences (SPSS), EPI and Microsoft Excel. This software package is used to analyze the descriptive and inferential statistics and the research questions were answered using descriptive statistics of frequency tables and percentages. Tables, pie-charts, bar graphs among others were used.

Ethical Considerations

Approval of the study was obtained from Kampala International University, School of Nursing. An introductory letter from the Dean School of Nursing was obtained to introduce the researcher to the hospital Administration Office. A consent form attached to the questionnaire was used to request the prospective participants to take part in the study voluntarily and only those who consented were allowed to participate in the study. The respondents were assured of privacy and confidentiality by using the codes instead of their names on the questionnaires. They were informed of the benefits of the study in to the area.

RESULTS

Table 1: maternal demographic characteristics and PPH.

Characteristics	Respondents n = 58 (%)	PPH n=20(%)
Age		
15-19	3(5.2)	1(5)
20-24	16(27.6)	3(15)
25-29	18(31.0)	5(25)
30-34	13(22.4)	6(30)
35-39	8(13.8)	5(25)
Marital status		
Married	54(93.1)	19(95)
Single	4(6.9)	1(5)
Divorced	0(0)	0
Education level		
Primary	18(31.0)	7(35)
Secondary	17(29.3)	5(25)
Tertiary	23(39.7)	8(40)
Occupation		
`House wife	31(53.4)	10(50)
Student	4(6.9)	2(10)
Wage Earner	16(27.6)	4(20)
Business Person	7(12.1)	4(20)
Employment		
Employed	15(25.9)	4(20)
Self employed	7(12.1)	4(20)
Unemployed	36(62)	12(60)

Table 1: shows demographic characteristics and prevalence of PPH of study subjects. According to **age**, most of the women were between 25-29 years (31%) followed by 20-24 years (27.6%) and 30-34 years (22.4%) respectively. Most of the women (93.1%) were married, followed by single (6.9%). According to **educational level** (39.7%) had tertiary level, followed by primary level (31%). Based on **occupation** most women were house wives (53.4%) followed by wage earners with (27.6%) respectively. Majority of the women (62%) were unemployed, followed by employed (25.9%). Women in the age group of 30-34(30%) reported higher risk of developing PPH, followed by 25-29 (25%) and 35-39 years (25%) respectively. Married women reported a higher risk (95%) of PPH occurrence as compared to single women (5%). Women who had tertiary education had (40%) of PPH occurrence followed by those with primary education (35%). House wives (50%) were at a higher risk of PPH occurrence followed by wage earners (20%) and business persons 20%) respectively. Unemployed women reported (60%) risk of developing PPH.

Maternal related factors contributing to PPH

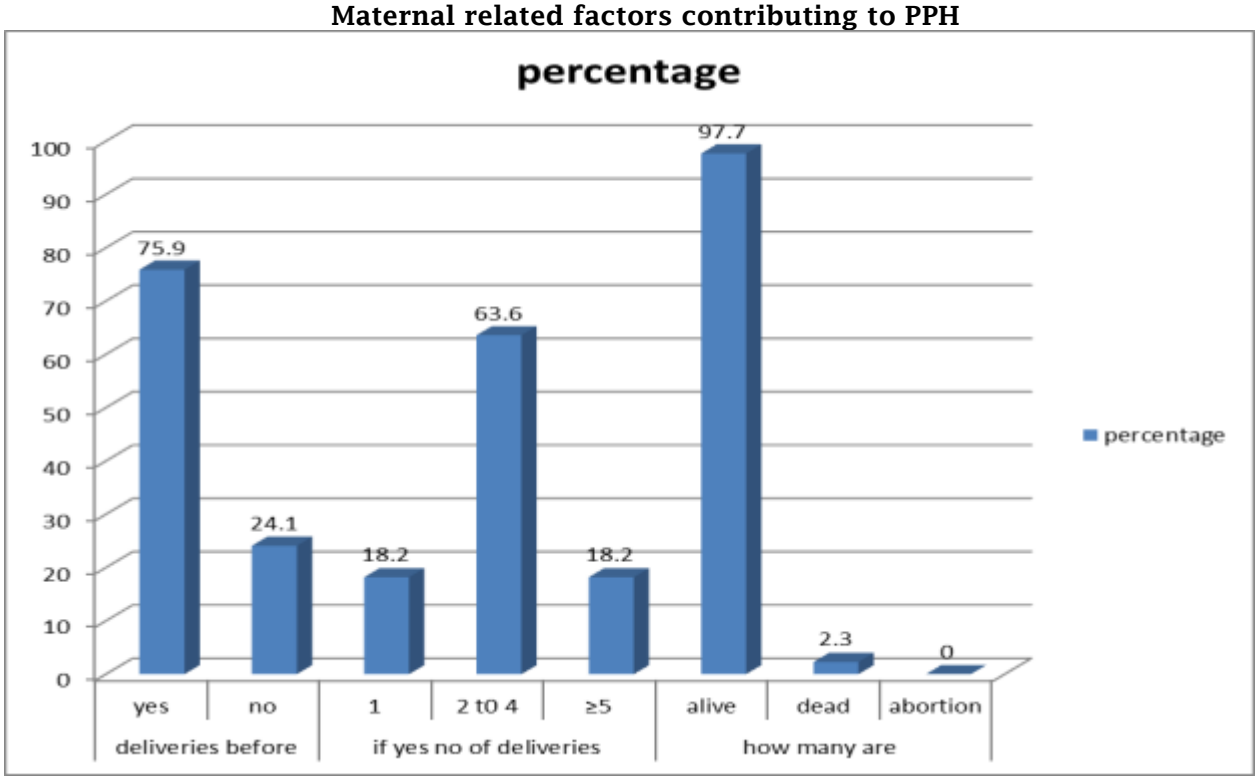

Figure 1: A bar graph showing maternal parity.

