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NURSE-LED TRAINING ON KNOWLEDGE OF POSTPARTUM HEMORRHAGE AMONG TRADITIONAL BIRTH ATTENDANTS IN LAGOS STATE, NIGERIA

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Abstract

Inadequate knowledge of postpartum haemorrhage (PPH) among Traditional Birth Attendants (TBAs) is a significant contributor to maternal mortality and morbidity globally. This study assessed the impact of nurse-led training on TBAs' knowledge of PPH in Lagos State, Nigeria, using a quasi-experimental design with pretest and posttest. Conducted in five Primary Health Care Centres across five divisions of Lagos State, a sample of 305 respondents was validated using multistage sampling. Data collection utilised a questionnaire with a reliability coefficient of 0.76–0.78. Statistical analysis, including descriptive statistics and paired t-tests, was performed using SPSS version 24.0. Findings revealed that most respondents were aged 45–49 years (59.3%), predominantly female (75.1%), and Yoruba (100%). Nearly half (49.0%) had secondary education, while none attended tertiary education. Most respondents (49.8%) had over 15 years of experience. Post-intervention, knowledge of PPH significantly improved, with mean scores increasing (Mean diff. = 0.43, $t(304) = 89.01$, $p < .05$). Similarly, knowledge of symptoms such as dizziness rose from 57.9% to 97.4% post-intervention. The study concluded that nurse-led training substantially enhanced TBAs' knowledge of PPH and recommended ongoing, structured educational programs for TBAs by the Ministry of Health and other stakeholders. Further research should evaluate similar interventions in diverse regions to identify adaptable best practices.

Keywords: Knowledge, Nurse-led training, Postpartum Hemorrhage, Traditional Birth Attendants

Introduction

Postpartum haemorrhage (PPH) significantly contributes to maternal mortality and morbidity, accounting for an estimated 27% of maternal deaths globally Ayenachew et al., (2024). Aboyeji et al., (2020) asserted that postpartum haemorrhage (PPH) is the predominant cause of maternal mortality and morbidity globally, accounting for around 25% of annual deaths. Statistics from the World Health Organisation (WHO) indicated that 60% of maternal fatalities in

underdeveloped nations were attributable to postpartum haemorrhage (PPH), resulting in over 100,000 maternal deaths annually across the globe. Postpartum Haemorrhage (PPH) constitutes an obstetric emergency and is identified as a leading cause of mother mortality in low-income nations, responsible for around 25% of all maternal fatalities globally (Adejo et al., 2020). Oboh et al., (2020) showed that the prevalence of postpartum haemorrhage in African nations ranges from 5% to 15%, with elevated rates observed in areas with restricted access to quality maternal healthcare services. A study by Adeniran et al., (2021), on the incidence of postpartum haemorrhage in Lagos State revealed that over 8% of women who gave birth encountered this condition. Adeniran documented a prevalence rate of 12% among women in Lagos State. Adeyemo et al., (2021) indicated that the incidence of postpartum haemorrhage in Lagos State has been progressively escalating, reaching 15% in 2023.

Postpartum haemorrhage (PPH) is characterised by the World Health Organisation (WHO) as a blood loss of 500 ml or greater within 24 hours following vaginal delivery. Severe postpartum haemorrhage (PPH) is characterised by a blood loss of 1000 ml or greater subsequent to a caesarean section. Postpartum haemorrhage (PPH) is categorised as primary if it transpires within the initial 24 hours following delivery, and as secondary if it occurs between 24 hours and 12 weeks postpartum (Ahmed et al., 2019). Brown et al., (2020) identified maternal and obstetrical factors as risk determinants contributing to the rising incidence of postpartum haemorrhage. Among the recognised risk factors for postpartum haemorrhage (PPH), certain factors pertain to maternal characteristics (e.g., age, parity, and prior caesarean section), others are introduced during pregnancy (e.g., placenta previa, assisted reproduction, and multiple gestations), and additional factors arise as pregnancy concludes (e.g., obstetric interventions, including labour induction and operative vaginal delivery). The primary risk factors associated with postpartum haemorrhage (PPH) include uterine atony (insufficient uterine contraction post-delivery), an extended third stage of labour, retained placenta, maternal age exceeding 35 years, gestational age under 37 weeks or over 41 weeks, pregnancy-induced hypertension, anaemia, a prior history of PPH, uterine rupture, abruptio placenta, and placenta previa. Aziato and Omenyo (2018) discovered that traditional birth attendants (TBAs) significantly exacerbate postpartum haemorrhage in low-resource environments. In economically disadvantaged urban

and rural Nigerian areas, the majority of women give birth at home, assisted by traditional birth attendants

