

# Teaching Guatemala Midwives About Postpartum Hemorrhage

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## ABSTRACT

**Purpose:** To evaluate the effect of a culturally sensitive teaching unit on traditional midwives' knowledge of nursing interventions to prevent and treat postpartum hemorrhage (PPH).

**Methods:** Sixteen midwives participated in a 1-day training program at a Refuge International Health Clinic in the remote town of Sarstun, Guatemala. The quasi experimental study used a one-group, pretest-posttest design. Researchers used a PPH Behavioral Checklist from the American College of Nurse Midwives (ACNM) to assess and compare knowledge of PPH interventions before and after the PPH teaching.

**Results:** The final analysis included 13 traditional midwives as the subjects. The culturally sensitive teaching improved traditional midwives' knowledge and skills about nursing interventions to manage PPH (pretest  $M = 1.385/8$ , posttest  $M = 4.846/8$ ).

**Conclusions:** Results of this pilot project suggest a culturally sensitive oral teaching in the primary language of the participants positively affects traditional midwives' knowledge and skills to manage PPH. Future training should be presented in a similar format to meet the needs of illiterate audiences in resource-poor settings.

**Keywords:** Postpartum hemorrhage; Midwives; Teaching.



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**P**ostpartum hemorrhage (PPH) is the leading cause of maternal death worldwide, accounting for one-quarter of all maternal deaths annually (Outlook, 2009). In Guatemala PPH is also the leading cause of maternal death, annually accounting for 53.3% of the maternal deaths (International Confederation of Midwives [ICM], 2009). One factor contributing to maternal death due to PPH is that Guatemalan traditional midwives, who attend most births, are unfamiliar with basic nursing skills to prevent or treat PPH (Lang & Elkin, 1997; Roost, Johnsdotter, Liljestrand, & Essen, 2004). The government encourages all midwives to attend training programs that have been in existence since 1955; however, there have been no documented changes in traditional midwives' knowledge and skills in this regard (Goldman & Gleib, 2003; Greenberg, 1982). Government classes are taught using written materials in Spanish, even though many traditional midwives cannot read and speak Mayan dialects rather than Spanish; the poor educational outcomes are, therefore, not a surprise (Hinojosa, 2004; Roost et al., 2004). Additionally, government training programs focus on the medical model supported by the World Health Organization, which encourages use of oxytocic medications and transferring patients with PPH to hospitals (Cosminsky, 1977; Goldman & Gleib, 2003; Maupin, 2008; WHO, 2006). Many traditional midwives cannot ever practice the medical model, however, because they live in areas lacking resources such as oxytocic medications and access to transportation to hospitals, as has been documented for the past 30 years (Cosminsky, 2001; Paul, 1975; Paul & Paul, 1975). Some indigenous patients also resist transfer to hospitals because they distrust hospital providers (Berry, 2006, 2008; Roost et al., 2004). Therefore, this study was designed to address the problem of developing an appropriate curriculum for Guatemalan traditional midwives that is culturally sensitive, presented orally (due to illiteracy), and provides PPH management techniques, which midwives can easily use in areas with minimal resources and limited access to healthcare facilities.

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## Background

### Civil War and Unrest

Historically, Europeans have dominated the indigenous Mayans since arriving in Guatemala during the 16th century. These European people are called "Ladinos," and they speak Spanish rather than the Mayan dialect. During the 19th and 20th centuries, the Ladino-dominated government and guerilla fighters maintained a civil war primarily concerning land issues (United Nations Historical Classification Commission, 2007). Unfortunately, indigenous people suffered nearly 83% of the casualties, giving them cause to distrust Ladinos (American Association for Advancement of Science, 2009). The 36-year civil war was the longest civil war in Central American history, lasting from 1960 until 1996. Resentment and distrust of the Ladinos remains strong among the indigenous peoples.

