

Skilled Birth Attendants' Factors and Management of Postpartum Hemorrhage in Level Four and Five Hospitals in Lamu County

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Abstract

Postpartum hemorrhage (PPH) is considered a significant contributor to elevated rates of maternal death. Subsequently, it stands at 4% in Kenya. PPH is also the most common complication of third stage of labor. However, with skilled workforce, adherence to recommendations, PPH can be managed in hospitals. The study sought to investigate skilled birth attendants' factors on the management of PPH in level 4 and 5 hospitals in Lamu County. The study employed descriptive cross-sectional survey research design. The target population for this study included all doctors, clinical officers, nurses and midwives in level 4 and 5 public hospitals in Lamu County. Census method was employed to obtain the 64 respondents in this study. The study employed questionnaires. The initial section focused on gathering demographic information to outline the characteristics of the sample. The subsequent section was designed to collect data related to the study variables, which were instrumental in elaborating the study components and addressing the research questions. Prior to the main data collection, the instruments were pretested in Mombasa County to improve their validity and reliability. Data was organized and entered into SPSS version 25 to create a data file. Subsequently, the researcher screened and cleaned the data to identify and correct any errors, and a preliminary analysis was conducted to check for violations of the assumptions underlying the statistical techniques used. Findings were presented using tables. The results revealed a significant positive influence of skilled birth attendants' factors on PPH management in level 4 and 5 hospitals in Lamu County ($r=0.762^{**}$, $n=41$, $P<0.05$). The study concluded that skilled birth attendant factors: teamwork, knowledge and competency—significantly influence PPH management in Lamu County. It recommended regular training for skilled birth attendants to enhance knowledge and competency. Additionally, healthcare institutions should promote teamwork through inter-professional workshops, ensuring better PPH outcomes.

Keywords: *Skilled birth attendants' Factors, Postpartum hemorrhage, Health facilities, Lamu County, Kenya*

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1.0 Introduction

While many pregnancies proceed smoothly, the threat of postpartum hemorrhage (PPH) looms large, leading to severe health complications and even death for many mothers. PPH, which affects a significant portion of new mothers worldwide, remains a leading cause of maternal mortality, largely due to uterine atony or other complications during the third stage of labor (Higgins et al., 2019). This critical condition, though preventable, continues to claim lives, particularly when there is a lack of skilled obstetric care (WHO, 2018). Postpartum hemorrhage is defined by abnormalities such as uterine atony (failure of the uterus to contract), retained placental tissue, lacerations in the genital tract (including vaginal or cervical lacerations), uterine rupture, and maternal bleeding disorders (Kurmanova & Sahak, 2021; Malla et al., 2023). A study in China found that, for hospitals to prevent and actively manage PPH, the obstetric nurses need to be knowledgeable and competent on the protocols. According to medical statistics obtained from hospitals across the United States, more than half of new mothers' experience postpartum hemorrhage, which can be as much as 500 milliliters or more in vaginal delivery and as much as 1,000 milliliters or more in cesarean birth (WHO, 2018). But, the vast majority of PPH-related deaths is avoidable if qualified obstetric nurses were involved in PPH management care (WHO, 2018). Midwives' abilities, competence, and experience, attitudes and the type of birth they execute, are required for preventing and effectively managing PPH.

Additionally, the staffing ratios of nurses is integral in the management of PPH. As a result, labor and delivery nurses must be adequate (Kalu & Chukwurah, 2022).

In Africa, unfortunately, many pregnant women die as a result of insufficient competent Skilled Birth Attendants' which limit maternal care in hospitals (Dahab & Sakellariou, 2020). One in every ten women dies in South Africa, compared to one in every 3800 in developed countries. Therefore, the challenge lies in providing access to suitable drugs and educating healthcare professionals in the treatment of postpartum hemorrhage (PPH). PPH has been identified as a major contributor to maternal deaths in Sub-Saharan Africa. Specifically, it is responsible for 25% of maternal fatalities in the region. Therefore, it is crucial to thoroughly assess and examine this issue PPH in the Africa (Tiruneh et al., 2022). In Kenya, PPH accounts for 33.9 percent of all maternal deaths (Kenya demographic health survey [KDHS], 2019). Consequently, Kenya has embarked on achieving reduced maternal deaths as a millennial development goal. However, despite the country's progress in hiring and training obstetric workers and supplying hospital supplies, among many other things, Kenya's maternal-mortality rate is still concerning. Muthoni (2021) asserts that postpartum hemorrhage cause between 1/4 and 1/3 of all obstetrical fatalities in Kenya, with an annual death toll of around 140,000 annually.

