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Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:
Adeyemi, N. K. (2019). Determinants, Treatment and Consequences of Post-Partum Haemorrhage in Osun State, Nigeria. *The Nigerian Journal of Sociology and Anthropology*, *17*(1), 133-152. https://doi.org/10.36108/NJSA/9102/71(0190)

THE NIGERIAN JOURNAL OF SOCIOLOGY AND ANTHROPOLOGY
ISSN: 0331-4111
Volume 17, No. 1, June 2019
Pages 133-152

DOI: 10.36108/NJSA/9102/71(0190)

Determinants, Treatment and Consequences of Post-Partum Haemorrhage in Osun State, Nigeria

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Abstract
*Despite concerted efforts made by United Nations and other health agencies to reduce Maternal Mortality Rate (MMR) through Skilled Birth Attendants (SBAs) and use of healthcare facilities, report reveals that Traditional Birth Attendants (TBAs) still have a place in maternal healthcare in developing countries. This paper examines causes, treatment and consequences of Post-Partum Haemorrhage (PPH) from TBAs' perspectives in Osun State, Southwestern Nigeria. The study adopted qualitative method of data collection (In-depth Interview and Focus Group Discussion). Results show some similar (**T**one, **T**rauma, **T**issue and **T**hrombin) as obtained from medical literatures and some divergent causes of PPH which includes: consumption of Potassium, intoxicants, dairy product, junks and iron tablets at advanced stage of pregnancy. This implies that substance/food consumption has implication on maternal health. TBAs' treatment techniques for PPH include: use of powdery substances, concoctions, herbs and roots, and sometimes use of animal parts. Consequences of PPH include: organ failure, respiratory disorder, infection, fever, vomiting, anaemia and loss of fertility. WHO has revealed that misoprostol is effective in treating PPH in home delivery in developing countries. Reducing MMR due to PPH and achieving development in health sector in Nigeria therefore, requires training Nigeria TBAs on the proper administration of misoprostol.*

Keywords: Development, Maternal Mortality Rate (MMR), Nigeria, Post-partum Haemorrhage (PPH), Traditional Birth Attendants (TBAs)

Introduction

Maternal mortality is one of the greatest health and development challenges of developing countries including Nigeria. This is evident as Nigeria and India accounted for over one third of all maternal deaths worldwide in the year 2015, with an approximate 58,000 maternal deaths (19%) and 45,000 maternal deaths (15%), respectively (World Health Organisation (WHO), 2015). This implies that one Nigerian woman dies in childbirth every ten minutes. Nigeria Demographic and Health Survey, NDHS, 2013 also estimates Nigeria Maternal Mortality Rate (MMR) at 576/100,000 live birth. These figures are incomparable with maternal mortality figures characteristic of a developed country where the MMR is as low as 8/100,000 live birth. Variations in MMR are not only particular to countries but also to regions in Nigeria and are significantly linked with urban-rural variations (Archibong & Agan, 2010). On regional basis in Nigeria, MMR in the Southwestern region is estimated at 166 maternal deaths per 100,000 live births (Osun State Ministry of Health, 2010).

This figure is more than twice the Sustainable Development Goal (SDGs 3.1) target aimed at reducing the global MMR to less than 70 per 100,000 live births by 2030 (SDG 3.1).

Post-Partum Haemorrhage (PPH) is the number one cause of maternal mortality in developing countries and is the cause of 25 percent of maternal deaths worldwide (United Nations, 2010; WHO, 2013). It is a common maternal morbidity in high resource countries and is trending upward (International Postpartum Haemorrhage Collaborative Group, 2009).

The American College of Obstetricians and Gynecologists (ACOG, 2016) defines early postpartum haemorrhage as at least 1,000 mls total blood loss or loss of blood coinciding with signs and symptoms of hypovolemia (that is, decrease in the volume of circulating blood) within 24 hours after delivery of the fetus or intrapartum loss. PPH is when the woman bleeds more than the 'expected amount' from the vagina and/or uterus after the baby is born. It can also include an excessive amount of blood loss during and/or after a Caesarean operation. Postpartum haemorrhage happens after the baby has been born, either before or after the placenta has been expelled from the uterus. Postpartum haemorrhage can be classified as primary, which may occur before the delivery of the placenta and within 24 hours after delivery of the fetus, or secondary, which occurs 24 hours to 12 weeks postpartum. Primary PPH is more common than secondary PPH (Rajan & Wing, 2010).