The World Health Organisation (WHO) defines Traditional Birth Attendants (TBAs) as "individuals who assist mothers during childbirth and who initially acquired their skills through personal experience in delivering babies or through apprenticeship with other TBAs." Traditional birth attendance (TBA) denotes the provision of birth help by non-medical individuals, typically women, who are acknowledged and esteemed within their communities. In Lagos State, Traditional Birth Attendants (TBAs) generally enter the caregiving domain through a blend of historical customs and community recommendations. A study by Johnson and Smith (2020) indicates that traditional birth attendants (TBAs) have historically participated in the birthing process in Lagos State, acting as key carers for pregnant women in their communities; however, their understanding of postpartum haemorrhage remains inadequate. Akute et al., (2024) discovered that numerous traditional birth attendants lack awareness on the causes, risk factors, and preventive strategies for postpartum haemorrhage (PPH). Services provided by Traditional Birth Attendants have been linked to heightened risks of complications and mortality (Smith and Johnson 2019)

Smith and Johnson (2019) conducted a review of prior efforts to enhance the understanding of TBAs. The research examined the efficacy of teaching Traditional Birth Attendants in the active management of the third stage of labour to avert postpartum haemorrhage. The research demonstrated a notable reduction in the occurrence of PPH among women assisted by trained TBAs in contrast to those who were not. This indicates that adequate training and instruction for TBAs can serve as an effective preventive strategy for PPH. Adewole and Arowojolu (2020) posited that TBA training should not be regarded as a substitute for proficient medical treatment, but rather as an ancillary approach to enhance the whole health system and provide access to excellent care for all women and children. Adeniran et al., (2021) evaluated the effect of teaching traditional birth attendants in the administration of misoprostol for the prevention of postpartum haemorrhage. The study revealed that trained Traditional Birth Attendants (TBAs) were more likely to accurately administer misoprostol tablets than their untrained counterparts. The research indicated that training traditional birth attendants correlated with a substantial decrease in maternal mortality and morbidity linked with postpartum haemorrhage.

Traditional Birth Attendants (TBAs) are anticipated to implement effective preventive strategies based on their gained knowledge to diminish the occurrence of postpartum haemorrhage (PPH) and enhance mother and newborn outcomes. Research indicates that traditional birth attendants (TBAs) had inadequate knowledge and ineffective prevention measures for postpartum haemorrhage (PPH). Adeniran et al., (2021) highlighted inadequate preventive measures employed by traditional birth attendants in mitigating postpartum haemorrhage. This encompasses the utilisation of natural remedies like ginger and garlic, together with conventional methods such as hot compresses. These do not constitute effective prevention of postpartum haemorrhage and may instead result in complications.

Abiola et al., (2019) discovered a significant prevalence of postpartum haemorrhage among women who delivered with traditional birth attendants, attributed to their inadequate awareness of prevention strategies for PPH. Notwithstanding the rise in maternal mortality due to inadequate information and ineffective prevention measures regarding postpartum haemorrhage among traditional birth attendants, expectant women in the community continue to seek their services for childbirth. Adeyemo et al., (2021) contended that a majority of pregnant women favour home deliveries with Traditional Birth Attendants due to financial constraints and convenient availability. Regrettably, numerous TBAs possess insufficient knowledge and abilities to identify, avert, and manage PPH successfully (Gulmezoglu et al., 2019).

A study by Johnson and Smith (2019) indicates that traditional birth attendants (TBAs) have historically participated in the birthing process in Lagos State, acting as primary carers for pregnant women in their communities. Traditional birth attendants are culturally endorsed by women within the community. These ladies have faith in the care services provided by Traditional Birth Attendants, as well as the utilisation of herbal remedies and other traditional customs. This improves their collaboration with them. Ayenachew et al., (2024) indicated that the incidence of postpartum haemorrhage in Lagos State has been progressively escalating in recent years, reaching a significant 15% in 2023. Lagos State, with an estimated population of 21 million, has a maternal mortality ratio (MMR) of 555 per 100,000 live births.