Statement of the problem

Postpartum hemorrhage (PPH) remains a major cause of maternal morbidity and is one of the most serious complications that can occur after childbirth. Ideally, both mother and child should leave the delivery room healthy and without any complications. However, research indicates that a considerable number of women experience PPH within the first 24 hours after delivery (Muthoni et al., 2021). Despite being largely preventable and treatable, PPH is the leading cause of maternal death in Kenya, responsible for 30% of all maternal deaths (Muthoni et al., 2021). Beyond mortality, PPH can lead to severe morbidities, including anemia, pituitary necrosis, and in extreme cases, it may result in conditions such as respiratory distress syndrome, coagulopathy, shock, and infertility (Muthoni et al., 2021). Many women who suffer from PPH require blood transfusions, which pose additional risks like the transmission of blood-borne diseases, including HIV/AIDS, or the possibility of adverse reactions.

Although the national government has initiated educational programs to mitigate PPH-related mortality, maternal deaths in Lamu County remain high. According to delivery records in Lamu County Hospital (2021), PPH frequently arises during the third stage of labor, representing the most significant risk to maternal health and safe childbirth. This underscores the need for improved management and skilled care during delivery, especially in high-risk areas as presented in table 1 below.

“The study concluded that postpartum hemorrhage could be effectively managed if skilled birth attendants’ factors had positive attitude, are knowledgeable and competent”

Table 1

Postpartum hemorrhage cases in Lamu County

YEAR	PPH CASES
2017	7
2018	13
2019	19
2020	27

WHO quality assurance standards aim at complete elimination of maternal deaths

during birth (WHO, 2018). From the statistics, there is increasing PPH cases in the

county. This shows that there is something wrong in the management of PPH in Lamu County; thus, it is imperative for skilled birth attendants' factors, and institutional factors to work together to reduce PPH cases. There is a dearth of literature on PPH in scope to Lamu County. Consequently, there is a critical knowledge gap in the continuum of care required for safe motherhood and the achievement of MDGs 5 which prioritize maternal health. Little is known about the prevalence of PPH and the current situation in the influence of skilled birth attendants' factors on PPH management in the level 4 and 5 hospitals in Lamu County. As such, it is imperative to establish the influence of skilled birth's attitude, knowledge and competence on the management of PPH in the County of Lamu, Kenya.

Purpose of the study

The study aimed to determine the influence of skilled birth attendants' factors on the management of post-partum hemorrhage in level four and five hospitals in Lamu County.

Literature

Skilled birth attendants' factors and Post-Partum Hemorrhage's management

Globally, birth attendants are expected to ensure professionalism and competence during handling of maternal cases. This is aimed at ensuring reduced fatalities and morbidity cases affiliated to PPH. Nurses, midwives, and clinicians are thereby expected to use and implement competent therapeutic intervention, and more so, incorporate Evidence Based practices. A study in Madagascar affiliated to factors leading to PPH cases across Africa

established that healthcare workers had little knowledge on the impact of PPH on their care settings. This is attributed to poor skills, and trainings (Flanagan et al., 2021). Another study in Sri Lanka found that PPH management demands resources such as health care workers, and medication to ensure reduced mortality and morbidity rates (Zimba, 2020). A study based on risk factors causing increased cases of PPH noted that Latin population had a wide knowledge deficit on nutrition aspects causing PPH and thereby putting them at high risk of macrosomia, obstetric complications, and retained placenta. As such, more efforts on women's health ought to be done (Nasem, 2020). In the same vein, studies done across Nigeria established poor competence among Skilled Birth Attendants' in, management of PPH across the health-care settings (Okonofua et al., 2019).

In Kenya, there deficit in the knowledge, competency and attitude of obstetrician towards management PPH (Mvundura et al., 2017). Mvundura et al. (2017), Kinuthia et al. (2019) and Muthoni et al. (2021) avers that knowledge deficit on management of PPH among health care workers was largely attributed to increased cases of PPH. Muthoni et al. (2021) note that more than 75% of registered Skilled Birth Attendants' especially nurses and also midwives had skills and knowledge on PPH management and treatment. Hoque et al. (2024) observed that 90% of mid-wives were able to diagnose PPH and subsequently administer medication. Muthoni (2021) further aver that 78% of nurses and midwives had skills and knowledge on treatment of the medical condition and cited a research study in which

90% of midwives could identify PPH and mend perineal injuries. Similarly, Muthoni et al. (2021) discovered that 78% of nurse midwives had strong understanding of PPH and the management abilities needed to treat the condition. In assessing patients and guiding treatment and care approaches, knowledge of record keeping and general accurate documentation is critical (WHO, 2018). It is vital to keep track of the patients receiving various medication during the treatment and management of PPH across medical care settings. This will ensure reduced mortality and morbidity rates caused by PPH. However, study by Muriki (2020) revealed that nurses providing postnatal care have poor skills of documentation pausing tracking the condition of the patients. Therefore, clinicians must improve their clinical skills as well as their knowledge of PPH management (Muriki, 2020).

