



**UNIVERSITI PUTRA MALAYSIA**

***EFFECTS OF EDUCATIONAL INTERVENTION ON INTENTION TO  
PRACTICE PLANNED HOME BIRTH AMONG MIDWIVES IN SOKOTO,  
NORTHERN NIGERIA***

**AUWALU MUHAMMED**

**FPSK(p) 2019 25**



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By

**AUWALU MUHAMMED**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfillment of the Requirements for the Degree of Doctor of Philosophy**

**June 2019**



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## **DEDICATION**

The study is dedicated to God Almighty who gave me the health, strength, and wisdom to carry out the study.



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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**June 2019**

**Chairman : Lee Khuan, RN, PhD**  
**Faculty : Medicine and Health Sciences**

**Background:** In Nigeria, two-thirds of women give birth at home by traditional birth attendants and relatives. Home births attended by traditional attendants or family member relate with increased maternal and newborn death. Planned home birth has been empirically found to be safe for low-risk women, but, its practice among midwives is rarely examined in Nigeria. Unless midwives are enlightened about planned home birth, unplanned home births may continue to increase in Nigeria. Education programmes attempted to influence planned home birth practice in other contexts. However, randomised control trials are rarely used to evaluate the planned home birth educational programme. The aim of this study was to develop, implement and determine the effect of educational intervention on the midwives' intention to practice planned home.

**Methods:** This study used a parallel group randomised control trial to answer the research questions. The target participants were midwives working in the maternity units of the health facilities in Sokoto, Nigeria. A sample of 226 midwives (calculated using a power of 80% at 95% confidence interval,  $\alpha = 0.05$ , and attrition of 30% were recruited at random from the health facilities. The study used a reliable and validated questionnaire based on the construct of the theory of planned behavior for data collection. The data collection involves a series of steps: formal entry to the organisation, selection of participants, baseline survey, and assignment of participants to intervention and control groups using stratified block randomisation. The intervention group received planned home birth education. At the end of the educational session, an immediate data collection occurred in both groups. In a month and half, the intervention group received a phone call to check for understanding of the module. Both groups also received a reminder for the final data collection. At three months after the intervention, data were collected for the third time (three -months

follow-up). The control group maintained the usual care during the study. However, at the end of the data collection, the control group received similar planned home birth education classes. The data collection took about six and half months. Finally, data were managed and analysed using descriptive statistics, chi-square test, independent t-test, and linear mixed effects model to evaluate the effect of the intervention. The analysis involved adjusting for the baseline covariates.

**Results:** At the baseline, the results of independent t-test showed a similar (no difference) low to moderate levels of the midwives' attitude, norm, perceived control, knowledge, and intention to practice planned home birth ( $p > 0.05$ ). The test of fixed effect, using linear mixed effect model showed significant main effects of the planned home birth education, time, and their interaction on the midwives' intention, attitude, norm, perceived behavioural control, and knowledge of planned home birth ( $p < 0.001$ ). The univariate test of within-group effects showed a significant positive change in the level of intention, attitude, norm, perceived behavioural control, and knowledge of planned home birth in the intervention group ( $p < 0.001$ ). However, midwives in the control group had no significant change in the level of the study outcomes ( $p$ -values  $> 0.05$ ). An adjusted between-group comparison after the intervention suggested that the planned home birth education group had a stronger level of intention to practice planned home birth ( $p < 0.001$ ) compared with the control group. Moreover, the midwives in the intervention group had a more positive attitude ( $p < 0.001$ ), and positive norm ( $p < 0.001$ ) compared to the midwives in the control group. Similarly, midwives in the planned home birth intervention group had a greater positive behavioural control of planned home birth ( $p < 0.001$ ) compared to the control group after the intervention. Finally, the knowledge of planned home birth after the intervention was found to be higher among the midwives who received planned home birth education ( $p < 0.001$ ) compared to the midwives in the control group. The findings may contribute to the midwifery model of care, and complement the health care stakeholders' effort for the integration of planned home birth in the conventional maternity system.

**Conclusion:** Planned home birth multi-strategy education is effective in informing and improving midwives' positive attitude and norm, perceived behavioural control, knowledge, and intention to practice planned home birth for low-risk women. Health system administrators, policymakers, and the researchers may use these strategies to engage midwives in skilled birth attendance at home.