According to Knight, Callaghan & Berg *et al.,* 2009, approximately 3% to 5% of obstetric patients will experience postpartum hemorrhage. Annually, these preventable events are the cause of one-fourth of maternal deaths worldwide and 12% of maternal deaths in the United States (Say, Chou, Gemmill *et al.*, 2014). A woman suffering from post-partum haemorrhage can die quickly (often within 2 hours) if she does not receive immediate and appropriate medical attention. Every minute of delay raises the likelihood that a woman suffering from haemorrhage will die.

To reduce maternal mortality in developing countries, commitment was made by the United Nations in year 2000 under the Millennium Development Goal Declaration (MDG 5.1) to ensure that 90% of birth takes place in health facility through Skilled Birth Attendants (SBAs) by the year 2015. Towards the end of 2015, many developing countries were still far from achieving this target. This is evident as NDHS (2013) estimated that 36% of births in Nigeria were delivered in health facilities and only 38% percent were assisted by SBAs. This implies that majority (63%) were delivered at home; most of who will be assisted by Traditional Birth Attendants (Odetola, 2015).

Objectives of the Study

The objectives of the study are to investigate the causes, treatment and consequences of PPH (the leading cause of maternal death) from the perspectives of Traditional Birth Attendants (TBAs) in Osun State, Southwestern Nigeria.

Causes of Post-Partum Haemorrhage (PPH)

Commonly reported causes of PPH are **T**one, Tissue, Trauma, and Thrombin. All these are commonly referred to as the 'four Ts' (Anderson & Etches, 2007). The most common aetiology of PPH is Tone; uterine atony (impaired uterine contraction after childbirth; that is, when the womb is unable to contract properly after the delivery of the baby). This occurs in about 80 percent of cases. Atony may result due to over- distension of the uterus, prolonged labour, infection, placental abnormalities, or bladder distension (Anderson and Etches, 2007; Chelmow, 2011). Studies (Manghan, Heim & Galazka, 2006; Khan, Wojdyla, Say, Gulmezoglu & Van Look, 2006; Anderson and Etches, 2007) revealed that the majority of women who develop PPH have no identifiable risk factors. However, clinical factors associated with uterine atony are multiple gestations, high parity (that is, high number of pregnancies) and prolonged labour (Royal College of Obstetricians and Gynaecologists, 2009; McLintock & James, 2011).

Another cause associated with PPH is Tissue (Anderson & Etches, 2007; Evensen & Anderson, 2014). Otherwise known as retained Placenta. The placenta normally separates from the uterine wall during delivery and is to be expelled from the vagina within 30 minutes after giving birth. If part or all of it fails to be delivered, the uterus cannot contract and close off all the necessary blood vessels. This means it will continue to bleed and this can lead to infection and consequently lead to haemorrhage. Traumatic causes include lacerations (these are tears of the uterus, cervix, or vagina), uterine rupture, and uterine inversion (Evensen & Anderson, 2014). Thrombin (Coagulation disorders) is another cause, though a rare cause of PPH (Evensen & Anderson, 2014). After delivery of a child, the blood is expected to clot properly; absence of this exposes the woman to risk of haemorrhage. This requires clotting factor replacement for the identified deficiency. According to Richey, Gilstrap, and Ramin, 1995 cited in Evensen & Anderson, 2014, obstetric conditions that can cause coagulopathy bleeding before or during labour include severe preeclampsia, amniotic fluid embolism, sepsis, placental abruption (often associated with cocaine use or hypertensive disorders), massive PPH and prolonged retention of fetal demise and use of anticoagulants such as aspirin or heparin (Evensen & Anderson, 2014).

Management/Treatment of PPH

Active Management of the Third Stage of Labour (AMSTL) is a common method adopted by skilled providers to reduce the incidence of PPH in clinical practice and if used at every birth, active management of the third stage of labour would reduce PPH by 30 to 50 percent (Begley, Gyte, Devane, Mcguire, Weeks, 2011). Active management of the third stage of labour involves the administration of a prophylactic to serve as interventions around the time of the baby's birth. Active Management of the Third Stage of Labour (AMSTL) also involve the clamping and cutting of the umbilical cord and controlled cord

traction to expedite delivery of the placenta and membranes (National Institute of Clinical Excellence (NICE) 2007; Begley, Gyte & Murphy, 2011). Active management of the third stage of labour is recommended in clinical settings to decrease the risk of postpartum hemorrhage, postpartum maternal hemoglobin less than 9 mg/dl, and the need for manual removal of the placenta (Begley, Gyte, Devane, Mcguire, Weeks, 2011).