2.0 Materials and Methods

This study was carried out in Lamu County, which is one of the 47 counties, and one in the Northern Coast of Kenya. The study was conducted among two-level 4 and one-5 hospitals in Lamu county due to the fact that these two levels receive substantial number of maternal patients, who mainly are of low social economic status and thus need high quality and financially less burdening. Averagely, 3000 maternal deliveries are recorded annually, where 70% are referrals from these two level 4 hospitals. Additionally, the study employed descriptive research design (Nathan, 2019). The study design included a combination of qualitative and quantitative methods. The research focused on 64 healthcare professionals,

including physicians, clinical officers, nurses, and midwives, who are employed at level 4 and 5 public hospitals in Lamu County. By using census method, the study included all the population to participate in the research. This was practical following relatively small population of healthcare workers. Data was gathered using self-administered questionnaires that were tailored to correspond with the aims of the research. In order to ascertain the accuracy and dependability of the data gathering instruments, a pretest was conducted at level 5 hospitals in Mombasa County. Statistical approaches were used to do quantitative data analysis. Frequency tables were used to provide descriptive statistics, including measures such as mean and standard deviation. Further, inferential statistics, such as chi-square tests and logistic regression, were used. Throughout the investigation, ethical issues were scrupulously adhered to.

3.0 Results and Discussion

A total of 64 questionnaires were distributed, and 41 were returned, resulting in a response rate of 64%. This aligns with Holtom et al. (2022) recommendation that a 60% response rate is acceptable, given that achieving a 100% return rate is somewhat unlikely.

Reliability Statistics

Cronbach's Alpha was utilized to check if the tools were reliable. A Cronbach's alpha coefficient of 0.874 was obtained and was termed as good and reliable (Taber, 2018). A Cronbach alpha value equal to or greater than 0.7 is considered reliable and adequate (Ingle & Mahesh, 2020).

Descriptive Statistics: Skilled birth attendants’ factors and Post-Partum Hemorrhage’s management

The study sought to determine the influence of Birth Health Worker on Post-Partum Hemorrhage’s management in level 4 and 5 Lamu County. The birth health worker variable was operationalized with attitude, knowledge and competence, while management of PPH was measured through

Table 1

Skilled Birth Attendants’ factors and PPH management

Statement	VSE	SE	M	LE	VLE	M	SD
Obstetrician's divisive attitude affects management PPH	0%	20%	76%	0%	5%	2.90	.625
Birth health workers’ attitude affect management of PPH	0%	29%	71%	0%	0%	2.71	.461
Knowledge on prolonged or difficult delivery enable fast track of PPH	49%	49%	2%	0%	0%	1.54	.552
To continuously have access to the training on PPH management affect how I perform PPH management	56%	41%	2%	0%	0%	1.46	.552
To receive clear, relevant and objective guidance affect management of PPH in my facility	10%	2%	41%	0%	46%	3.71	1.346
To be reassured that whatever the level of care at which myself working will receive support from other individuals or units affect PPH management	56%	39%	5%	0%	0%	1.49	.597
Birth attendant with injection skills is appropriate in PPH management	63%	34%	2%	0%	0%	1.39	.542
Competent birth health workers ensure reduction of fatalities and morbidity cases affiliated to PPH	46%	44%	7%	2%	0%	1.66	.728
Aggregate values						2.107	.3756

Maternal PPH related deaths, morbidity and PPH cases. The respondents were asked to rate the items measuring the birth attendants’ factors using an interval Likert scale, with options ranging from Very Small Extent (VSE), Small Extent (SE), Moderate Extent (ME), Large Extent (LE), to Very Large Extent (VLE). The findings are presented in Table 1.