**Keywords:** Choice behaviour, education, home childbirth, intention, midwives,

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KESAN INVERVENSII PENDIDIKAN TERHADAP HASRAT UNTUK  
MENGAMALKAN KELAHIRAN TERANCANG DI RUMAH DALAM  
KALANGAN BIDAN DI UTARA NIGERIA, SOKOTO**

Oleh

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**Latar belakang:** Di Nigeria, dua pertiga kelahiran di rumah adalah dilakukan oleh atendan kelahiran tradisional dan juga oleh saudara mara. Kelahiran tersebut berkaitan dengan pertambahan bilangan kematian ibu dan bayi baru lahir. Walaubagaimanapun, kajian empirikal menemui kelahiran terancang di rumah adalah selamat bagi wanita berisiko rendah, tetapi pengamalannya dikalangan bidan di Nigeria, amat jarang dikaji. Kelahiran oleh kakitangan (bidan) tidak terlatih mungkin akan terus bertambah, melainkan sekiranya bidan-bidan ini diberi pencerahan tentang kelahiran terancang. Program pendidikan untuk mempengaruhi amalan kelahiran terancang di rumah telah dilakukan di dalam konteks yang lain. Walaubagaimanapun, penilaian bagi program pendidikan kelahiran terancang di rumah jarang dilakukan melalui kajian rawak terkawal. Kajian ini adalah untuk membangunkan, melaksana dan menentukan kesan intervensi pendidikan terhadap hasrat untuk mengamalkan kelahiran terancang di rumah dalam kalangan bidan.

**Metodologi:** Kajian ini menggunakan kajian rawak terkawal (parallel group) bagi menjawab persoalan kajian tersebut. Peserta sasaran adalah bidan-bidan yang bekerja di unit bersalin di fasiliti-fasiliti kesihatan di Sokoto, Nigeria. Sampel sebanyak 226 bidan (dihitung berdasarkan kuasa 80% dengan selang keyakinan 95%,  $\alpha = 0.05$ , serta attrition 30%) telah direkrut dari fasiliti-fasiliti kesihatan secara rawak. Kajian ini menggunakan borang soal selidik yang mempunyai kesahan dan kebolehpercayaan berdasarkan teori tingkah laku terkawal (*Theory of Planned Behaviour*) untuk pengumpulan data. Proses pengumpulan data melibatkan beberapa langkah bersiri: kemasukan rasmi ke dalam organisasi; pemilihan peserta; tinjauan garis pangkal, dan; memperuntuk peserta ke dalam kumpulan intervensi dan kawalan, menggunakan kaedah perawakan blok berstrata. Kumpulan intervensi menerima modul pendidikan berkenaan kelahiran terkawal di rumah. Pada penghujung sesi modul pendidikan,



pengumpulan data dilakukan ke atas kedua-dua kumpulan. Kumpulan intervensi juga dihubungi dalam selang masa enam minggu, untuk memastikan mereka memahami modul tersebut. Kedua-dua kumpulan juga menerima peringatan berkaitan pengumpulan data terakhir. Data kemudiannya dikumpulkan buat kali ketiga (susulan selepas tiga bulan). Kumpulan kawalan mengekalkan rawatan seperti kebiasaan sepanjang tempoh kajian. Walaubagaimanapun, pada penghujung pengumpulan data, kumpulan kawalan menerima kelas 'pendidikan kelahiran terkawal di rumah' yang sama. Pengumpulan data telah mengambil masa selama enam bulan setengah. Analisa statistik deskriptif, ujian-t sampel tidak bersandar dan model *linear mixed effects* (LME) digunakan untuk menilai kesan intervensi pendidikan. Analisa melibatkan penyesuaian mengikut garis dasar kovariat.

**Dapatan:** Pada peringkat garis dasar, dapatan daripada ujian-t sampel tidak bersandar menunjukkan tahap sikap, norma, tanggapan terhadap kawalan, pengetahuan dan hasrat untuk mengamalkan kelahiran terkawal di rumah adalah sama (tiada perbezaan) pada tahap rendah ke sederhana ( $p>0.05$ ). Ujian bagi kesan tetap (*fixed effect*) menggunakan model LME menunjukkan terdapat kesan yang signifikan antara intervensi pendidikan kelahiran terancang di rumah, masa dan hubungkaitnya ke atas hasrat, sikap, norma, tanggapan terhadap kawalan, pengetahuan tentang pengamalan kelahiran terkawal di rumah ( $p<0.001$ ). Ujian univariat (dalam kumpulan) menunjukkan perubahan positif pada tahap hasrat, sikap, norma, tanggapan kawalan sikap, dan pengetahuan tentang kelahiran terancang di rumah bagi kumpulan yang menerima intervensi ( $p<0.001$ ). Manakala, bidan-bidan bagi kumpulan kawalan tidak menunjukkan perubahan signifikan ( $p>0.05$ ). Perbandingan antara kumpulan (diselaraskan) selepas intervensi menunjukkan kumpulan yang menerima intervensi pendidikan kelahiran terancang mempunyai tahap hasrat untuk mengamalkan kelahiran terancang yang lebih tinggi ( $p<0.001$ ) berbanding kumpulan kawalan. Sementara itu, bidan di dalam kumpulan intervensi juga mempunyai sikap yang lebih positif ( $p<0.001$ ) dan norma positif ( $p<0.001$ ) berbanding bidan di dalam kumpulan kawalan. Selain itu, kawalan sikap yang lebih positif ( $p<0.001$ ) terhadap kelahiran di rumah juga ditemui, berbanding kumpulan kawalan, selepas intervensi. Seterusnya, pengetahuan mengenai kelahiran terancang di rumah juga didapati lebih tinggi dikalangan bidan yang menerima intervensi pendidikan ( $p<0.001$ ) berbanding bidan dalam kumpulan kawalan. Kesemua dapatan ini mungkin boleh menyumbang kepada model penjagaan bagi bidan, serta melengkapi usaha pihak berkepentingan untuk mengintegrasikan kelahiran terancang di rumah dalam sistem bersalin konvensional.