However, WHO, revealed that one way unskilled birth attendants (TBAs) could help to reduce PPH is through the use of an oral intervention known as Misoprostol, which had been included in the WHO's Essential Medicines List after a review of the existing evidence (WHO, 2012). World Health Organisation now supports administration of misoprostol by non-skilled birth attendants at home deliveries (WHO, 2012). Studies have also shown effective use of misoprostol in several developing countries. For instance, a qualitative study conducted by Ghana Health Service (GHS), Millennium village projects and the University of Illinois at Chicago designed to assess the safety, feasibility, and acceptability of community-based distribution of misoprostol to prevent PPH at home deliveries in rural Ghana clearly demonstrates that misoprostol distributed to pregnant women during antenatal can be used accurately and reliably by rural Ghanaian women, and should be considered for policy implementation across Ghana and other countries with high home birth rates and maternal mortality ratios. This necessitated the support of integration of misoprostol tablets into its safe motherhood efforts by Ghana Health Service. Thus, Ghana registered misoprostol tablets for prevention and management of PPH in 2008 (Geller, Carnahan, Akosah, Asare, Agyemang, Dickson, Kapungu, Owusu-Ansah, Robinson, Mensah-Homiah, 2014).

A study done in low resource settings including Tanzania and Angola, indicated that training TBAs in the correct use of misoprostol administration reduced PPH, influenced referrals to the formal health-care services and reduced cost of expenditures on healthcare services (Hunington, Banzon & Recidoro, 2012). Other studies have also revealed that Misoprostol has advantages for prevention in low-resource settings because it is effective, inexpensive, heat stable, and simple to administer (Prata, Gessessew, Abraha, Holston & Potts, 2009; Bellad, Tara, Ganachari *et al.*, 2012).

In an intervention study conducted in Bangladesh (low-resource settings in South Asia) in 2009–2011, TBAs were trained in the utilization of two "safe motherhood" tools—misoprostol and an absorbent delivery mat designed to measure postpartum blood loss. The study revealed that majority of the trained TBAs retained correct knowledge of the function, dosing and timing of administration of misoprostol and of the use of the delivery mat 18 months after training. Thus, the study concluded that, it is feasible to train TBAs in the administration of misoprostol and this can improve TBAs' ability to manage PPH (Prata *et al.*, 2012). Other treatments method for PPH included manual removal of placenta/placenta bits, repair of tears/laceration, blood transfusion, and/or an anti-shock garment (Miller, Fathalla & Youssif, 2010). A serious case of haemorrhage may require surgery. Surgery such as hysterectomy has its

own risks which include infection, anaesthesia, loss of fertility and other complications, as well as high financial costs (Miller *et al*., 2010).

Consequences of PPH

Consequences of PPH on women who survived PPH if not properly managed include severe anaemia (Guidelines and Audit Committee of the Royal College of Obstetricians and Gynaecologists, 2017); fever, vomiting, vascular perforation (the creation of a hole in the blood vessels), uterine ischemia (inadequate flow of blood to a part of the body), thrombosis (a condition in which the blood changes from a liquid to a solid state. Thrombosis in any artery obstructs the blood flow to the tissue it supplies. This may sometime result to stroke), fertility loss and infection (Gizzo, Saccardi and Patrelli, 2013), organ failure, shock, oedema, compartment syndrome, transfusion complications, acute respiratory distress syndrome and sepsis and may require intensive care, and prolonged hospitalization (Evensen & Anderson, 2014; Guidelines and Audit Committee of the Royal College of Obstetricians and Gynaecologists, 2017). In spite all the above mentioned consequences, research studies have suggested that many deaths associated with PPH could be prevented with prompt recognition and more timely and adequate treatment.

Theoretical Framework (Functionalist Theory)

This paper adopted the Functionalist Theory. Functionalism is a theoretical approach that sees society as an interconnected system of institutions. These social institutions act as complex social forces that encourage stable, valued patterns of behaviour in a society. Medicine is also an important social institution. The institution of medicine includes organizations such as clinics and hospitals. And in the case of traditional health system, it includes the traditional healing homes, as well as key figures such as doctors and nurses. And in the traditional health system, it include the Traditional Birth Attendants and other traditional healers. It also includes health and illness within a society.

Functionalists see society as working like a body, with different social institutions each performing particular functions and working together to achieve social order and stability. When one part of the society fails, it can impact the whole of society. Consider the roles of Traditional Birth Attendants especially in society that strongly believe in traditional health system, if these providers are not well trained, it has an impact on the larger society. Subsequently, it implies that fewer people can receive necessary health care, which can then impact other parts of society such as the family and the economy. Mothers who experience Post-Partum Haemorrhage (PPH) during labour and could not receive adequate medical care are often too ill to care for their already existing and new babies, or they may die, leaving society to care for their children. Similarly, people who do not receive care cannot work, or may not work efficiently, meaning the economy is less productive. In these ways the institution of medicine is connected to and affects other parts of society.