The results indicate that respondents agreed to a very small extent to majority of the statements; aggregate mean 2.107 and SD of 0.3756. Majority of the respondents (76%) agreed that obstetricians' divisive attitudes

affect PPH management (M=2.90, SD=0.625). Similarly, 71% of respondents felt that birth health workers' attitudes also influence PPH management to a moderate extent (M=2.71, SD=0.461). Additionally,

46% of respondents agreed to a very large extent that receiving clear, relevant, and objective guidance impacts PPH management ($M=3.71$, $SD=1.346$). Reassurance that support from other individuals or units will be available also ranked high in importance, with 56% rating this as significant to a very small extent ($M=1.49$, $SD=0.597$). The need for birth attendants with injection skills was similarly noted as critical, with 63% of respondents indicating its importance to a very small extent ($M=1.39$, $SD=0.542$). Conversely, knowledge on prolonged or difficult delivery enabling the fast-tracking of PPH was rated low, with 49% of respondents indicating only to a very small extent ($M=1.54$, $SD=0.552$). Access to training on PPH management had a similar trend, with 56% reporting that it affects their performance to a very small extent ($M=1.46$, $SD=0.552$). Lastly, 46% of respondents recognized that competent birth health workers help reduce fatalities and morbidity from PPH to a very small extent ($M=1.66$, $SD=0.728$). The findings highlighted that while some critical factors like teamwork, objective guidance, and competence were acknowledged by respondents, many birth health workers felt inadequately trained or supported, suggesting the need for regular training and support systems to enhance PPH management, particularly in ensuring that health workers feel better equipped to manage emergencies like PPH.

Discussion

The study aimed to determine the influence of skilled birth attendants' factors (attitude, knowledge, competence) on the management

of Post-Partum Hemorrhage (PPH) in level 4 and 5 hospitals in Lamu County. Diagnostic tests confirmed that Pearson product-moment correlation and multiple regression were appropriate methods for analysis. The study's findings aligned with those of Malla et al. (2023) as well, Ameh and Althabe (2022) that midwives who possess both theoretical knowledge and practical skills are better able to diagnose and treat PPH effectively. This was consistent with the regression results in this study, where attendants' factors ($\beta_1=0.592$, $P=0.001$) had a significant impact, highlighting that well-trained and knowledgeable health workers can drastically reduce PPH-related fatalities and complications. Moreover, Okonofua et al. (2019) emphasized the need for continuous education and training of healthcare providers in PPH management, particularly in low-resource settings, as a way of improving outcomes. Similarly, the current study echoed this finding, showing that the competence and knowledge of skilled birth attendants significantly enhance PPH care. The importance of attitude was also reflected in the findings, with divisive or negative attitudes potentially hampering effective management, which correlated with Muriki (2020) who pointed out that healthcare workers' attitude impacts patient care delivery, particularly in emergency obstetric cases. Finally, the results from Muthoni et al. (2021) where over 75% of nurses and midwives had the skills to manage PPH, supported this study's conclusion that skilled birth attendants' knowledge and competence are essential to improving maternal outcomes. The strong statistical significance found in this study further reinforces that

continuous professional development, teamwork, and positive attitudes among health workers are critical to improving PPH management outcomes in Lamu County. Conversely, Kinuthia et al. (2019) argued that while skilled attendants are important, institutional factors, like staffing ratios and availability of medical supplies might outweigh individual competencies.

4.0 Conclusion

The study concluded that skilled birth attendants' factors had a positive and statistically significant influence on PPH management in level 4 and 5 hospitals in Lamu County. This means that PPH could be effectively managed if skilled birth attendants' factors had positive attitude, knowledgeable and competence. The study was in concurrence with the findings of Bazirete et al. (2022) that knowledgeable and competent birth health worker is integral in management of third labor complications.

5.0 Recommendations

The study recommends the level 4 and 5 hospitals in Lamu County to hire qualified and skilled birth attendants' and continuously provide in-service training to enhance their competence in the management of PPH. The

study recommends similar studies be conducted in the coastal counties to provide solutions and interventions.

Value of the study

The findings of the study would benefit the obstetric staff by enabling them understand how their knowledge and skills, competencies, and attitudes influence the management of PPH. Hence, they would learn how emergency obstetric care, referrals systems, record keeping, equipment, guidelines and adherence to quality assurance standards influence the management of PPH in their place of work. By understanding the prevalence of PPH, the county government of Lamu would plan for evaluation and planning, and for future mitigation strategies towards the management of zero PPH mortality and morbidity in the county. Therefore, the county government should understand how skilled birth attendants' attitude, knowledge and competence affect the management of PPH within the county. The policymakers should employ the knowledge of the skilled birth attendants in the management of PPH. Additionally, the study is beneficial to future scholars, and researchers focusing on the subject of this study.