**Kesimpulan:** Pendidikan multi-komponen kelahiran terancang adalah strategi yang efektif untuk memaklumkan dan meningkatkan sikap positif dan norma bidan, tanggapan kawalan sikap, pengetahuan dan hasrat untuk mengamalkan kelahiran terancang di rumah bagi wanita yang berisiko rendah. Pihak pengurusan, penggubal polisi, serta penyelidik dalam bidang sistem kesihatan mungkin boleh menggunakan strategi tersebut untuk melibatkan bidan sebagai atendan terlatih bagi kelahiran di rumah.

**Kata kunci:** pemilihan tingkahlaku, pendidikan, kelahiran di rumah, hasrat, bidan,

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## LIST OF ABBREVIATIONS

AAP	American Associations of Paediatricians
ACOG	American Congress of Obstetricians and Gynaecologist
CAM	Canadian Association of Midwives
CNMs	Certified Nurse-Midwives
CMs	Certified Midwives
RCM	Royal College of Midwives
NPC	National Population Commission
ICF	International Classification of Functioning, disability and Health
PHB	Planned home birth
PAPHB	Provider Attitudes towards Planned Home births
AWHONN	Association of Women Health, Obstetrics and Neonatal Nurses
TBA	Traditional birth attendants
TPB	Theory of planned behaviour



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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Planned home birth (PHB) is defined as a birth that takes place when the pregnant woman who chooses to give birth at home is found eligible (based on evaluation of medical, obstetric, and environmental criteria); and is attended by a midwife who is working in a health care system that gives access to specialised personnel, equipment, and/or hospitalisation when it is necessary (Vedam, 2003). PHB model is not to discourage hospital-based delivery but rather to improve the safety and quality of home birth practices in Sub-Saharan Africa (Dayyabu et al., 2018). In addition, midwife assisted PHB is to maximise community involvement, respect their cultural beliefs and practices, and reduce perinatal morbidity and mortality through increasing low-risk PHB and referrals of high-risk women to hospitals (Dayyabu et al., 2018).

Globally, the situations of PHB vary with contexts. The highest rate of PHB practice is in the Nordic countries (Lindgren, Kjaergaard, Olafsdottir & Blix, 2014). In Denmark, PHB is funded publicly, and guidelines for PHBs are also available. Similarly, in Norway and Iceland, PHBs are partly paid by taxes and there are guidelines to regulate the service. However, in Finland and Sweden, women pay for the PHB themselves and there are no national guidelines available (Lindgren et al., 2014). Furthermore, in England's maternity services, there is support for a PHB practice (Carter, 2012; O'Connell, Richley, & Williams, 2012). In Canada, 25 to 30% of midwifery clients had PHB and there is a compensation scheme from the government (Vedam, Stoll, Schummers, Rogers, & Paine, 2014a). PHB practice is limited in the developing countries, as reported in Bangladesh (Ahmed & Jakaria, 2009) and South Africa (Ehrhardt, Sheldon, & Littlejohn, 2017).

The PHB practices among midwives in Nigeria were reported from the perspective of women. In a cross-sectional study in Shagamu, southwestern Nigeria, out of 80% of home births recorded, 67% were planned by the women (Adelaja, 2011). However, only 13.40% of the women had midwives in attendance (Adelaja, 2011). Bukar and Jauro (2013) found that out of the 49% women delivered at home in Maiduguri northern Nigeria, TBAs attended 99 (50.80%), midwives/nurses assisted 31 (15.50%), and 33.2% of the women were attended by the relatives (Bukar & Jauro, 2013). As in Adelaja, the midwives assisted home birth was possibly not planned from health facilities. In a teaching hospital of Sokoto, 52% of the women who failed to deliver in hospital after attending antenatal clinic, gave birth at home. It was reported that midwives attended 60% of the home deliveries, but it was not clear whether these were planned at the health facility (Ekele & Tunau, 2007). Both authors suggested a culturally acceptable change to include PHB.

Previous studies highlighted some of the factors impeding or facilitating PHB practice among midwives. These factors include, but not limited to knowledge about PHB, experience and attitude of a midwife towards PHB, peer and social pressure from people and relevant colleagues (McCourt, Rayment, Rance, & Sandall, 2012). In addition, midwife's confidence and resource constraints such as human and material resources for health may limit the midwives' practice of a PHB (Royal College of Midwives, 2011). The factors are further described in the next section.