A functionalist approach to analyzing health and illness considers how levels of health and illness impact overall social order, as well as the roles of patients and health care providers (TBAs). Illness, particularly life threatening illness, such as PPH is a threat to social order. It prevents people from working and fulfilling their social functions. Training TBAs' in Nigeria, particularly in Osun State in the proper administration of Misoprostol as done in other developing countries is therefore essential to achieve good health and development particularly in a society with high value for traditional healthcare.

Methods

Cross-sectional research design was adopted using primary data and qualitative method of data collection (In-depth Interview and Focus Group Discussion). The study adopted multistage sampling Technique comprising; stratified, purposive and snow balling sampling techniques. At the first stage, the state was captured based on the 3 existing strata (3 senatorial districts) namely: Osun Central, Osun West, and Osun East. Subsequently, one Local Government Area (LGA) was purposively selected from each senatorial district to represent each district due to availability of TBAs in the LGA. Thus, Osogbo LGA represents Osun Central, Iwo LGA was selected to represent Osun west and Ife East LGA was to represent Osun East LGA. In each of the LGA, 25 TBAs with considerable years of experience (minimum of 5 years as a practitioner which was the major criterion used in drawing the sample size) were identified using snow-ball sampling technique. This gave a total of 75 TBAs from the three (3) LGAs which constitute the sample size for the study. Osun State is found in the tropical rainforest vegetation type in Southwestern Nigeria. It is one of the 36 States in Nigeria.

Approval for the study was obtained from Health Research Ethic Committee (HREC) Institute of Public Health, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria. The TBAs were duly informed about the purpose of the study and participation was made voluntary. Anonymity and confidentiality were assured. Data collected from the field were analysed in line with the study objectives thematically. Data were collected with the aid of a Tape- recorder and a field note and were subjected to content analysis. Information from both the In-depth Interview (IDI) and Focus Group Discussion (FGD) were transcribed and translated. Significant statements were quoted verbatim to substantiate or refute important findings.

Results and Findings

Table 1: Socio-Demographic Data of Respondents (TBAs)

Age	**Frequency**	**Percentage**	**Educational Status**	**Frequency**	**Percentage**
30-39	17	22.7	None	47	62.7
40-49	27	36.0	Primary	09	12.0
50-59	15	20.0	Secondary	15	20.0
60-69	10	13.3	Post-secondary	04	5.3
70-79	06	8.0			
Mean = 48yrs					
Gender			**Religion**		
Male	45	60	Traditional	42	56
Female	30	40	Islam	27	36
			Christian	06	08
Other occupation			**Years of Experience as TBA**		
None	42	56			
Farming	33	44	5-15	16	21.3
			16-26	20	26.7
			27-37	35	46.7
			38-48	04	5.3

Source: Author's field work

A total of 75 TBAs were obtained using snow-ball sampling technique, out of which 45 were males and 30 were females. The mean age of the respondents was 48 years (30-79 years). Most (62.7%) of the TBAs had no formal education, very few (12%) had primary education, while 20% had secondary education and only 5.3% had post-secondary education. More than half (56%) practice traditional religion, 36% practice Islam, and 8% were Christians. All respondents are married and are Yoruba. Majority have had considerable number of work experience as TBA practitioner (minimum of five years). In addition to the practice as TBAs, some (44%) were also subsistence farmers as shown in table 1.

Table 2: TBAs' Perception of Causes of PPH

	LOCAL GOVERNMENT AREAS														
	OSOGBO					IFE EAST					IWO				
TBAs' PERCEIVED CAUSES OF PPH	IDI 1	IDI 2	IDI 3	IDI 4	IDI 5	IDI 1	IDI 2	IDI 3	IDI 4	IDI 5	IDI 1	IDI 2	IDI 3	IDI 4	IDI 5
Tone (e. g infection, impaired uterine contraction, prolonged labour)	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Tone: Number of pregnancies	--	--	--	--	++	--	--	++	--	--	--	--	--	++	--
Trauma (laceration of cervix)	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Tissue: Retained placenta or bit	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Thrombin: Improper clotting	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Potassium consumption	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Alcoholic drink	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Lime	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Excess dairy food e.g. Milk	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Blood supplement at 3rd trimester of pregnancy	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
AMTSL	++	--	++	++	++	++	++	++	++	++	++	++	++	--	++
Supernatural/preternatural causes	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Hereditary factor	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Stress during pregnancy	++	++	--	++	++	--	++	++	++	++	++	++	++	--	++

Key: ++ **support the statement;** **-- Not support the statement**
++/ -- ⇨ 5 Respondents

Table 2 shows the TBAs' perceived causes of PPH using In-depth Interview (IDI) and two Focus Group Discussion sessions (FGD) conducted among TBAs in each LGA to substantiate or refute responses from IDI. Responses obtained from IDI were reported alongside with the FGD reports.