Figure 1: shows the distribution of the respondents according to their delivery status, number of deliveries and status of the children. It showed that respondents among those who had delivered before reported the highest incidence of PPH (75.9%) than among those who never delivered before. Out of those who had delivered before, the risk of PPH was high among respondents with 2-4 deliveries (63.7%) compared to those with 1 or > 5 deliveries. The risk of PPH was highest among respondents with 2-4 deliveries (63.6%). Those who had live deliveries reported high cases of PPH (97.7%) compared to those with dead deliveries.

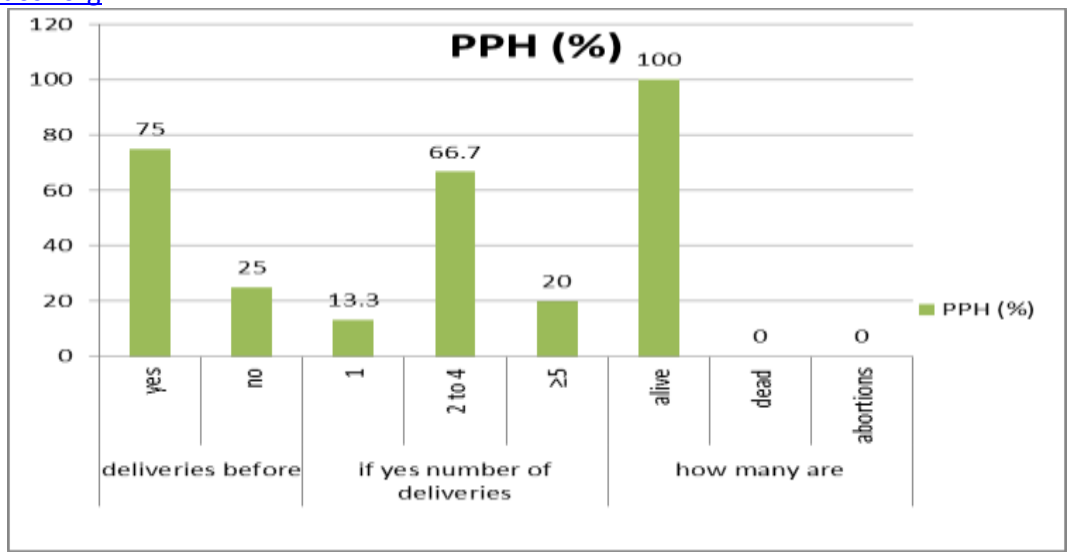

Figure 2: A bar graph maternal parity and PPH.

Figure 2: shows the distribution of the respondents according to their delivery status, number of deliveries, status of the children and PPH occurrence. It showed that 75% of respondents who reported to have delivered before developed PPH as compared to 25% who never delivered before. Among those who had delivered before, risk of PPH occurrence was reported higher among those who had 2-4 deliveries (66.7%) followed by those with >5 deliveries (20%) respectively. Of the 57 who had live birth, 20 (35.1%) developed PPH.

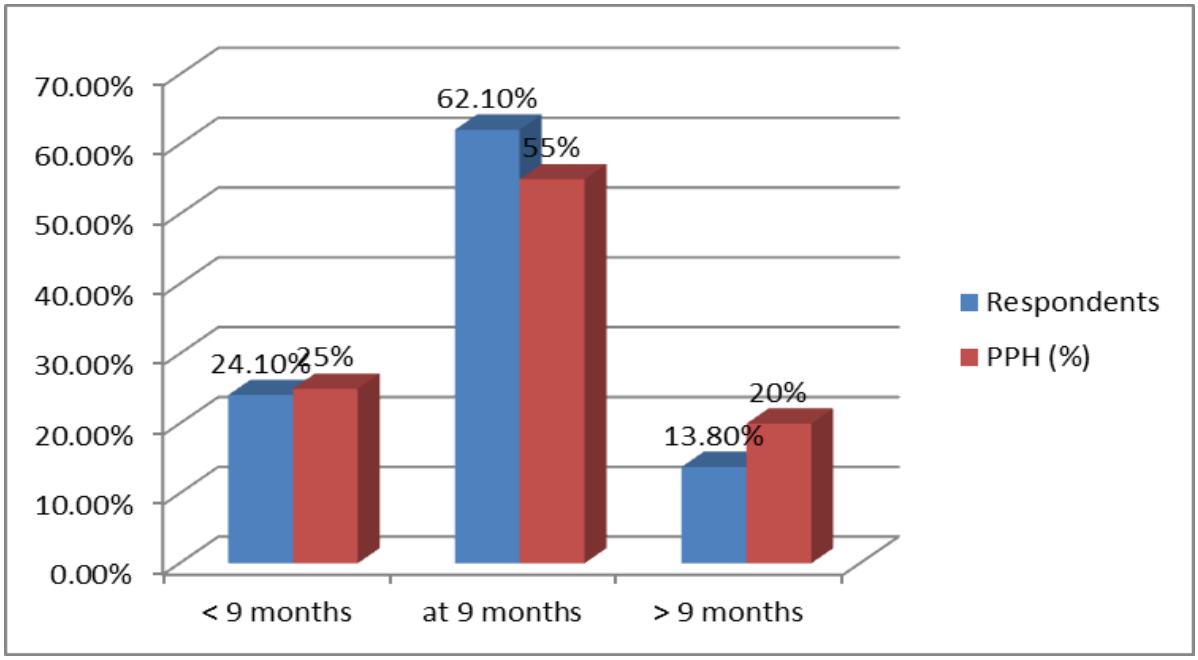

Figure 3: A bar graph showing the relationship between duration of pregnancy and PPH.