Midwives in most contexts are expected to have knowledge of PHB (Carter, 2012; O'Connell et al., 2012). However, PHB practice requires teamwork, and there may be a need to continuously educate some midwives about PHB practice (Walsh, Common & Noble, 2014). In Nigeria, midwives are only taught concerning PHB (in the form of domiciliary practice) during their school training, but not as a continuous education programme—after graduation (Adeyemo, 2013). Unless midwives are aware of the need to plan a home birth for women (who prefer PHB), the rate of unplanned home birth in Nigeria, especially in the north, may remain the same or even increase (Bolaji & Nosakhare, 2014). Therefore, an educational programme may enhance the role of midwives in giving support to women who choose PHB.

Furthermore, there is a contextual difference regarding midwives' attitude towards women who prefer a PHB. Studies in Canada and UK suggest that midwives seem to be positive towards every woman in the maternity cycle, including those who preferred PHB (Royal College of Midwives, 2011; Vedam et al., 2014a). However, in Nigeria, the attitude of most nurses and midwives to women during labour is unfavourable (Adeyemo, 2013), especially women who choose a home birth. A study in Bayelsa State, showed that some women shared their positive experiences in their relationship with midwives, but other women had experienced severe abuse and neglect from midwives (Onasoga, Opiah, Osaji, & Iwolisi, 2012). This kind of attitude may affect pregnant women's trust to discuss their choice of birthplace with a midwife (Adeyemo, 2013).

Another factor affecting PHB practice is the influence of other people in health facility and community. For example, midwives may think about other constraints, such as peer and social pressure (from other midwives, doctors, or hospital administrators), to support or not engage in PHB practice (Licquirish & Evans, 2016). Nevertheless, midwives would need the support of the health team and other administrators for effective PHB practice (McCourt et al., 2012). Conversely, studies regarding the midwives' experiences with colleagues in relation to PHB practice have not been reported in Nigerian context. However, anecdotal evidence indicated that midwives who provide PHB services might face some difficulties from their colleagues. The report may need to be verified.

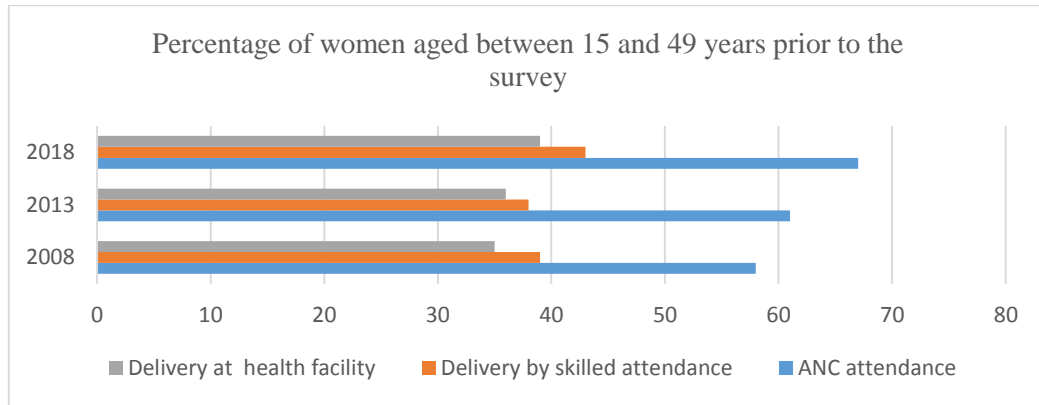
The midwives' level of confidence and perceived resources control may also facilitate their intention to offer PHB services. In some contexts, McCourt et al. (2012) reported that midwives showed a lack of confidence in PHB practice. Furthermore, resources such as an increase in the number of midwives, timely transport, and other equipment

are required to facilitate PHB practice among midwives (McCourt et al., 2012; Royal College of Midwives, 2011). However, these factors were not statistically linked with the intention to practice PHB.

One of the targets in Sustainable Development Goal 3 is to reduce maternal death (<70/100,000 live births) and newborn death (< 12 /1000 live births) by 2030 (World Health Organisation [WHO], 2019a). To achieve this goal, it becomes necessary to increase universal access to sexual and reproductive health care services, including skilled care at birth (WHO, 2019a). However, the skilled births (attended by a midwife / doctor/nurses) coverage (from 2012 to 2017) shows disparity between regions, because only 59 % of the births in the sub-Saharan Africa region are attended by skilled midwives compared to other regions with 68% to 99%. Unfortunately, maternal death is highest in sub-Saharan Africa (WHO, 2019b).

One approach to increase skilled birth attendance is to promote PHB practice among midwives (Dayyabu et al., 2018). In most developed world such as the US and Canada, midwives are the key providers of PHB (Vedam et al., 2014a). The midwife works closely with women to provide the necessary support, care, and suggestions during pregnancy, labour, and the postpartum period, to conduct deliveries and to provide immediate care for the newborn and the infant (International Confederation of Midwives [ICM], 2014). In Nigeria midwives (either nurse-midwives who had 18 months training after nursing or basic midwives who had only midwifery qualification) are also train to provide care in all settings. Ugo (2016) has found that bringing midwives close to the homes of clients in Nigeria would increase women's chance of skilled attendance at birth by 56%,  $p < 0.0001$ .