Moreover, current interventions for PPH predominantly occur in hospitals, resulting in a deficiency in community-level prevention and response efforts. Training programs for

Traditional Birth Attendants (TBAs) frequently exhibit inconsistency, lack standardisation, and fail to sufficiently address context-specific difficulties. The deficiency in knowledge and capacity substantially leads to postponed referrals and avoidable maternal fatalities. Consequently, a nurse-led training program designed to provide Traditional Birth Attendants with evidence-based knowledge and competencies in the prevention and management of postpartum haemorrhage is essential for enhancing maternal health outcomes in Lagos State.

The following studies conducted on PPH (Akute et al., 2024; Ayenachew et al., 2024; Aziato & Omenyo 2018) indicated that there is a lack of nurse-led structured intervention studies regarding the understanding of postpartum haemorrhage among Traditional Birth Attendants in Lagos State, Nigeria. The World Health Organisation (WHO) recognises that untrained and unequipped Traditional Birth Attendants (TBAs) may jeopardise maternal and newborn health (WHO, 2019). Therefore, this study aims to identify Nurse-led training on knowledge of postpartum haemorrhage among Traditional Birth Attendants in selected LGAs in Lagos State, Nigeria.

The main objective is to carry out an intervention study on knowledge of postpartum haemorrhage among Traditional Birth Attendants in Lagos State, Nigeria. The study assess the pre and post intervention mean score knowledge of postpartum hemorrhage (PPH) among Traditional Birth Attendants (TBAs) in selected Local Government Areas (LGAs), Lagos State.

Two hypotheses raised for the study were:

$H_0$1: There is no significant difference between the pre and post intervention mean score knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State.

$H_0$2: There is no significant difference between the pre and post intervention effect of nurse-led training on knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State.

Methods

This study employed a quantitative research approach using a quasi-experimental design, which allows for comparisons between groups while lacking the full control of true experimental designs. The quasi-experimental design was selected to facilitate pre- and post-intervention

comparisons of the knowledge of postpartum haemorrhage (PPH) and the utilisation of preventive strategies among Traditional Birth Attendants (TBAs) in Lagos State. Initially, a pre-intervention questionnaire was administered to assess TBAs' baseline knowledge and practices regarding PPH in selected Local Government Areas (LGAs) of Lagos State. Subsequently, the researcher conducted a training intervention, after which the same questionnaire was re-administered four weeks later to evaluate changes in knowledge and practice.

The study population comprised 388 TBAs aged 40–59 years, residing in Ikeja, Badagry, Ikorodu, Lagos Island, and Epe divisions of Lagos State. These TBAs were drawn from five selected Primary Health Centres (PHCs): Ikotun, Ijegun, Oke-Eletu, Sura, and Epe. Using a proportional sampling formula, the targeted sample size of 308 participants was distributed across the PHCs. The sample included 96 participants from Ikotun, 45 from Ijegun, 62 from Oke-Eletu, 60 from Sura, and 46 from Epe. To select participants, a multistage sampling technique was used. First, all five divisions of Lagos State were included. One LGA was then randomly selected from each division, followed by the purposive selection of one PHC in each LGA based on the number of TBAs recorded. Finally, simple random sampling was applied to select TBAs from each PHC. Inclusion criteria ensured that participants were practising TBAs aged 40–59, residing in the LGAs for at least six months, and consenting to participate in the study. Exclusion criteria excluded retired TBAs, those with chronic illnesses, and those who had undergone similar training previously.

The study's sample size was determined using Cochran’s formula, incorporating a 95% confidence level, a 5% margin of error, and a 24% prevalence rate of poor PPH knowledge among TBAs from previous studies. This calculation yielded a sample size of 280, which was adjusted upward by 10% to account for potential non-responses, resulting in a final sample size of 308. A questionnaire was developed, adapted from the World Health Organization's (2021) framework on preventing PPH. It comprised two sections: demographic information (age, gender, marital status, education, ethnicity, and years of practice) and a knowledge assessment section focusing on the causes and warning signs of PPH.

The research instrument underwent rigorous validation and reliability testing. Face and content validity were conducted with input from field experts, including the researcher’s supervisor. Reliability testing involved a test-retest method using 10% of the sample size (31 TBAs) in

Isheri, Lagos State, with Cronbach's alpha used to measure internal consistency. A reliability coefficient of 0.756 confirmed the instrument's reliability for assessing TBAs' knowledge.