Figure 3: shows the distribution of the respondents according to duration of the current pregnancy. It showed that PPH was highest among the respondents who delivered at 9 months (62.1%) and 55% reported PPH, followed by women who delivered before 9 months at (24.1%) and (25%) reported PPH.

Table 2: showing maternal clinical conditions and PPH.

Characteristics	Respondents n = 58 (%)	PPH n=20(%)
Was there any bleeding during pregnancy?		
Yes	10(17.2)	4(20)
No	48(82.8)	16(80)
Was there excessive bleeding after delivery in recent delivery?		
Yes	21(36.2)	20(100)
No	37(63.8)	0
Was there excessive bleeding with your previous delivery?		
Yes	16(27.6)	10(50)
No	42(72.4)	10(50)
Any History of multiple pregnancies?		
Yes	19(32.8)	6(30)
No	39(67.2)	14(70)
Did you suffer from malaria during pregnancy?		
Yes	15(25.8)	8(40)
No	43(74.2)	12(60)
Were you diagnosed with abnormal growth in the uterus before?		
Yes	4(6.9)	3(15)
No	54(93.1)	17(85)
Were you operated with a child before?		
Yes	12(20.7)	4(20)
No	46(79.3)	16(80)
Do you have diabetes		
Yes	3(5.2)	1(5)
No	55(94.8)	19(95)
Do you have bleeding disorders?		
Yes	0	0
No	58(100)	20(100)
Do you have any other chronic disease or condition?		
Yes	4(6.9)	3(15)
No	54(93.1)	17(85)
If yes, which one (specify)		
Asthma	2(50)	1(33.3)
Hypertension	2(50)	2(66.7)

Table 2: shows the distribution of the respondents according to maternal clinical conditions. It showed that 82.8% reported no bleeding during pregnancy and the occurrence of PPH was highest among the respondents who reported no bleeding during pregnancy (80%). Women who never had excessive bleeding in recent deliveries were (63.8%) and 100% of those who reported bleeding in the recent deliveries reported PPH. Women who reported no bleeding with previous deliveries was 72.4% and 50% reported PPH. Women who had no history of multiple pregnancies were 67.2% and 70% of them reported PPH. women who were never diagnosed with abnormal uterine growth before were 93.1% and 85% of them reported PPH. Women who were never operated with a child before were 79.3% and 80% of them reported PPH. Of the 94.8% of women who never had diabetes, 95% of them reported PPH. None of the women reported bleeding disorders. Of the 93.1% women who reported no other chronic conditions, 85% of them reported PPH.

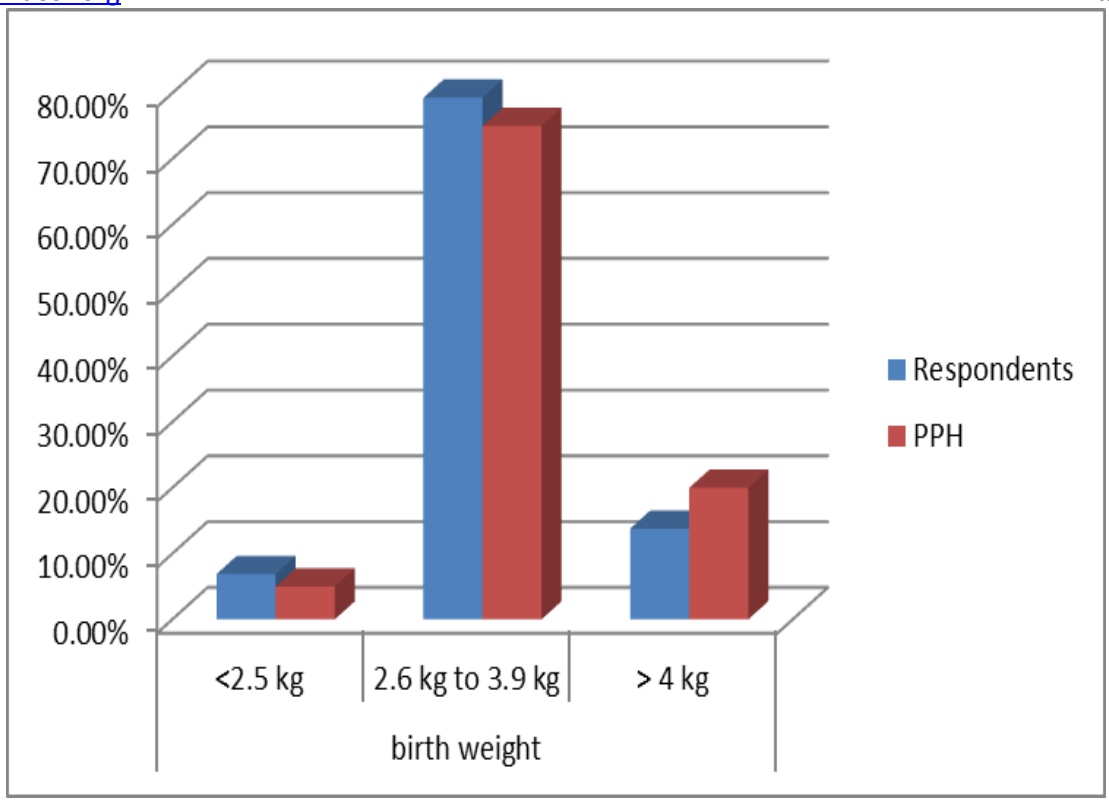

Figure 4: A bar graph showing birth weight of babies in recent deliveries.