Unfortunately, In Nigeria, two-thirds of births are attended by TBAs and relatives (Adeyemo, 2013), and only 43% of births are assisted by midwives or doctors (National Population Commission & International Classification of Functioning, disability and Health [NPC & ICF], 2019; see figure 1). The situation is alarming in the northwestern part of Nigeria. According to the earlier report, 85% of women in Sokoto employed the services of TBAs at birth, which is the highest proportion in the country (NPC & ICF, 2014). Previous reports in Nigeria and Africa suggest that women in the region may choose to give birth at home due to inherent tradition that is difficult to change, negative experiences in hospital, and strong family decision (Shehu, Ibrahim, Oche, & Nwobodo, 2016; Sialubanje, Massar, Hamer, & Ruiter, 2015). Conversely, home birth without a skilled attendant may predispose women and newborns to complications or even death (Kirby, 2013).



**Figure 1.1 : Trend in Maternal Health Care in Nigeria 2018 (adapted from NPC & ICF, 2019). Overall, the antenatal clinic attendance increased within the 10 years of the survey, but the skilled birth attendance and health facility deliveries were almost static (less than 50 %)**

The revised health care policy in Nigeria gears towards improving health infrastructure, manpower distribution, health information system, and access to service delivery to attain Health for All Nigerians, including reduction in maternal morbidity and mortality (Federal Ministry of Health [FMOH], 2016). With regards to the infrastructure, about 30,098 primary health care facilities, 3992 secondary level facilities, and 83 tertiary level facilities are instituted (FMOH, 2016). Health manpower includes doctors, nurses, midwives, pharmacist, health information officers, and community extension workers. The government also reinforces the health information system to communicate among health care workers, but the level of compliance is still low. The primary health care is the fulcrum of health care which emphasises women empowerment, equitable access to needed health services, community participation, and delivery of a Minimum Health Care Package (FMOH, 2016). However, the availability of the health facilities does not reflect on the access to quality of care (FMOH, 2016).

Although women used some of the facilities for antenatal care, there is little improvement in the past ten years with regards to skilled attendance at birth (NPC & ICF, 2019). The lack of progress was compounded by poor distribution of health staff, lack of coordination among the three levels of government, limited standards and protocols of care, and inadequate institutional framework to check on the utilisation of health facilities and quality of care (FMOH, 2016).

To further improve skilled care at birth and reduce maternal and newborn death, about 2,622 midwives were posted to rural primary health care hospitals (Rand Health Project, 2015). The midwives were expected to provide intrapartum services to women in health facility, or their homes, through the health centres aiding referrals to hospitals when there is a need (FMOH, 2011). However, the scheme suffered some setbacks, including the inability to retain the posted midwives (Ibeh, 2015). Recently, Sokoto state has made an effort to increase human and material resources, an allowed a model

of care that encourages women's choice of birthplace in selected centres. While the efforts were for future integration of PHB, it is the hope of the ministry that midwives will support women in making an informed choice about the place of birth, thereby reducing the burden associated with unskilled birth attendants (Department of Health Planning, Research, and Statistics, Ministry of Health Sokoto, 2018). However, PHB integration is rarely successful unless midwives are willing to support the practice (Meroz, & Gesser-Edelsburg, 2015; Vedam et al, 2014a). This prompted the researcher to educate midwives concerning the PHB practice.

In conclusion, studies in the area of PHB practice are rarely reported among midwives in Nigeria, despite the empirical reports that most women in Nigeria give birth at home. In addition, previous intervention studies (in other contexts) influenced midwives' confidence, knowledge, communication, but not their intention to practice PHB. Therefore, the researcher intends to use the theory of planned behaviour to assess the midwives' intention to practice PHB, and to evaluate the effect of the intervention on their intention to practice PHB.

## **1.2 Problem Statement**

Unplanned home birth attended by TBAs has been linked with maternal and newborn complications and death in Nigeria (Bolaji & Nosakhare, 2014). In Nigeria, maternal mortality declined by 44% between 1990 and 2015 compared to the targeted fall of 75% (WHO, 2015). The maternal mortality ratio of 576 deaths per 100,000 live births reported in the 2013 NDHS was not much different from the 2008 NDHS ratio of 545 deaths per 100,000 live births (NPC & ICF, 2014). Hence, it is likely that birth at home in the hands of untrained personnel contributed to the nation's failure to meet its target for reducing maternal death by 2015 (Rand Health, 2013; NPC & ICF, 2019).

Unlike unplanned home birth, PHB is an evidence-based option for increasing access to midwives by every woman, everywhere, to reduce maternal and newborn morbidity and mortality associated with home births (Nove, Berrington, & Matthews, 2012; United Nation International Children Emergency Fund [UNICEF], 2014; WHO, 2009). In addition, for every 10,000 births assisted by the TBAs, 272 died, compared with 198 deaths for every 10,000 home deliveries attended by midwives (Koshy & Krishnan, 2012).