Data collection began with pre-intervention sensitisation visits to the selected PHCs. The researcher engaged Medical Officers of Health (MOH) and Community Health Extension Workers (CHEWs) to explain the study's objectives and its potential to reduce maternal morbidity and mortality. These gatekeepers facilitated access to monthly TBA meetings, which were used for the intervention. Research assistants were trained to administer and collect questionnaires, ensuring confidentiality by avoiding the collection of participants' names or addresses. During the pre-intervention phase, participants completed a face-to-face questionnaire to assess their baseline knowledge and practices.

The intervention involved a three-hour training session conducted by the researcher at each PHC during TBAs' monthly meetings. The training covered definitions, risk factors, causes, warning signs, and preventive strategies for PPH. It included teaching sessions, group discussions, and demonstrations. Visual aids, such as charts, pictures, and video clips, were used to enhance understanding. The sessions were interactive, featuring question-and-answer segments to address participants' concerns. Following the training, participants were provided with identification tags, which they were required to present for the post-intervention assessment.

The post-intervention phase took place four weeks after the training, using the same questionnaire administered during the pretest. This ensured comparability between pre- and post-intervention data. Only TBAs who presented their identification tags were included in the posttest. Data were analysed using the Statistical Package for Social Sciences (SPSS) version 24.0. Descriptive statistics, including frequencies, percentages, and means, were used to summarise the data, while paired t-tests were conducted to assess differences in knowledge scores before and after the intervention. Knowledge was scored on a scale of 0 to 10, with correct answers receiving one point each. TBAs were categorised as having "poor" or "good" knowledge based on their scores. A p-value of ≤ 0.05 was considered statistically significant.

Ethical considerations were meticulously observed throughout the study. The proposal was submitted to the Babcock University Health Research Ethical Committee (BUHREC) for review and approval. Participants provided informed consent, were assured of confidentiality, and were

informed of their right to withdraw from the study at any time. Permissions were also obtained from relevant PHC authorities, including MOHs and CHEWs, ensuring compliance with local regulations and ethical standards.

Results

Table 1: Socio-demographic Characteristics of the Respondents

Variable	Categories	Frequency	Percent(%)
Age in years	40-44years	99	32.5
	45-49years	181	59.3
	50-54years	20	6.6
	55 -59years	5	1.6
Highest Level of Education	Non-formal	31	10.2
	Primary	122	40.0
	Secondary	152	49.8
	Tertiary	0	0.0
Years of Working Experience	1-5	83	27.2
	6-10	8	2.6
	11-15	62	20.3
	15 years and above	152	49.8
Marital status	Never Married	75	24.6
	Married	162	53.1
	Divorced	14	4.6
	Widow	54	17.7
Gender	Male	76	24.9
	Female	229	75.1
Ethnic groups	Hausa	0	0
	Igbo	0	0
	Yoruba	305	100

Table 1 highlights the demographic characteristics of respondents. Most are aged 45-49 years (59.3%) and have a secondary education (49.0%), while none attended tertiary institutions. The majority have 15 or more years of experience (49.8%), and most are married (53.1%). Females dominate the sample (75.1%), and all respondents are Yoruba (100%), reflecting the cultural context of the study area in Southwest Nigeria. Educational backgrounds vary, with 10.2% having non-formal education, while 27.2% and 20.3% have 1-5 and 11-15 years of experience, respectively.

Table 2: Knowledge level of Traditional Birth Attendants on Postpartum Hemorrhage