Figure 4: shows the distribution of the respondents according to birth weight of the babies and PPH. It showed that PPH was highest (75%) among mothers who had babies with weight 2.6 kg – 3.9 kg compared to mothers with babies of other birth weight.

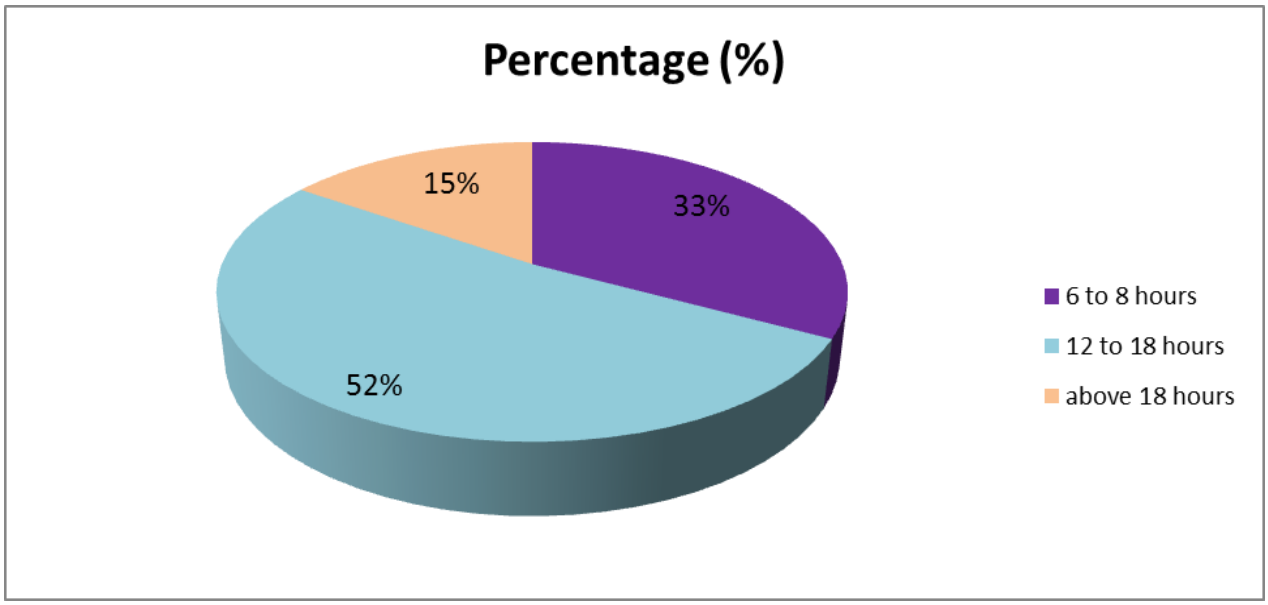

Figure 5: A pie chart showing duration of labour in the recent delivery.

Figure 5: shows the distribution of the respondents according to the number of hours spent in labour in the recent delivery. It shows that 52% of respondents spent between 12 – 18

hours in labour, followed by 6-8 hours (33%) in labour.

Table 3: prevalence of PPH

	Postpartum Haemorrhage	Number of Respondents	Percentage (%)
	YES	20	34.5
	NO	38	65.5
	Total	**58**	**100.0**

Table 3: above shows the prevalence of postpartum haemorrhage among the 58 respondents. It showed that 20 of the 58 (34.5%) respondents reported that they had PPH.

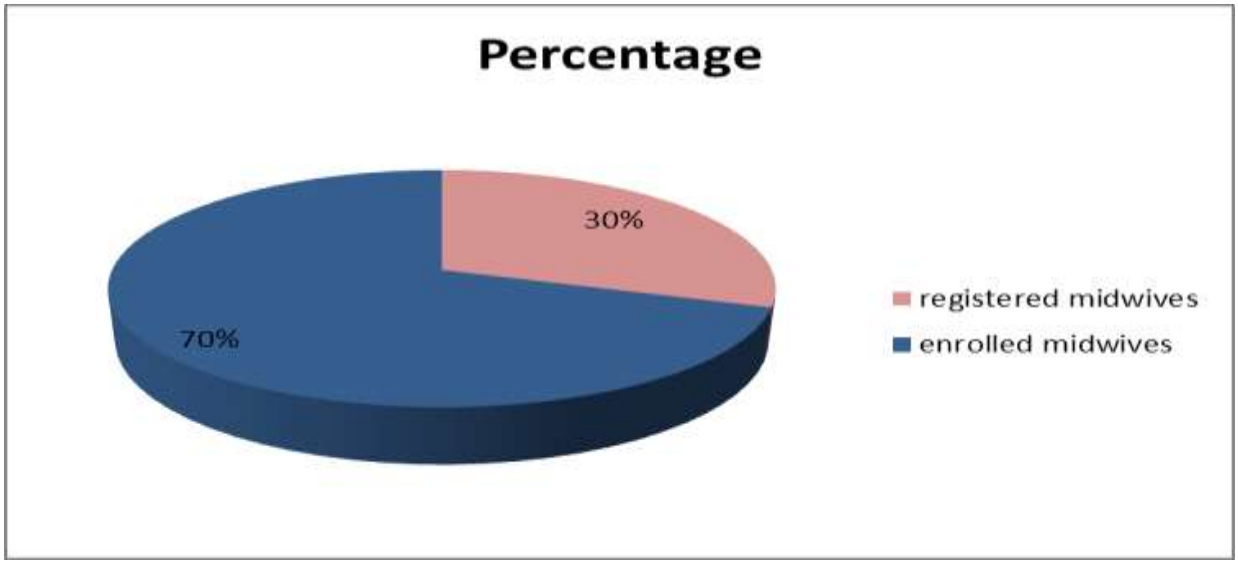

Figure 6: Qualification of the health workers.