In the past, the attention of the health administrators and midwives in Nigeria was drawn to the need for a change in the approach to skilled care at birth. For instance, Onyadike (2012) observed that, in northern Nigeria, an effort to increase hospital births failed due to the high preference for home birth among pregnant women and their family. She also reiterated that home birth is an integral part of midwifery competency, and, thus, midwives are expected to practice it; however, they rarely do, possibly due to burnout, leading women to opt for TBAs (Onyadike, 2012). Hopefully, the introduction of midwife home-based care would be in line with PHB, a model that Nigeria could learn from Bangladesh and other countries (Onyake, 2012). Similarly,



Modupe and Chigozie (2014), in a critical review, observed that, in Nigeria, TBAs attend 1.35 million births per year, while hospital births remain static due to women and family demand for home birth. The authors maintained that the need for home birth by Nigerian women has implications for the leadership, curriculum, and competencies of midwives. A culturally acceptable change that respects women's choice of birthplace would address the current task shift of midwife's roles that integrate PHB, as in the developed world. In addition, Shehu et al. (2016) suggested that since most women in Sokoto may not be allowed to give birth in the hospital by their relatives, they should be encouraged to reach out to midwives when home birth is preferred. Their recommendation was in line with a previous prospective study in the same setting, which showed that midwives attended home births would have similar low maternal and newborn outcomes to that of hospital births (Ekele & Tunau, 2007). These studies might heighten the need to provide information to midwives regarding the PHB option for low-risk women.

The need for home birth services is emphasised in the Integrated Maternal, Newborn, and Child Health (IMNCH), adopted by the Nigerian government to save the lives of women and newborns. The continuum of care in IMNCH requires the provision of intrapartum services to women at home, and the creation of better linkages between the home and health facilities (Chukwu, 2014; FMOH, 2011). It was found that community-based care and healthy home birth practices could possibly save over 90,000 babies each year (FMOH, 2011). Recently, the Nursing and Midwifery Council of Nigeria (NMCN) intensified the need to understand the evidence regarding the preference of the women and family for the PHB option. The ultimate goal is to ensure that all births are attended by trained birth attendants in all settings, particularly by midwives. The Council is the only federal government agency that regulates nursing and midwifery practice in Nigeria. Accordingly, the Council has reaffirmed that the domiciliary practice (which involves the provision of home birth services) is a community component of midwifery practice. The midwives were to update and maintain their competency, provide evident and accessible information, and respect a woman's choice of birthplace. Therefore, a properly attended PHB may ensure safe delivery, provide data to evaluate PHB outcomes in Nigeria, bridge the gap between the theory and practice of midwifery, and promote an informed choice of birthplace (NMCN, 2017).

In Sokoto, the Ministry of Health attempted the training of TBAs and community extension workers in basic maternity care. However, the government realised that the training of TBAs or non-skilled attendants will not improve maternal health, because, most TBAs failed to refer cases to health facilities. In addition, some environmental health officers often misused drugs (oxytocin), and applied unnecessary manipulations to hasten delivery, which resulted in complications, such as ruptured uterus and postpartum haemorrhage. Although the recent plan is to ensure that women have access to skilled midwives in all settings, the major challenge is getting the midwives to provide home birth services. The challenge arises as most midwives dwell in the metropolitan secondary and tertiary hospitals, creating more workload for the midwives in the lower level of care (Department of Health Planning, Research, and Statistics, Ministry of Health Sokoto, 2018). Therefore, the growing concern about

skilled attendants at birth in all settings might indicate the need to design an intervention, and inform midwives about PHB practice for the low-risk women who preferred home delivery.

However, in Nigeria, there is limited access to midwives' services at birth, and most women choose to give birth at home in the hands of TBAs and relatives (Kirby, 2013; Muhammed, Donkor, & Naab, 2016; NPC & ICF, 2019). Data from the National Demographic Health Survey indicate that hospital births were 39% and that midwife's assisted birth were 43% (NPC & ICF, 2019). The majority of the births that take place at home were not planned at the health facility. Consequently, TBAs and relatives supervised most home births (Rand Health, 2013). The TBAs may not have the skills to manage birth complications or refer cases when necessary (Rand Health, 2013). Unfortunately, Sokoto has the highest rate of births supervised by the TBAs (95%) (Bolaji & Nosakhare, 2014; NPC & ICF, 2014). If these home births were planned and attended by the midwives and other skilled providers, Nigeria could have improved the safety of home births, and, probably, met its target for reducing maternal death, as achieved by other countries around the world (Akinwaare & Adejumo, 2015).