Infection classified under atony was perceived by all TBAs during IDI as well as in FGDs as risk factor for PPH in the three LGAs. This was revealed from the statements obtained from TBA in IDI in Iwo LGA (extract 1) and FGD report from Ife East LGA (extract 2).

Extract 1:

> "Reason for PPH in some mothers after delivery cannot be explained adequately by healthcare providers because sometimes it is difficult to tell who among the mothers will experience PPH after delivery. However, based on my experience, it has been noted that mothers suffering from infection that has not been completely treated before delivery mostly end up with PPH after delivery".

Extract 2:

> "Infection can make a mother to be susceptible to PPH. When a pregnant mother is suffering from infection and is not properly treated before delivery, if she survives it and deliver the child, it may end up in PPH because the infection may not allow the uterus to contrast back to its original position in order to close off all the necessary blood vessels". (*Report from FGD with TBAs in Ife East LGA*)

Number of pregnancies also classified under atony is perceived to be one of the causes of PPH by respondents (TBAs). Though, this view was only supported by very few (15) respondents. This was substantiated with a statement made by one of the TBAs during IDI in Osogbo LGA as presented in extract 3.

Extract 3:

> "Number of pregnancies could be a risk factor for PPH if the mother does not receive quality antenatal care during pregnancy. Although, PPH also occur in first pregnancy, but the important thing about prevention of PPH or any other pregnancy-related complication is quality antenatal care. Every pregnant mother should consider herself at risk irrespective of the number of pregnancies and go for regular antenatal care and also report any problem associated with her pregnancy to her health-care provider as early as possible to avoid complications during delivery". (*IDI with a TBA in Osogbo LGA*)

On the contrary, in FGD sessions held in the same locality (Osogbo LGA), majority of the respondents had a contrary opinion to number of pregnancies being a risk factor for PPH. This contrary opinion was elucidated with statement presented in extract 4.

Extract 4:

> "Number of pregnancies has nothing to do with PPH. PPH can occur with any mother irrespective of the number of previous pregnancies. This is because it has been observed that PPH also occur in women with first pregnancies, while women who have had almost ten children previously may never experience PPH throughout delivery". (*Report from FGD with TBAs in Osogbo LGA*)

Trauma (laceration of the cervix) commonly called 'tear' is another cause of PPH identified by all TBAs in IDI and during FGD. It would be assumed that consumption of milk will help to supply necessary nutrient (protein) needed by both mother and the fetus. Contrary to this assumption, laceration was attributed to excessive consumption of milk, junks and chocolate drinks and other eating habit of pregnant mother which subsequently result to 'big babies'. Big babies according to TBAs can lead to tear of the cervix during delivery and if not properly managed could result to PPH. However, all TBAs claimed competence in management of traumatic cause of PPH with regular Antenatal Care (ANC).

The issue of dairy product such as milk (source of protein) could be seen as one of the areas of divergence between TBAs perception of causes of PPH and the medical perception because in healthcare facilities, pregnant mothers are counsel to take enough protein even till date of delivery. But TBAs see this

protein especially milk as a risk factor for PPH. The TBAs argument on this view is portray in IDI conducted with one of the TBAs in Iwo LGA (extract 8), and reports from FGD sessions conducted in Osogbo LGA (extract 9) and Ife East LGA (extract 10) respectively.