Figure 6: shows health worker qualification. It showed that 70% of the respondents were enrolled midwifes who contributed the highest number in the unit and 30% of the respondents were registered midwifes.

Table 4: Showing health workers related factors

Variable	Number of respondents	Percentage (%)
How many staff are in this unit?		
10-15 staff	10	100
How many deliveries do you conduct in a day?		
5-10 deliveries	10	100
Do you administer uterotonic drugs after delivery of the baby?		
Yes	10	100
If yes, which one?		
Oxytocin	10	100
Have you ever managed PPH?		
Yes	10	100
If yes what was the cause of PPH?		
Retained placental tissues	5	50
Uterine atony	3	30
Laceration	2	20

Table 4: shows that all the respondents reported having 10-15 staff in the unit. All the respondents (100%) reported that they conducted about 10-15 deliveries in a day. All of them (100%) reported to have administered uterotonic drugs and all the respondents (100%) used oxytocin. They have all ever managed PPH and all reported the main cause of PPH managed as being retained placental tissues (50%).

DISCUSSION

The prevalence of PPH of 34.5% in this study was found to be lower than 35% in India, but higher than 25.7% reported by Calvert *et al.* [38] in Africa, and 21.5% [36] reported in East Africa respectively. However, lower values were reported by some researchers in West Africa in similar studies. This difference in the prevalence of PPH is probably due to the methods used in estimating blood loss after delivery and the setting of these studies. The clinical importance of this underestimation cannot be overemphasized as it could explain why PPH is still associated with a high maternal morbidity and mortality worldwide because of late intervention strategies.

Pregnancy and childbirth related complications are among the leading causes of morbidity and mortality in women of reproductive age in developing countries. Among these complications various studies have shown PPH as the highest cause of maternal morbidity and mortality. The result of this study showed that many women (34.5%) developed PPH. In this study conducted on fifty-eight (58) participants for postpartum haemorrhage.

Majority of the women (31%) were between the ages 25-29 years compared to 27.6% of the women between 20-24 years. But considering the individual age group, PPH occurrence is (62.5%) higher among women of the age group of 35-39 years than in any age group. This implies that there was a greater positive response of respondents between the ages of 35-39 years compared to others. This implies that more than half of the women interviewed within that age group reported PPH. This result was comparable to a study conducted In Zimbabwe that reported that advanced maternal age (≥ 35 years) was associated with 95% risk of developing PPH [39]. Similarly, (Sosa, Althabe, Beliz, & Buekens, 2009) found that, the risk of PPH in women >35 years was two-fold higher compared to women <25 years.

Majority of the respondents were Unemployed (62.1%) compared to employed and unemployed (25.9% and 12.1%) respectively and 60% of those who reported PPH came from unemployed group of respondents. Considering individual employment status, more than half of the self - employed that is 57.1% reported PPH. This implies that self-employed mothers had better control of their maternal conditions than the employed and unemployed.

Marital status of the participants also was another factors, 54(93.1% of the respondents were married women and it was found that the risk of developing PPH was more common among the married women (95%) than the single ones (5%). This implies that married women are associated with many risk factors of PPH compared to the single women. However, another study by [34] showed that PPH was high among the Married woman (89.7%) than among the single women (10.3%) and this was comparable to this study.

Educational level was another important factor, majority of the respondents had tertiary education (39.7%) however, PPH occurrence was found high among women who attained primary education (38.9%) as compared to those who attained secondary and tertiary level respectively. This implies that low educated mothers have less awareness about the preventive measures of PPH compared to higher educated mothers.

Occupation status was another factor important in the PPH occurrence, 53.4% of the respondents were house wives, followed by 27.6% who were wage earners and the majority of those who reported PPH were house wives. Considering individual occupation, PPH occurrence was more common among the business women (57.1%). This implies that business women have less awareness about PPH preventive measures compared to other occupation.

In this study based on the causes of large for date's uterus or uterine over distension, multiple pregnancy,

prolonged pregnancy and uterine fibroids were associated with PPH. There were 19(32.8%) cases of multiple pregnancy of which 6 (31.6%) of them developed PPH. Furthermore, out of 4 (6.9%) of uterine over distension due to uterine fibroids, 3(75%) of them developed PPH. There were also 8(13.8%) cases of prolonged pregnancy, 4(50%) developed PPH which is consistent with a study conducted by [40] which suggested that twins and other high order pregnancies are associated with obstetric haemorrhage. Multiple pregnancies are associated with an increased risk of PPH (95%).

There were 8 (13.8%) who ever had one (1) delivery and 2 (25%) of them developed PPH, out of the 28 (48.3%) women who had 2-4 deliveries, 10 (35.7%) developed PPH and out of the 8(13.8%) women who had ≥5 deliveries, 3(37.5%) developed PPH. Therefore, based on the above results, the risk of PPH occurrence is higher among the women who had more ≥5 deliveries as compared to less than 5 deliveries. This indicates that occurrence of PPH increased with increasing parity. This was comparable with the other study of Calvert et *al.* [38] who had (34.8%) of PPH occurrence among women with >5 deliveries.