S/N	Statement	Pretest				Posttest			
		Yes (%)	No (%)	Mean	Std	Yes (%)	No (%)	Mean	Std
1	Have you heard of postpartum hemorrhage before? If No, go to Section 3. If Yes, continue with this section	213 (69.8%)	92 (30.2%)	1.6	0.01	305 (100%)	0 (0%)	1.9	0.07
2	A common cause of postpartum hemorrhage is Uterine atony	197 (64.6%)	108 (35.4%)	1.4	0.01	302 (99.0%)	3 (1.0%)	1.9	0.09
3	The recommended first-line treatment for postpartum hemorrhage is administration of Cytotec	0(00.%)	305(100 %)	0.1	0.00	297 (97.4%)	8 (2.6%)	1.8	0.1
	Postpartum hemorrhage can be prevented through the following;								
4	Administration of oral Cytotec	0(00.%)	305(100 %)	0.1	0.00	305 (100%)	0 (0%)	1.9	0.07
5	Timely referred to a higher level of care in case of any complication	179 (58.7%)	126 (41.3%)	1.5	0.03	298 (97.7%)	7 (2.3%)	1.8	0.4
6	Monitor and manage mother's vital signs during and after delivery	187 (59.8%)	118 (40.2%)	1.2	0.04	276 (90.5%)	29 (9.5%)	1.7	0.6
7	Uterine Massage	176 (57.9%)	129 (42.1%)	1.3	0.02	297 (97.4%)	8 (2.6%)	1.8	0.5
	Signs and symptoms of postpartum hemorrhage are the following;								
8	Excessive bleeding after giving birth	194 (65.6%)	101 (34.4%)	1.4	0.02	301 (98.7%)	4 (1.3%)	1.7	0.2
9	Dizziness or light-headedness	176 (57.9%)	129 (42.1%)	1.3	0.03	297 (97.4%)	8 (2.6%)	1.6	0.1
10	Rapid heart rate	129	176	1.2	1.37	284	21	1.6	0.9

		(42.1%)	(57.9%)			(93.0%)	(7.0%)		
11	Passing blood clots	156 (50.5%)	149 (49.5%)	1.2	0.02	300 (98.4%)	5 (1.6%)	1.8	0.1
12	Low blood pressure	197 (64.6%)	108 (35.4%)	1.4	0.01	302 (99.0%)	3 (1.0%)	1.9	0.09
	Total Weighted Average mean			**1.32**	**0.13**			**1.78**	**0.27**

Table 2 presents a comparison of pretest and posttest knowledge of postpartum haemorrhage (PPH) among traditional birth attendants (TBAs), revealing significant improvements following the intervention. Before the intervention, 69.8% of TBAs had heard of PPH, compared to 100% in the posttest, with mean awareness increasing from 1.6 to 1.9. Knowledge of uterine atony as a cause of PPH rose from 64.6% to 99%, with the mean increasing from 1.4 to 1.9. Awareness of Cytotec as the first-line treatment and its role in PPH prevention increased dramatically from 0% to 100%, with mean scores rising from 0.1 to 1.8. Knowledge of timely referral improved from 58.7% to 97.7%, and awareness of monitoring vital signs rose from 59.8% to 90.5%. Awareness of uterine massage for PPH prevention increased from 57.9% to 97.4%. Recognition of PPH symptoms also improved significantly: excessive bleeding (65.6% to 98.7%), dizziness (57.9% to 97.4%), rapid heart rate (42.1% to 93%), passing blood clots (50.5% to 98.4%), and low blood pressure (64.6% to 99%).

These results demonstrate that the intervention effectively enhanced TBAs' knowledge of PPH causes, treatment, prevention, and symptom recognition, contributing to improved maternal health awareness.

Test of Hypotheses

$H_0$1: There is no significance difference between the pre and post intervention mean score knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State.

Table 3: Paired t-test result showing significant difference between the pre and post intervention mean score knowledge of postpartum hemorrhage

		N	Mean ±SD	Mean difference	Std. error	t.value {df}	P	Decision

					mean			
knowledge of postpartum hemorrhage	Pre-test	305	0.74±0.34	0.43	0.061	89.01 {304}	0.001	Reject the Hypothesis
	Post-test	305	1.17±0.09					

Table 3 depicts the result of hypothesis one postulated in this study. It is indicated that there is a significant difference between the pre (0.74±0.34) and post (1.17±0.09) intervention mean score knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State *(Mean diff. = 0.43, $t_{(304)}$ = 89.01, p <.05). The p-value is 0.001* which justifies the significant difference between pre and post intervention mean score knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State. Therefore, the difference occurred as a result of the intervention mean score knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State.

$H_0$2: There is no significance difference between the pre and post intervention effect of nurse-led training on knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State.