References

Dahab, R., & Sakellariou, D. (2020). Barriers to accessing maternal care in low income countries in Africa: a systematic review. *International journal of environmental research and public health*, 17(12), 4292. <https://doi.org/10.3390/ijerph17124292>

Flanagan, S. V., Razafinamanana, T., Warren, C., & Smith, J. (2021). Barriers inhibiting effective detection and management of postpartum hemorrhage during facility-based births in Madagascar: findings from a qualitative study using a behavioral science lens. *BMC Pregnancy and Childbirth*, 21(1), 1-9.

- <https://link.springer.com/article/10.1186/s12884-021-03801-w>
- Higgins, N., Patel, S. K., & Toledo, P. (2019). Postpartum hemorrhage revisited: new challenges and solutions. *Current Opinion in Anesthesiology*, 32(3), 278-284. https://journals.lww.com/co-anesthesiology/fulltext/2019/06000/postpartum_hemorrhage_revisited_new_challenges.6.aspx
- Holtom, B., Baruch, Y., Aguinis, H., & A Ballinger, G. (2022). Survey response rates: Trends and a validity assessment framework. *Human relations*, 75(8), 1560-1584. <https://doi.org/10.1177/00187267211070769>
- Hoque, A. M., Buckus, S., & Hoque, M. (2024). Incidence of post-partum complications and referrals of mothers and neonates to hospitals from a Midwife Obstetric Unit. *African Health Sciences*, 24(2), 243-254. <https://www.ajol.info/index.php/ahs/article/view/273614>
- Ingle, P. V., & Mahesh, G. (2021). Identifying the performance areas affecting the project performance for Indian construction projects. *Journal of Engineering, Design and Technology*, 19(1), 1-20. <https://doi.org/10.1108/JEDT-01-2020-0027>
- Kalu, F. A., & Chukwurah, J. N. (2022). Midwives' experiences of reducing maternal morbidity and mortality from postpartum haemorrhage (PPH) in Eastern Nigeria. *BMC Pregnancy and Childbirth*, 22(1), 1-10. <https://doi.org/10.1186/s12884-022-04804-x>
- Kinuthia, K., Stephenson, M., & Maogoto, E. (2019). Management of postpartum hemorrhage in a rural hospital in Kenya: a best practice implementation project. *JBIEvidence Synthesis*, 17(2), 248-258. <http://ir.jkuat.ac.ke/bitstream/handle/123456789/5941/Betsy%20Rono%20Corrected%20thesis.pdf?sequence=1&isAllowed=y>
- Kurmanova, A. M., & Sahak, M. (2021). Frequency of atonic uterus due to primary postpartum hemorrhage: a cross-sectional study. *Interdisciplinary Approaches to Medicine*, 2(2), 13-18. <https://peos.kaznu.kz/index.php/medicine/article/view/71>
- Malla, A. P., Acharya, S., & Thapa, B. (2023). Postpartum hemorrhage: clinical features and management in a tertiary care center of Nepal. *Journal of Patan Academy of Health Sciences*, 10(2), 28-35. <https://doi.org/10.3126/jpahs.v10i2.59127>
- Muthoni, D. M., Kabue, P. N., & Ambani, E. K. (2021). Factors that influence management of postpartum hemorrhage among midwives in a rural setting in Kenya. *African Health Sciences*, 21(1), 304-10. <https://doi.org/10.4314/ahs.v21i1.39>
- Mvundura, M., Kokonya, D., Abu-Haydar, E., Okoth, E., Herrick, T., Mukabi, J., & Burke, T. (2017). Cost-effectiveness of condom uterine balloon tamponade to control severe postpartum hemorrhage in Kenya. *International Journal of Gynecology & Obstetrics*, 137(2), 185-191. <https://doi.org/10.1002/ijgo.12125>

Okonofua, F., Ntoimo, L. F. C., Ogu, R., Galadanci, H., Gana, M., Adetoye, D., & Omo-Omorodion, B. I. (2019). Assessing the knowledge and skills on emergency obstetric care among health providers: Implications for health systems strengthening in Nigeria. *PLoS One*, *14*(4), e0213719. <https://doi.org/10.1371/journal.pone.0213719.t003>

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, *48*, 1273-1296. <https://doi.org/10.1007/s11165-016-9602-2>

Tiruneh, B., Fooladi, E., McLelland, G., & Plummer, V. (2022). Incidence, mortality, and factors associated with primary postpartum haemorrhage following in-hospital births in northwest Ethiopia. *Plos one*, *17*(4), e0266345. <https://doi.org/10.1371/journal.pone.0266345>

World Health Organization (2018). *WHO recommendations on intrapartum care for a positive childbirth experience*. World Health Organization.