There are also existing research and practice gaps regarding PHB among midwives in Nigeria. Although some studies reported that few midwives attended home births, the findings were based on the women's reports, and it was not clear whether these were PHBs. Midwives rarely discuss with women about the choice of birthplace, possibly due to a negative attitude (Adeyemo, 2013), inadequate knowledge about PHB, comfort with hospital norm, and unwillingness or lack of confidence in their ability to provide PHB services (Henshall, Taylor, & Kenyon, 2016). Thus, it would be interesting to identify the factors that may influence PHB practice from the perspective of midwives in Nigeria. Another concern is that when midwives ignored PHB practice, women might not be aware of the options available (Henshall et al., 2016). Consequently, when women are not given the opportunity to discuss their PHB choice, they will continue to take the risk and seek the services of TBAs or their relatives who have no training and are unfamiliar with the referral networks (Bolaji & Nosakhare, 2014). Therefore, it is necessary to encourage midwives to include PHB discussion and provide support for low-risk women (who preferred home birth), thereby assisting women to make an informed choice about the place of birth. Moreover, integrating the PHB option will promote a model of care that meets the needs of the women and the society and improves the maternal and newborn outcome at birth.

The current maternity practices may need to be changed to meet the women's demand for skilled care at birth in all settings. An educational intervention might be helpful to promote midwives' willingness to practice PHB. Previous correlational studies suggested an educational programme to influence midwives' attitude towards PHB practice (Licqurish & Evans, 2016; Onosoga et al., 2012; Vedam et al., 2014a). The TPB has been widely used to understand, predict, and modify the determinants of health behaviours. The theory emphasises modifying the determinants of behaviour, such as the attitude, subjective norm, and perceived control. However, the role of

knowledge as a determinant of intention has not been captured by the TPB. Therefore, there is a need to design an intervention targeting the TBP constructs and the knowledge of PHB to increase midwives' support for PHB integration.

Previously, PHB educational interventions focused more on the midwives' clients (Henshall et al., 2016). Although a few intervention studies improved the confidence, knowledge, and communication skills of midwives in terms of PHB practice (Komorowski, Andrighetti & Benton, 2017; Kumar, Nestel, Stoyles, East, Wallace, & White, 2016), it did not alter their intention to practice PHB. Furthermore, the major problems of these intervention studies were the lack of methodological and statistical rigour to make valid inferences about the effectiveness of their interventions. For instance, some of the gaps identified include the lack of a control group, no report on the baseline score, no details of the data analysis or adjustment for potential confounders, and the use of descriptive statistics to judge the success of the programme.

Therefore, there is a need to use a randomised control trial to implement and assess the effect of educational intervention on midwives' intention to practice PHB. The findings of this study will enable a valid conclusion that may support decision-making among midwives and other stakeholders for the integration of PHB discussion and practice in Sokoto hospitals and Nigeria at large.

### **1.3 Significance of the Study**

This research will contribute to the maternity model of care that is woman centred and inform midwives, stakeholders, and policymakers about the need for integration of PHB into the conventional maternity care in Sokoto. The findings of this study may have a significant impact on nursing education, practice, research, administration, and policymaking in maternity.

For nursing education, the study would add to the theoretical knowledge of PHB practice. Thus, the PHB educational materials used in this study may be useful to nursing and midwifery educators in teaching and learning among students and staff regarding the concepts and practice of PHB. In addition, the learning materials may be reviewed and incorporated into the domiciliary and community midwifery curriculum.

In nursing practice, first, the study process (training component) and outcome may inform midwives about the need to respect a woman's choice of birthplace. Including the PHB option for women in maternity may change the model of care and foster a network of collaboration that will promote safe motherhood. Secondly, the study will provide learning materials to midwives for safe and effective home birth practice (promoting better outcomes for the low-risk women who preferred home birth). For example, the training module may be used to continuously educate midwives concerning a proper PHB practice.

Furthermore, this study uses a theoretical approach and intervention design to investigate issues concerning PHB, filling the gap left by other researchers who used surveys and natural observation to observe midwives' responses to PHB practice. While the questionnaire used in this study may help future researchers understand the factors that affect midwives' intention to practice PHB, the intervention described in this study may allow for replication in Nigeria and other contexts to improve midwives' intention to offer PHB services.

Nursing/ Midwifery leadership and policymakers/stakeholders in maternity care would appreciate the findings from the study, and understand what may influence the midwives' practice of PHB. Specifically, the study will inform health services administrators concerning the need to provide more midwives in the lower level facilities and other equipment required to attend a PHB. Moreover, this study will inform the government that if a PHB policy is formulated, midwives are likely to support low-risk women who prefer a PHB. However, the policymakers will be informed to emphasize on midwives' collaboration and team approach with doctors and other maternity caregivers for the successful implementation of PHB.

The study will also benefit the Nigerian community in a number of ways. First, if the midwives support PHB practice, most women and their families will make an informed decision regarding choice of birthplace (home or health facility). Secondly, PHB practice will increase community participation in promoting skilled attendance at birth. Finally, an increase in the midwives' practice of a PHB may reduce maternal and newborn complications and death.