Most common cause of PPH in this study was retained placental tissues which contributed to 50% of cases. This is due the facts that uterine muscles tend to relax with increasing parity and therefore does not contract effectively to expel all the products of conception hence leading to PPH, this was comparable to [32] which was 33.91% in India. Uterine atony was the second most common cause of PPH that is taking 30% cases of PPH in this study. This is because the age-related changes in the connective tissue decrease the ability of cervical, vaginal and perineal muscles to stretch as needed during delivery resulting in greater trauma to tissues, prolonged labor and diminished uterine contractility after delivery. Trauma to the broad ligament, uterine rupture, cervical and vaginal tears and perineal tears are all associated with an increased blood loss during delivery.

Anderson [41] in their study reported 70% of PPH cases caused by uterine atony. Uterine atony remains a major public health issue as it is the second main cause of postpartum hemorrhage (30%) of cases in this study. The risk factors associated with uterine atony were: previous (APH, PPH and abortion), multiparity, malaria in pregnancy, induced labor, prolonged labor and macrosomia as documented in other studies.

Obstetrical lacerations were the third cause of PPH in 20% of cases following uterine atony and retained placenta (30% and 50%) respectively. This was compared to 20% in Anderson *et al.* [41] study and lower than 37.7% in a study conducted by (Halle-ekane *et al.*, 2016). The risk factors for obstetric laceration were precipitate labor and macrosomia or neonates babies presenting with congenital mal-formations such as hydrocephalus. However, women who gave birth to fetuses with birth weight less than 2500 g (25%) were less prone to having primary PPH and of birth ≥4.0 kg (50%) were at a greater risk of developing PPH. Most common among medical disorders (cardiac diseases, hypertension, diabetes, sickle cell disease, & coagulopathy) was diabetes 3 (5.2%), out of the 3, 1(33.3%) developed PPH, hypertension cases were 2 (3.45%) and both 2 (100%) developed PPH, respondents with history of PPH in previous deliveries were 16(35.6%) of which 10 (62.5%) developed PPH, Uterine fibroids were 75%, followed by those who had malaria (53.3%) and those with the history of previous cesarean section were (33.3%). This means that the risk of PPH was higher in women with hypertension (100%), followed by uterine fibroids (75%) and followed by history of previous PPH (62.5%) and Malaria cases (53.3%) respectively. This implies that hypertensive disorders are associated with a higher risk of PPH occurrence than other clinical conditions. This was comparable to Walraven [37] who had 46.8% of the combined hypertensive conditions who experienced PPH, cardiac disease were 9.09%.

In this study only ten (10) birth attendants were interviewed on information related to PPH occurrence and risk factors associated with PPH occurrence. Of the 10 health workers 70% of them were enrolled midwives while

the remaining 30% were registered midwives. All of them reported that they conduct between 5-10 deliveries a day. All the 10 staff had ever managed PPH using uterotonic drugs and specifically all reported to have been using oxytocin. The most common cause of PPH was; retained placental tissues 50%, atonic uterus 30% and lacerations 20%. according to the response from the healthworkers.

CONCLUSION

Maternal related factors that contribute to PPH among women getting maternal services from KIU-TH, western Campus example the risk of PPH occurrence was reported high among; the age group of 35-39 years (62.5%), among the married women (93.1%), among women with low education (38.9%), among business persons (57.1%), among the self-employed 57.1%), among respondents with high parity (37.5%), those who had prolonged pregnancy (50%), birth weight of >4.0kg (50%), previous history of PPH (50%), those with history of malaria in pregnancy (53.3%) and among those with hypertensive disorders (100%).

Health workers related factors that contributed to PPH among women getting maternal services from KIU-TH, western campus. All reported the number of staff in unit between 10-15.

REFERENCES

[1]. Vidya, S., Kumar, S., Jakheng, S. P. E., Obeagu, E. I., Jakheng, E. W., Uwakwe, O. S., Eze, G. C. and Obeagu, G. U. (2022). Occurrence of Chlamydial Infection Based on Clinical Symptoms and Clinical History among Pregnant Women Attending Clinics in Zaria Metropolis, Kaduna State, Nigeria. International Journal of Research and Reports in Gynaecology, 5 (3):98-105.

[2]. Jakheng, S. P. E., Obeagu, E. I., Abdullahi, I. O., Jakheng, E. W., Chukwueze, C. M., Eze, G. C. and Kumar, S. (2022). Distribution Rate of Chlamydial Infection According to Demographic Factors among Pregnant Women Attending Clinics in Zaria Metropolis, Kaduna State, Nigeria. *South Asian Journal of Research in Microbiology*, 13(2): 26-31.

[3]. Ondieki, C., Clement, M. M., Nalwadda, G., Mirembe, M. E. and Alice, N. (2018). Magnitude of Birth Preparedness among Pregnant Women Seeking Skilled Birth Services at a Rural Hospital in Western Uganda: Health Facility Based Cross Sectional Study. SAS Journal of Medicine, 4 (9):133-138.

[4]. Kasande, A. J., Eze, E. D., Ezekiel, I. and Rabiu, K. M. (2017). Alteration of Human Chorionic Gonadotropin Levels among Pregnant Women with Morning Sickness Attending Antenatal Care Services at Ishaka Adventist Hospital, Uganda. *Journal of Biosciences and Medicines*, *5*(8), 55-77.

[5]. Jakheng, S. P. E., Obeagu, E. I., Jakheng, E. W., Uwakwe, O. S., Eze, G. C., Obeagu, G. U. and Kumar, S. (2022). Occurrence of Chlamydial Infection Based on Clinical Symptoms and Clinical History among Pregnant Women Attending Clinics in Zaria Metropolis, Kaduna State, Nigeria. *International Journal of Research and Reports in Gynaecology,* 5(3): 98-105

[6]. Kisuule, I., Kaye, D. K., Najjuka, F., Ssematimba, S. K., Arinda, A., Nakitende, G. and Otim, L. (2013). Timing and reasons for coming late for the first antenatal care visit by pregnant women at Mulago hospital, Kampala Uganda. *BMC pregnancy and childbirth*, *13*, 1-7.