Extract 8:

> "PPH occur due to several factors, for instance, if a baby is too big to pass through the cervix, this may result in tear for the mother during delivery and tear if not properly managed can result to infection and consequently lead to PPH. However, tear due to big baby during delivery is not common with TBAs unless such mother does not receive proper antenatal care during Pregnancy from a qualified TBA. This is because part of our antenatal care includes treatment that will not make the child to be unnecessarily too big right from the womb". (*IDI with a TBA in Iwo LGA*)

Extract 9:

> "The type of nutrition a pregnant mother takes during pregnancy mostly affects the baby and consequently on the day of delivery. We do advise our clients to avoid taking junks and chocolate drinks. Even if they are to take chocolate drink, it should be minimal. (*Report from FGD in Osogbo LGA*)

Extract 10:

> "Though, milk is good to supply protein to both mother and fetus but the excessive consumption of milk during pregnancy affects the size of the baby and if the baby is too big without quality antenatal care, the mother may sustain injury popularly known as "tear" during delivery. Excessive tear without competent healthcare giver can result to PPH". (*Report from FGD in Ife East LGA*)

All TBAs were of the opinion that retained placenta known as 'Tissue' can also result to PPH. Extract 11 revealed a statement from a TBA in IDI to support this view.

Extract 11:

> "The birth of a child cannot be celebrated until the placenta is expelled. Thus, careful management of labour at this level is very important. A healthcare giver must be very careful at this stage to ensure that placenta are expelled within 30minutes after delivery and must examine the placenta after expulsion to be sure that no part of it is cut off and retained in the womb.

> Retained placenta is another cause of PPH and can lead to death". (*IDI with a TBA in Ife East LGA*)

Further report from the respondents (TBAs) revealed that majority (65) of the TBAs attributed Active Management of the Third Stage of Labour (AMTSL) as the major risk factor for retained placenta. Extract 12 revealed a statement from one of the TBAs' who attributed AMTSL as the risk factor for retained placenta.

Extract 12:

> "Retained placenta is one of the major causes of PPH and I am of the view that the system of child delivering in health facility which has to do with cutting and clamping of cord before expelling the placenta is the major reason why mothers die due to retained placenta. Process of childbirth is natural, after delivery of a child; it is advisable not to cut off the umbilical cord until the placenta is naturally delivered". (*IDI with a TBA in Ife East LGA*)

Though, literature revealed thrombin: coagulopathy (improper clotting of blood) as one of the causes of PPH, which was also supported by all TBAs. However, divergence occur as all the TBAs were of the opinion that consumption of certain substances such as smoking, alcoholic drink, potassium substance, lime juice, iron tablet/tonic and so on during pregnancy which were not revealed by medical literature could make pregnant woman susceptible to thrombin. This was revealed by the statements in IDI conducted with a TBA in Osogbo LGA (extract 13) and in FGD sessions in Osogbo LGA (extract 14) and Iwo LGA (extract 15) respectively.

Extract 13:

> "Smoking and alcoholic drinks are major risk factors for PPH because the two substances will continue to melt the blood and when the blood is too watery, clotting will be very difficult after delivery and it will also be difficult for the healthcare giver, whether a medical doctor or a TBA to stop the blood after delivery". (*IDI with A TBA in Osogbo LGA*)

Extract 14:

> "Some maternal death in our society today is largely due to some mothers' attitude. For instance, to avoid such complication as PPH, a pregnant woman need to distant herself from such substances as lime, potassium, strong wine, Gins and so on. All these prevent blood clotting which is necessary after childbirth, and if not quickly and easily controlled may result in death". (*FGD in Osogbo LGA*)

Extract 15:

> "Smoking during pregnancy is dangerous for both mother and baby. For the baby, it will affect the size of the baby, that is, the baby's growth and development during pregnancy will be affected. For the mother, it can lead to PPH after delivery because the blood could refuse to clot properly which is a necessary condition to prevent PPH after delivery". *(Report from FGD in Iwo LGA*)

Other area of divergent cause of PPH which TBAs believe could also result to thrombin is the use of Iron tablet/tonic especially during 3rd trimester of pregnancy which in most cases is given to pregnant mothers in health facilities even up to the day of delivery. All participants were of the opinion that the use of iron tablet at advance stage of pregnancy (7 months upward) is a risk factor for PPH. Reason given to support this assertion by study participants is that use of iron tablet/syrup at advance stage of pregnancy leads to excessive blood flow after delivery of a child and which may lead to death if unable to control immediately. This assertion is substantiated in an FGD report obtained from Iwo LGA (extract 16).

Extract 16:

> "When pregnant mothers are in their 7 months of pregnancies, we usually advise them not to take blood tonic/tablet especially from healthcare facilities except when extremely needed. Reason for this is to prevent too much blood flow after delivery". (*FGD with TBAs in Iwo LGA*)

All TBAs interviewed were of the opinion that PPH could also be hereditary, and could also result due to supernatural/preternatural forces which need to be appealed. A supernatural cause of PPH is associated with wrath of the gods as a result of violations of societal norms, while preternatural cause is defined as PPH which results due to malevolence of men. Majority (60) of the TBAs also perceived stress as a risk factor for PPH; while very few (15) perceive stress as a form of exercise necessary to aid labour.