Table 4: Paired t-test result showing significant difference between pre and post intervention effect of nurse-led training on knowledge of postpartum hemorrhage

		N	**Mean ±SD**	**Mean difference**	**Std. error mean**	**t.value {df}**	**P**	**Decision**
Effect of nurse-led training on knowledge of postpartum hemorrhage	Pre-test	305	0.62±0.08	0.22	0.041	81.14 {304}	0.001	Reject the Hypothesis
	Post-test	305	0.84±0.18					

Table 4 depicts the result of hypothesis three postulated in this study. It is indicated that there is a significant difference between pre (0.62±0.08) and post (0.84±0.18) intervention effect of nurse-led

training on knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State *(Mean diff. = 0.22, $t_{(304)} = 81.14$, $p < .05$).* The *p-value is 0.001* which justifies the significant difference between pre and post intervention effect of nurse-led training on knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State. Therefore, the difference occurred as a result of the intervention effect of nurse-led training on knowledge of postpartum hemorrhage among TBAs in selected Local Government Areas (LGAs), Lagos State.

Discussion of Findings

The outcome of this study showed that the traditional birth attendants' knowledge of postpartum hemorrhage increased after the intervention, as their mean score at pre-test was 1.32±0.13 (42.4%) compared to post intervention mean score of 1.78±0.27 (89.9%). This finding does not conform with that of a study done in Nigeria by Akute et al. (2024) who found that only 4% of TBAs had accurate knowledge on the definition of PPH, and less than half knew the signs and symptoms of the condition. According to a study by Ayenachew et al. (2024) only 30% of traditional birth attendants were able to accurately identify the signs and symptoms of postpartum hemorrhage while Smith and Johnson (2019) found that many TBAs in rural areas have moderate knowledge of postpartum hemorrhage and its management, leading to delays in seeking appropriate medical care. However, the finding corroborates with that of [15] which claimed that majority (76.4%) of the Traditional birth attendants (TBAs) had good knowledge of the causes and warning signs of PPH, while a few (23.6%) of them had poor knowledge.

The outcome of this study also showed that the effect of nurse-led training increased after intervention as pre intervention score was 0.62±0.08 (20.2%) compared to post intervention score of 0.84±0.18 (86.9%). This finding is in line with the findings of several authors on the subject matter. Study conducted by Abiola et al. (2019) found that a training program that incorporated hands-on practice and refresher courses improved the knowledge and skills of TBAs in managing PPH. Similarly, a study by Adewole and Arowojolu (2020) found that a 3-day training program on PPH management significantly improved the knowledge and practice of TBAs. In Nigeria, Akute et al., (2024) found that TBAs who received training on safe delivery practices had greater knowledge and confidence in managing complications during childbirth, leading to reduced maternal and neonatal mortality rates.

Conclusion

The study indicates a substantial improvement in knowledge of postpartum hemorrhage (PPH), its causes, treatment, prevention methods, and symptoms following the nurse-led educational intervention. This suggests that the intervention was highly effective in enhancing participants' awareness and understanding of postpartum hemorrhage. Such improvements are critical for early detection and effective management of PPH, which can significantly reduce maternal morbidity and mortality.

Recommendations

The following recommendations can be made:

1. The Ministry of Health, Department of Nursing Services, and the community health department should implement continuous, organised nurse-led training programs for Traditional Birth Attendants (TBAs) to improve their expertise in managing postpartum haemorrhage (PPH). These programs must incorporate practical experience and periodic refresher courses to guarantee ongoing education and skill retention.

2. Community outreach and educational initiatives should be implemented to enhance knowledge of the risk factors for PPH among traditional birth attendants and the wider community. Highlighting the significance of adequate training, prompt referrals, and availability of medical supplies helps reduce the dangers linked to PPH.

3. Funding and resources must be obtained to facilitate the ongoing enhancement of TBA training programs. This encompasses the allocation of resources for training materials, equipment, and subsequent sessions to guarantee that TBAs are adequately prepared to address PPH and other maternal health issues proficiently. Regular assessment and revision of training programs, informed by feedback and emerging evidence, should be prioritised to uphold high standards of care.

References

Abiola, O.O., Erhiano, E.E., Oluyemi, O.F., Oyeyemi, A.S., & Waziri, N.B. (2019). Knowledge of Traditional Birth Attendants on Postpartum Hemorrhage: A Review of the Literature. *Journal of Midwifery and Reproductive Health*, *7*(2), 1578-1586.