[7]. Saliu, M. A., Salihu, A., Mada, S. B. and Owolabi, O. A. (2021). Dyslipidaemia-related cardiovascular risk among pregnant women attending Aminu Kano Teaching Hospital Kano: A longitudinal study. *Journal of Taibah University Medical Sciences*, *16*(6), 870-877.

[8]. Eguogwu, F. C., Ugwu, O., Amadi, N. C., Ike, O. C., Ohale, A. C., Okwara, J. and Udeogu, C. H. (2021). Levels of Maternal Serum Alpha-fetoprotein and Beta Human Chorionic Gonadotropin in HIV Seropositive Pregnant Women Attending Antenatal Care at Nnamdi Azikiwe University Teaching

Hospital Nnewi, Nigeria. *Journal of Advances in Medicine and Medical Research*, *33*(12), 32-38.

[9]. Ifeanyi, O. E., Ndubuisi, O. T., Leticia, E. O. B. and Uche, E. C. (2014). Haematological profile of pregnant women in Umuahia, Abia State, Nigeria. *Int J Curr Microbiol App Sci.*, *3*(1), 713-718.

[10]. Chinedum, O. K., Ifeanyi, O. E., Uzoma, U. G. and Ngozi, G. C. (2014). Prevalence of Trichomonas vaginalis among pregnant women attending hospital in Irrua specialist teaching hospital in Edo State, Nigeria. *J Dent Med Sci.*, *13*(9), 79-82.

[11]. Hope, O., Ifeanyi, O. E. and Braxton, A. Q. (2019). Investigation of some haematological parameters in pregnant women with gestational diabetes at Federal Medical Center, Owerri, Imo State, Nigeria. *Annals of Clinical and Laboratory Research*, *2*, 305.

[12]. Ifeanyi, O. E., Uzoma, O. G., Amaeze, A. A., Ijego, A. E., Felix, C. E., Ngozi, A. F. and Chinenye, K. S. (2020). Maternal expressions (serum levels) of alpha tumour necrosis factor, interleukin 10, interleukin 6 and interleukin 4 in malaria infected pregnant women based on parity in a Tertiary Hospital in Southeast, Nigeria. *Journal of Pharmaceutical Research International*, *32*(23), 35-41.

[13]. Ifeanyi, O. E., Chibunna, O. M., Braxton, N. A. Q. and Uche, E. C. (2014). Impact of Plasmodium falciparum malaria and hookworm infection on anaemia among pregnant women of ikwuano local government area, Abia state, Nigeria. *Int J Curr Microbiol Appl Sci.*, *3*(1), 104-11.

[14]. Obeagu, E. I., Adepoju, O. J., Okafor, C. J., Obeagu, G. U., Ibekwe, A. M., Okpala, P. U. and Agu, C. C. (2021). Assessment of Haematological Changes in Pregnant Women of Ido, Ondo State, Nigeria. *J Res Med Dent Sci.*, *9*(4), 145-148.

[15]. Queen, E., Ifeanyi, O. E., Chinedum, O. K. (2014). Evaluation haematological parameters among pregnant women attending antenatal clinic in College of Health Demonstration Clinic, Port Harcourt. *J Dental Med Sci.*, *13*(9), 122-127.

[16]. Nwosu, D. C., Nwanjo, H. U., Obeagu, E. I., Ibebuike, J. E. and Ezeama, M. C. (2015). Changes in liver enzymes and lipid profile of pregnant women with malaria in Owerri, Nigeria. *International Journal of Current Research and Academic Review*, *3*(5), 376-83.

[17]. Okorie, H. M., Obeagu, E. I., Obarezi, H. C. and Anyiam, A. F. (2019). Assessment of some inflammatory cytokines in malaria infected pregnant women in Imo State Nigeria. *International Journal of Medical Science and Dental Research*, *2*(1), 25-36.

[18]. Obeagu, E. I., Ikpenwa, J. N., Chukwueze, C. M. and Obeagu, G. U. (2022). Evaluation of protein C, protein S and fibrinogen of pregnant women in Owerri Metropolis. *Madonna University journal of Medicine and Health Sciences, 2*(1), 292-298.

[19]. Obeagu, E. I., Esimai, B. N., Ekelozie, I. S., Asogwa, E. I., Amaeze, A. A., Chukwu, S. N. and Chukwu, S. K. (2020). Maternal Serum Levels of Alpha Tumour Necrotic Factor, Interleukin 10, Interleukin 6 and Interleukin 4 in Malaria Infected Pregnant Women Based on Their Gestational Age in Southeast, Nigeria. *Journal of Pharmaceutical Research International*, *32*(14), 64-70.

[20]. Onyenweaku, F. C., Amah, H. C., Obeagu, E. I, Nwandikor, U. U. and Onwuasoanya, U. F. (2017). Prevalence of asymptomatic bacteriuria and its antibiotic susceptibility pattern in pregnant women attending private ante natal clinics in Umuahia Metropolitan. *Int J Curr Res Biol Med.*, *2*(2), 13-23.

[21]. Jakheng, S. P. E. and Obeagu, E. I. (2022). Seroprevalence of human immunodeficiency virus based on demographic and risk factors among pregnant women attending clinics in Zaria Metropolis, Nigeria. *J Pub Health Nutri., 5 (8), 137.*

[22]. Obeagu, E. I., Obeagu, G. U., Chukwueze, C. M., Ikpenwa, J. N. and Ramos, G. F. (2022). Evaluation of Protein C, Protein S and Fibrinogen of Pregnant Women with Malaria in Owerri Metropolis. *Madonna University journal of Medicine and Health Sciences, 2*(2), 1-9.