### What Traditional Midwives Know About PPH

Limited data exist about what Guatemalan traditional midwives know about PPH. Some traditional midwives have said that they acquire information from divine inspiration (Berry, 2006; Cosminsky, 2001; Paul, 1975). Likewise, little literature explains what interventions Guatemalan traditional midwives practice, if any, to address PPH, or what the pregnant women know or believe about interventions during childbirth. It has been reported that some indigenous women would rather die at home than go to a government hospital (Roost et al., 2004). Some midwives attribute obstetrical complications to the will of God, which cannot be questioned (Lang & Elkin, 1997). Additionally, no literature explains what types of teaching, if any, Guatemalan traditional midwives are likely to accept. As the government sponsored Spanish programs have clearly not been effective, or sensitive to the needs of the illiterate, Mayan-dialect speaking midwives, Lang and Elkin (1997) have suggested that a more effective learning paradigm for Guatemalan traditional midwives would be oral teaching in the native language with props, games, and songs to reinforce learning.

### Theory of Popular Education

The Theory of Popular Education provided a framework in the planning of this study and, particularly, the culturally sensitive teaching intervention (Freire, 2000). Associated with Brazilian Paulo Freire's work with illiterate adults in third world countries, Popular Education outlines ways to empower oppressed populations by encouraging them to become active contributors in the learning process. For Freire, education is never neutral but occurs in a social and political context. Freire maintains that true learning occurs through dialogue between inquiring equals. Therefore, the nurse educator serves as an expert resource rather than an authority figure. Freire heralds the importance of collective knowledge that emerges from dialogue, and suggests that knowledge is produced from dialogue is new to both the learner and the educator. Finally, Freire emphasizes that authentic learning requires not only dialogue but also action within a local context (Williams et al., 2005).

Popular education supports active learning and positive community change through collective problem solving and

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consciousness raising. Active involvement includes drawing on learners' experiences, learners as teachers, participation and reflection, facilitator as collaborator, respect of diverse learning styles and of learners' social situations, and learner-centered activities, such as role playing, small group discussions, games, and work groups (Health Outreach Partners, 2010).

### Home-Based Lifesaving Skills Curriculum

The American College of Nurse Midwives (2009) has developed a training program for healthcare providers in third world countries incorporating many of the learning strategies the Theory of Popular Education promotes. The Home-Based Life-Saving Skills (HBLSS) curriculum has 12 units covering preventative and lifesaving skills for mothers and their babies. Midwives have field tested the curriculum in several third world countries with great success (Dynes et al., 2009; Fullerton Killian, & Gass, 2005; Sibley, Buffington, & Haileyesus, 2004; Sibley, Buffington, Tedessa, & McNatt, 2006) Ultimately, integrating the Theory of Popular Education with the HBLSS curriculum in low-income, low-literacy settings may empower traditional healthcare providers while improving their knowledge and skills, thus enhancing health outcomes for mothers and babies (Roost et al., 2004).

## Design and Methods

This study employed a pretest-posttest design to determine the effect of the teaching intervention.

### Setting

This 1-day pilot project took place at a Refugee International Health Clinic in the remote village of Sarstun, located on the Sarstun River, the boundary between Guatemala and Belize, in the eastern central part of Izabal. Refugee International is a nonprofit organization founded by two Texas nurses in 2001. It has four health clinics in Guatemala.

Refuge International located a health clinic in Sarstun because this community is one of the most remote areas in Guatemala and has some of the poorest health conditions in the country. No roads lead in or out of Sarstun; visitors must access the community by boat. Sarstun is a 2-hour boat ride from Puerto Barrios, the capitol city of Izabal. The Sarstun health clinic is in a 3,000-square-foot stucco building with a thatched roof. The health clinic has electricity, running water, bathrooms, and showers. The first floor has six examination rooms, two operating rooms and a pharmacy. The second floor has a 12 by 18 feet conference room where the teaching took place,

three private bedrooms and a large, covered open-air area where nearly 50 people can sleep comfortably.

### Sample

For the past 8 years Refugee International staff has been working with a group of approximately 15 midwives who live in eight small communities surrounding Sarstun. Refugee volunteers have given the traditional midwives birth supplies and are building relationships with them, listening to their stories and assessing their needs. One identified need is education on numerous topics related to safe pregnancy and birth. Because PPH is the leading cause of maternal deaths, the primary investigator decided the initial teaching should be prevention and management of this complication. Any traditional midwife who spoke Kek Chi or Spanish and was willing to come to the clinic was a potential participant.