TBAs' Treatment Techniques for PPH

Major treatment techniques identified for PPH by majority of the TBAs both in IDI and FGD is the use of *'Ebu'* -- a black powdery substance mixed with cold pap or taken with ordinary water to arrest bleeding. The powdery substances are reported to have been extracted from medicinal leaves, roots and herbs. Other PPH treatment techniques use by participants (TBAs) include preparing concoction for the client and sometimes the use of whole animal or animal part to appeal if PPH is perceived to be due to malevolence of man (preternatural cause). Result also reveals that if all methods fail, clients are referred to formal

healthcare facility for further examination and treatment. Reports from FGDs revealed similar treatment modalities for PPH as indicated in extract 17 and 18.

Extract 17:

> "One major treatment for PPH is to mix "Ebu" (black powdery substance) with cold pap and give the victim to drink. The moment she drinks this, she is expected to be alright. However, if this measure does not work, we prepare 'aseje' (concoction)" for the mother to eat. (*Report from FGD in Osogbo LGA*)

Extract 18:

> "We have our own method of arresting PPH which include the use of roots and herbs, "Ebu", concoction, and other methods. But if it is beyond our control, we refer such victim to health facility for further treatment which may require surgical operation". (*FGD in Ife East LGA*)

Some of the TBAs asserted that before they embark on any delivery, they make consultations with their oracles to know or pre-determine the possible outcome of the delivery. This was revealed in a statement during FGD with TBAs in Iwo LGA as shown in extract 19.

Extract 19:

> "Before I lay my hand on any delivery, I always consult my oracle to know if there is going to be any problem such as PPH or any other form of complication due to the handwork of the wicked. If there would be, I would have known and would appeal with whatever the person involve demands, sometimes whole animal or animal part before embarking on the delivery". (*FGD with TBAs in Iwo LGA*)

TBAs Perceived Consequences of PPH

Findings revealed that the consequence of PPH can be fatal if not appropriately managed. For those who survived it, they suffer permanent or long term morbidity such as organ failure, shock, oedema, respiratory disorder, infection, fever, vomiting, anaemia and anaesthesia. The greatest consequences of PPH include loss of fertility and sometimes death. This also gave support to the findings of Guidelines and Audit Committee of the Royal College of Obstetricians and Gynaecologists, 2017 who observed similar consequences of PPH. Other consequence of PPH is high financial costs if there is need for referral to healthcare facilities. Comment from one of the FGDs sessions on the consequence of PPH revealed thus:

Extract 20:

> "Serious case of PPH can make a woman lose her fertility. If it is beyond our control, the woman is referred to healthcare facility for proper management which may require surgery to arrest the

> bleeding in order to save her life. In most cases, such surgery has to do with the removal of the womb which implies that she can no longer be pregnant but will live a healthy and normal life, and can still enjoy sex with her husband". *(FGD in Ife East LGA on the consequence of PPH*)

Discussion of Findings

Despite the fact that the TBAs were not trained physicians, they were knowledgeable about the causes of PPH which were outlined literarily and which when compared were similar to causes identified in medical literatures. Thus, it could be concluded that participants (TBAs) were also knowledgeable and recognised the four Ts' (Tone, Trauma, Tissue and Thrombin) as major causes of PPH as revealed by literatures. The finding of this study therefore, substantiated Anderson and Etches (2007) and Chelmow (2011) who asserted that atony may result due to infection, impaired uterine contraction, prolonged labour and other causes.

Though, there were some areas of divergence which were contrary or not revealed by medical literature, such as in the case of number of pregnancies; while medical literature revealed that number of pregnancies could result to atony of the uterus (Royal College of Obstetricians and Gynaecologists, 2009; McLintock & James, 2011), majority 60(80%) of the TBAs did not perceive number of pregnancies as risk factor for PPH. In other words, the finding of this study does not give full support to the assertions made by Royal College of Obstetricians and Gynaecologists, 2009; McLintock & James, 2011) on the issue of numbers of pregnancies.