#### **1.4 Research Questions**

1. What is the baseline level of intention to practice PHB between the intervention and control groups of midwives in Sokoto?
2. What is the baseline mean attitude, subjective norm, perceived control, and knowledge of PHB between the intervention and control groups of midwives in Sokoto?
3. What is the effect of PHB education on the intention to practice PHB within and between the intervention and control groups of midwives at baseline, post-intervention, and the three-month follow-up?
4. What is the effect of PHB education on the attitude, subjective norm, perceived control, and knowledge of PHB within and between the intervention and control groups of midwives at baseline, post-intervention, and the three-month follow-up?

## **1.5 Objectives**

**1.5.1 General Objective: The purpose of this study is to determine the effect of PHB educational intervention on the intention to practice among midwives in Sokoto.**

### **1.5.2 Specific Objectives:**

The specific objectives are as follows:

1. To determine the baseline level of intention to practice PHB between the intervention and control groups of midwives in Sokoto.
2. To determine the baseline mean attitude, subjective norm, perceived control, and knowledge of PHB between the intervention and control groups of midwives in Sokoto.
3. To determine the effect of PHB education intervention on the intention to practice PHB within and between the intervention and control groups of midwives at baseline, post-intervention, and the three-month follow-up, after controlling for the covariates.
4. To determine the effect of PHB education on the attitude, subjective norm, perceived control, and the knowledge of PHB within and between the intervention and control groups of midwives at baseline, post-intervention, and the three-month follow-up, after controlling for the covariates.

## **1.6 Hypothesis:**

The study findings may answer the following hypotheses:

1. There will be a significant difference in the mean total score for intention to practice PHB between the intervention and control groups after an educational intervention.
2. There will be a significant difference in the mean total score for attitude towards PHB between the intervention and control groups after an educational intervention.
3. There will be a significant difference in the mean total score for subjective norm for PHB between the intervention and control groups after an educational intervention.
4. There will be a significant difference in the mean total score for perceived control of PHB between the intervention and control groups after an educational intervention.
5. There will be a significant difference in the mean total score for knowledge of PHB between the intervention and control groups after an educational intervention.

6. There will be a significant difference in the intention to practice PHB between the baseline, post-intervention, and the three-month follow-up (within groups).
7. There will be a significant difference in the knowledge, attitude, subjective norm, and behavioural control between the baseline, post-intervention, and the three-month follow-up (within groups).
8. There will be an interaction effect of PHB education and time on the knowledge, attitude, subjective norm, perceived control, and intention to practice PHB.



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## BIODATA OF STUDENT

Auwalu Muhammed was born in Bukkuyum, Zamfara State, Nigeria on the 16th May, 1978. He attended his primary school at Sami Gomo model Primary School Zuru in Kebbi State, and then proceed to junior secondary School at Government Day School Zuru. Thereafter, he attended and finished his senior secondary education at Government Science College Birnin Kebbi, Kebbi State. In the year 2000, the candidate joined Usmanu Danfodiyo University Teaching Hospital (UDUTH) where he was trained and graduated in 2003 as a Nigerian Registered Nurse. The candidate worked at General Hospital Moriki in Zamfara State for two years to gain clinical experience before enrolling for a degree in Nursing. He completed his Bachelor of Nursing Sciences degree in March, 2011, at Ahmadu Bello University Zaria, Nigeria. In addition, he also passed a midwifery professional examination in the same institution. After working for about two years in a maternity unit of his earlier place of work, he relocated to the School of Nursing (UDUTH), as a nurse tutor. Presently, the candidate worked in Usmanu Danfodiyo University, Sokoto as a lecturer. Auwalu had completed his Master of Science in maternal and child health nursing at the University of Ghana, Legon in 2014 before enrolling for a PhD in Nursing at Universiti Putra Malaysia.

## LIST OF PUBLICATIONS

### Published Article:

Muhammed, A., Khuan, L., Shariff-Ghazali, S. Said. S. Md., & Hassan, M. (2019). Predictors of midwives' intention to provide planned home birth services to low-risk women: A theory of planned behaviour approach. *Midwifery*, 73, 62–68.

### Article Submitted (Under reviews)

Muhammed, A., Khuan, L., Shariff-Ghazali, S. Said. S. Md., & Hassan, M. (2019). The validity and reliability of a Theory of Planned Behaviour questionnaire for assessing the midwives' intention to provide planned home birth services for low-risk women. *International Journal of Nursing Practice*, (Submitted on 28<sup>th</sup> June, 2019).

Muhammed, A., Khuan, L., Shariff-Ghazali, S. Said. S. Md., & Hassan, M. (2019). Effect of randomised controlled educational intervention on midwives' intention to provide planned home birth services. *Journal of Midwifery and Women's Health* (Submitted on 10<sup>th</sup> July, 2019).

### Conference Proceeding

Muhammed A., Khuan L., Shariff-Ghazali S., Said S. M., & Hassan M. (2018). Effectiveness of vignettes strategy on the midwives' perceived behavioural control in providing planned home birth services to low-risk women: a randomised control trial. A paper presented at a Conference organised by the Malaysian Association of Education in Medical and Health Sciences (MAEMHS), at the Faculty of Medicine, Selayan Campus, November, 2018.



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