[23]. Anyiam, A. F., Obeagu, E. I., Obi, E., Omosigho, P. O., Irondi, E. A., Arinze-Anyiam, O. C. and Asiyah, M. K. (2022). ABO blood groups and gestational diabetes among pregnant women attending University of Ilorin Teaching Hospital, Kwara State, Nigeria. *Int J Res Rep Hematol.*, *5*, 113-21.

[24]. Obeagu, E. I., Hassan, A. O., Adepoju, O. J., Obeagu, G. U. and Okafor, C. J. (2021). Evaluation of Changes in Haematological Parameters of Pregnant Women Based on Gestational Age at Olorunsogo Road Area of Ido, Ondo State. Nigeria. *Journal of Research in Medical and Dental Science*, *9*(12), 462-464.

[25]. Okorie, H. M., Obeagu, E. I., Eze, E. N. and Jeremiah, Z. A. (2018). Assessment of some haematological parameters in malaria infected pregnant women in Imo state Nigeria. *Int. J. Curr. Res. Biol. Med.*, *3*(9), 1-14.

[26]. Okorie, H. M., Obeagu, E. I., Eze, E. N. and Jeremiah, Z. A. (2018). Assessment of coagulation parameters in malaria infected pregnant women in Imo state Nigeria. *International Journal of Current Research in Medical Sciences*, *4*(9), 41-49.

[27]. Agreen, F. C. and Obeagu, E. I. (2023). Anaemia among pregnant women: A review of African pregnant teenagers. Journal of Public Health and Nutrition, 6(1)138.

[28]. Obeagu, E. I., Obarezi, T. N., Eze, O. B. L. and Emelike, U. U. (2014). Haematological profile of pregnant women in Umuahia, Abia State, Nigeria. Int. J. Curr. Microbiol. App. Sci., 3(1): 713- 718

[29]. Akandinda, M., Obeagu, E. I. and Katonera, M. T. (2022). Non-Governmental Organizations and Women's Health Empowerment in Uganda: *A Review.* Asian Research Journal of Gynaecology and Obstetrics, 8 (3): 12-16.

[30]. Obeagu, E. I. (2022). An update on utilization of antenatal care among pregnant Women in Nigeria. Int. J. Curr. Res. Chem. Pharm. Sci., 9(9): 21 26.DOI:http://dx.doi.org/10.22192/ijcrcps.2022.09.09.003

[31]. Obeagu, E. I., Obeagu, G. U. and Adepoju, O. J. (2022). Evaluation of haematological parameters of pregnant women based on age groups in Olorunsogo road area of Ido, Ondo state. J.Bio.Innov., 11(3): 936- 941

[32]. Kodla, A. (2022). study of prevalence , causes , risk factors and outcome of severe obstetrics haemorrhage, *4*(2), 83–87.

[33]. Obeagu, E. I., Eze, R. I., Nwakulite, A., Obeagu, G. U. and Babar, Q. (2021). An Update on Haemphilia A. Madonna University Journal of Medicine and Health Sciences, 1(1) 7-18.

[34]. World Health Organization. (2009). WHO Guidelines for the Management of Postpartum Haemorrhage and Retained Placenta. Geneva. Available from: http://whqlibdoc.who.int/publications/2009/ 9789241598514_eng.pdf

[35]. Hernandéz-diaź, S., Greene, F. and Almqvist, B. (2014). *Genetic contribution to postpartum haemorrhage in Swedish population*: cohort study of 466 686 births, *4984*:1–14.

[36]. Halle-ekane, E., Bechem, P., Fongaing, E. (2016). Prevalence and Risk Factors of Primary Postpartum Hemorrhage after Vaginal Deliveries in the Bonassama District Hospital, Cameroon, 13(2), 1–12.

[37]. Walraven, W. S. (2008). *Management of post-partum hemorrhage in low-income countries.* Best practice & research Clinical obstetrics & gynaecology, 1013-23.

[38]. Calvert, C., Thomas, S. L., Ronsmans, C., Wagner, K. S., Adler, A. J. and Filippi, V. (2012). Identifying regional variation in the prevalence of postpartum

hemorrhage: A systematic review and meta-analysis. PLoS ONE.

[39]. Dongol, S. C. (2010). Postpartum haemorrhage: prevalence, morbidity and management pattern in Dhulikhel Hospital. Kathmandu Univ Med J (KUMJ), 8: 212-215.

[40]. Puri, P., Singh, M., Trivedi, S. and Kumar, S. (2011). Factors influencing occurrence of postpartum haemorrhage in pregnant women with hepatitis E infection and deranged coagulation profile. Obstetric Medicine, 4, 108-?--11

[41]. Anderson, F. W. J. (2009). Maternal mortality: an enduring epidemic. *Clinical Obstetrics and Gynecology*, 52(2): 214-223.

[42]. Namagembe,J. (2023).Assessment of Incidence and Factors associated with Postpartum Hemorrhage among Women delivering at Kampala International University Teaching Hospital Bushenyi District. *IDOSR Journal of Applied Sciences* 8 (2), 29-38.

Piranok, Jilda Martha (2023). Evaluation of factors that contributes to post-partum haemorrhage in Pregnant Women at KIU-TH. IDOSR JOURNAL OF EXPERIMENTAL SCIENCES 9(2) 64-77, 2023.
https://doi.org/10.59298/IDOSR/JES/101.1.7005