Tissue, also known as retained placenta is a significant factor in the aetiology of post-partum haemorrhage in medical literatures as well as among the study participants. However, it should be noted that while medical literatures (National Institute of Clinical Excellence (NICE), 2007; Begley, Gyte & Murphy, 2011) revealed that AMTSL could help to reduce PPH in clinical settings, majority 65(86.7%) of the study participants held a contrary opinion and thus, were of the view that AMTSL is a contributory factor to PPH especially with regard to the aspect which has to do with cutting and clamping of cord before expelling the placenta. Thus, in this regard, there is a need for further research to know the risk associated with early cord clamping and its implication in PPH management. While Traumatic causes of PPH were associated with lacerations, uterine rupture, and uterine inversion (Evensen & Anderson, 2014), the study participants though largely supported traumatic causes as risk factors for PPH but associated laceration with 'big babies' which is believed could result due to the feeding habits of pregnant women during pregnancy. Hence, while the consumption of dairy product such as milk would be seen as a source of protein needed by both the pregnant mother and the fetus in medical literature; for the study participants, consumption of such product (milk) especially at the third trimester of pregnancy was seen as one of the risk factors for big babies which could subsequently lead to laceration.

Thrombin (coagulopathy), a rare cause of PPH (Evensen & Anderson, 2014) is often connected with cocaine use and use of anticoagulants such as aspirin or heparin and other causes. Anticoagulants are agents that prevents the clotting of blood. This assertion by Evensen & Anderson (2014) was substantiated by the present study as all the study participants also considered substances such as potassium, lime, alcoholic drink, smoking as anticoagulants. That is, consumption of these substances during pregnancy prevent blood from clotting after child birth, hence, haemorrhage.

Other area of divergence obtained in the study compare to that of medical literature is the use of iron tablets at advanced stage of pregnancy even up to the date of delivery which is a common practice in the western system of healthcare. On the contrary, all the study participants, were of the view that use of iron tablets at the third trimester of pregnancy is a risk for PPH. This also calls for a further investigation.

The study reviewed that all the TBAs have ready-made solutions known as *"Ebu"* in the local language to arrest excessive bleeding. Aside from this ready-made preparation, the TBAs also claimed to have different and special preparations either in form of herbs, roots or concoction called *"Aseje"* which a woman must take in each of the nine months of pregnancy if she is to have a problem free conception. For instance, she must take the "medicine for preventing haemorrhage" in the early and last months of pregnancy. These practices have important implications on the health of the mother and her baby and it is also an important measure to reduce incidence of PPH as Studies (Manghan, Heim & Galazka, 2006; Khan *et al.*, 2006; Anderson and Etches, 2007) have shown that the majority of women who develop PPH have no identifiable risk factors. The study participants (TBAs) claimed that there is no obstetric complication beyond their competence. The confidence of these traditional birth attendants deserves further investigation.

Study also revealed that when all available treatment techniques for PPH failed, TBAs refer the victim to healthcare facility for further treatment which may require surgery as shown in FGD conducted with TBAs in Ife East LGA (extract 18). This implies that the allegation that TBAs do not refer patient to healthcare facility needs further verification.

Conclusion and Policy Implementation

Development is a multi-dimension concept, that is, concept with different meaning. In Sociology, development can be viewed as qualitative and quantitative improvement in standard of living of people in a country. That is, development is the full utilization of resources which results in a high quality of living standard for citizens. In other words, when available resources are used to improve the standard of livelihood of people in a particular society, then development has taken place. On the other hand, governance is "the process of decision-making and the process by which decisions are implemented (or not implemented). Good governance therefore, describes how public institutions conduct public affairs and manage public resources.

The health sector in Nigeria is one of the institutions which deserve good governance and development because it is often said that *"health is wealth"*, therefore, a healthy nation is a wealthy nation. The Nigerian health sector is characterized by two health systems: the traditional therapeutic system of care and the cosmopolitan western–style system. Even though the traditional is not officially recognized, studies have shown that it commands strong support in the society. Studies have also revealed that TBAs have existed even before the advent of modern medicine and this present study has also revealed that TBAs have been faced with challenges of PPH from time immemorial which has necessitated their ability to devise their own traditional or local treatment techniques for management of the complication.

Increasing women's access to skilled birth attendants is crucial to achieving the goal of reducing maternal mortality in Nigeria. However, in developing country such as Nigeria, where very few (38%) of births were attended by SBAs, and a country with high value for traditional healthcare, training TBAs how to manage PPH — the leading cause of maternal mortality, especially with the use of oral misoprostol to complement their local treatment techniques as obtained in other developing countries may help to reduce maternal death. The training will also be beneficial because studies have shown that the drug is less expensive, effective, requires no refrigeration and easy to administer in home birth setting even without trained medical practitioner. This will go a long way in achieving both quantitative and qualitative health care in Nigeria, and particularly in Osun State, and hence good governance and development in the health sector

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