### Procedure

Several weeks before the scheduled training, a Guatemalan Refugee International employee sent a message up the mountains surrounding Sarstun to the midwives announcing the event. On the day of the training midwives from four of the eight communities came to the clinic. Midwives from two highland villages came down out of the mountains and gathered along the river to wait for the boat from Refugee International to collect them and take them to the clinic. Midwives from Sarstun and San Juan in the lowlands walked a short distance to the clinic.

Upon arrival at the clinic at 8 a.m. investigators informed midwives about the study and teaching, and invited midwives to complete Background Data Sheets with the help of two Kek Chi translators. Midwives did not need to provide signed consents because a university Internal Review Board granted the study an exempt status. Each participant completed the pretest by demonstrating the steps a midwife would take to manage PPH on a female volunteer (Table 1). A research assistant observed the demonstration and checked off steps the participant demonstrated on the PPH Behavioral Checklist.

At the end of the 1-hour teaching the midwives completed a Demographic Data Sheet and again demonstrated the steps for noninvasive management of PPH on a volunteer. Three hours passed between the pretest and the posttest. The research assistant marked on the PPH Behavioral Checklist the skills midwives demonstrated. To thank the midwives for participating in the teaching and pilot study, researchers gave midwives medical supplies, such as blue towels, iodine, examination gloves, and umbilical cord tape. Researchers asked midwives to make mental notes of cases of PPH they encountered during the next 3 months.

**Table 1.** Steps Taught and Tested on Pretest and Posttest From the ACNM-Modified Behavioral Checklist

1. Call for help	3b. Place baby on breast to nurse	6. Put pad firmly between legs
2. Help squat, pass urine	3c. Roll nipples	7. Put nothing in birth canal
3a. Rub womb	4. Put baby skin to skin with mom	8. Refer to a hospital
	5. Do two-hand hold of uterus	

Researchers plan to discuss information midwives share during the next Sarstun clinic and future studies about PPH. Volunteers then served midwives lunch and at 4 p.m. transported them by boat back to their respective return sites on the foot of the mountain.

### Content of Culturally Sensitive Teaching

Content for the teaching came from the PPH unit in the HBLSS. The teaching included

- Basic anatomy lesson using props such as a pelvis, uterus, and placenta. The primary investigator explained the uterus is a muscular sack that houses the baby, and must shrink back down to its pre-pregnant size to avoid PPH.
- Placing a baby attached to a placenta inside a cloth bag representing a uterus, and putting the cloth bag inside a soft pelvis model so midwives could visualize the birth process.
- Reinforcement that no steps for addressing PPH should be taken until after the placenta detaches from the uterus.
- Passing props around the room for midwives to examine and using the soft pelvis model to demonstrate one of the steps for addressing PPH: help squat and pass urine. The primary investigator taught midwives about the bladder's location in front of the uterus and, if the bladder is full, it can hinder the uterus's ability to shrink back down to its pre-pregnant size.
- Providing information about how much blood loss is too much after birth by showing the midwives a liter of water colored red with food coloring. The primary investigator then spilled half a liter of colored water onto blue towels in a bucket, explaining that half a liter of blood loss is an emergency and they should take mothers who lose this much blood to a hospital. Midwives passed the bucket around the room and took the towels in their hands to gain an understanding of the weight of too much blood loss.
- Teaching eight steps from the PPH Behavioral Skills Checklist to manage PPH, two steps at a time. After every two steps, the primary investigator asked midwives to roll play the steps and repeat back information from each step.
- Reinforcing learning by giving the midwives laminated "Take Action Cards" from the ACNM with pictorial descriptions of the PPH management to take home.