Aboyeji, A.P., Adisa, C.A., Akinloye, O., Fawole, A.A., Omede, A.Y et al. (2020). Incidence and Risk Factors of Postpartum Hemorrhage among Mothers Receiving Childbirth Care Services in Nigeria: A Cross-Sectional Study. *BMC Pregnancy Childbirth*, *20*(1), 205.

Adeniran, A., Olanrewaju, T., & Olugbenga-Bello, A., (2021). Traditional Birth Attendants' Knowledge and Practices Regarding Postpartum Hemorrhage in Rural Nigeria: A Cross-Sectional Study. *African Health Sciences, 21*(3), 1156-1165.

Adewole, B., & Arowojolu, O. (2020). Integrating Traditional Birth Attendants into the Formal Healthcare System: A Case Study in Lagos State. *Nigerian Journal of Medicine*, *25*(2), 78-84.

Adejo, C.J., Aimakhu, C.O., Helgason, S., Okonofua, F.E., & Olugbenga-Bello, A.I. (2020). The impact of Training on the Use of Misoprostol for the Prevention and Treatment of Postpartum Hemorrhage: a cluster-randomized controlled trial in Nigeria. *BMC Pregnancy Childbirth 20*(1), 289 https://doi:10.1186/s12884-020-02923-7

Adeyemo, O.F., Iwaola, O.M., Olajide, A.O., Olorunfemi, O., & Sowunmi, C.O. (2021). Enhancing Knowledge of Traditional Birth Attendants for the Identification of Selected Labor Emergencies. *Afr. J. Health Nurs. Midwifery, 4*(3), 1–14. https://doi: 10.52589/AJHNMHL0BDMZJ

Ahmed, S., Begum, M., & Rahman, M. (2019). Factors Contributing to the Lack of Knowledge on Postpartum Hemorrhage among Traditional Birth Attendants in Bangladesh. *BMC Pregnancy and Childbirth, 19*(1), 476.

Akute, Y.I., Elusoji, C.I., Munge M., Olawale, Y.A., & Olofin-Samuel, M.A. (2024). Collaboration Processes between skilled and traditional birth attendants on maternal and newborn care in Ekiti State. *Journal of Liaoning technical university (natural science edition)*18(4), 189-204

Ayenachew F., Bekele D., Gerenstein H., Gaym, A., Mohamad I. et al. (2024) Training Traditional Birth Attendants (TBAs) to Prevent and Manage Postpartum Hemorrhage in Ethiopia: A Cluster-Randomized Trial. *BMC Pregnancy and Childbirth 24*(1), 100. https://doi.org/10.1186/s12884-024-0488-7

Aziato, L., & Omenyo, C.N. (2018). Initiation of Traditional Birth Attendants and their Traditional and Spiritual Practices during Pregnancy and Childbirth in Ghana. *BMC Pregnancy Childbirth,* 18:64 https://doi: 10.1186/s12884-018-1691-7

Brown, A., Johnson, L., & Smith, J. (2020). Traditional Birth Attendants' Practices in the Prevention of Postpartum Hemorrhage: A Qualitative Study. *Journal of Midwifery &Women's Health*, *65*(3), 214-221.

Gülmezoglu, A.M., Khan, K. S., Say, L., Van Look, P. F., & Wojdyla, D. (2019). WHO Analysis of Causes of Maternal Death: A Systematic Review. *The Lancet*, *367*(9516), 1066-1074.

Johnson, B., & Smith, A. (2019). Enhancing Maternal and Neonatal Health through Nurse-Led Training of Traditional Birth Attendants. *International Journal of Nursing Research*,

Johnson B, & Smith, A. (2020). The Role of Uterotonics in Preventing Postpartum Hemorrhage: A Study among Traditional Birth Attendants. *International Journal of Obstetrics*, *35*(4), 430-435.

Oboh, E.M., Oguntayo, S. A., Oketola, O.O., & Oyenike, M. A. (2020). Knowledge of Traditional Birth Attendants on Prevention and Management of Postpartum Haemorrhage in Northeast Nigeria. *Obstetrics and Gynecology International*, 1-8

Smith A., & Johnson, A. (2019). Training Traditional Birth Attendants in Active Management of the Third Stage of Labor: A Randomized Controlled Trial. *Journal of Maternal Health*, *45*(2), 210-215.