### Instruments

This study relied on three instruments: the PPH Behavioral Skills Checklist, a Background Data Sheet, and a Demographic Data Sheet. The primary investigator added skin-to-skin/chest-to-chest contact (Birth Kangaroo Care) between mother and newborn starting immediately after birth to the Behavior Checklist. The UNICEF/WHO (2009) strongly recommended Birth Kangaroo Care and breastfeeding within the first hour after birth in the Baby Friendly Hospital Initiative. Birth Kangaroo Care promotes release of maternal oxytocin (Matthiesen, Ransjo-Arvidson, Nissen, & Uvnas-Moberg, 2000), which facilitates uterine involution. The primary investigator designed the demographic and background data sheets based on a literature search about PPH and Guate-

malan traditional midwives. A judge panel of three experts established content validity of the data sheets and a Fog Index of 0.35. The Fog Index measures the readability of a writing sample. The resulting number is a rough estimate of the number of years of formal education required to understand the test on first reading. In other words, participants with less than 1 year of education should be able to understand passages with a Fog Index of 0.35.

### Data Analysis

The study relied on frequencies and measures of central tendency to analyze demographic and background data. Performance scores for the behavioral skills checklists (pre- and posttest) were the total number of steps marked as satisfactorily demonstrated on the pre- and posttests. The study measured change in level of knowledge as a comparison of mean pre- and posttest scores.

## Results

### Demographics

There were 16 traditional midwives: 12 from the highlands and four from the lowlands who traveled to the Refuge International Health Clinic to participate in the teaching and study. One attendee was a 16-year-old apprentice who could not participate in the study because of her age. Two of the lowland midwives were bilingual and served as translators rather than study participants. One midwife neglected to fill out the Background Data Sheet. The average age of the midwives was  $44.54 \pm 6.489$  years. Sixty-nine percent spoke Kek Chi, 15% spoke Spanish and 15% spoke both languages. Three midwives were literate, two from the lowlands and one from the highlands. Both Spanish-speaking midwives and one of the bilingual midwives were literate. Literate midwives read and write Spanish, not Kek Chi, as Kek Chi is primarily an oral language. All midwives reported that they felt valued in their communities. Participants had practiced midwifery for a mean of  $13.42 \pm 9.02$  years, yet they acknowledged managing PPH less than one time each. Approximately one-third of the midwives indicated they came to midwifery by attending a neighbor's birth, 23.1% by village election and 23.1% by apprenticeship. Only 7.7% of participants reported a spiritual calling to midwifery, but the calling was a secondary path instead of the primary path to becoming a midwife.

### Pretest/Posttest Scores

The mean score on the pretest was  $1.385 \pm SD 0.870$  (1-3). The mean posttest score was  $4.846 \pm SD 0.899$  (3-6). As the sample size in this study was not large enough to determine if this difference was significant, we are presenting only the mean raw scores, which are clearly indicative of a strong increase in knowledge after the educational intervention.

### Behavioral Skills

Before the training most midwives demonstrated only one or two of the eight steps on the PPH Behavioral Skills Checklist. All the midwives demonstrated a fundal massage and one-third of midwives demonstrated a two-handed hold of the fundus. Midwives also demonstrated massaging the patient's legs, lifting the patient's legs and giving the

patient herbs as means of treating PPH before the teaching. However, none of the latter interventions were on the PPH Behavioral Skills Checklist. The pretest responses provided insight into traditional midwives' practices in Guatemala.

After the culturally sensitive teaching most midwives recalled five of the eight steps on the PPH Behavioral Skills Checklist. Most frequently the midwives forgot the steps "call for help" and "put nothing in the vagina." Midwives did not receive credit for the later step unless they verbalized they would "put nothing in the vagina." Research assistants

wives the same number of years. These results call into question whether traditional midwives can count; this would be crucial information for future teachings. These findings also suggest a class structure, another characteristic to inform future teachings, in which highland midwives generally are uneducated and illiterate, and lowland midwives near Sarstun are educated and literate.

A final observation that compliments findings from other studies is that midwives are highly regarded in their communities (Cosminsky, 2001; Gleib & Goldman, 2000;

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randomly asked six midwives who did not state they would "put nothing in the vagina" if they would put anything in the vagina, and all six responded they would not. Still, these six midwives did not receive credit for this step as they did not spontaneously provide the answer, which became a limitation of this study.

## Discussion

During the culturally sensitive teaching, midwives were initially reluctant and stoical. When asked to repeat back steps to treat and prevent PPH, they would answer with blank looks. Asking midwives to stand up and demonstrate the steps to treat and prevent PPH during a role play exercise, however, facilitated involvement and retention of knowledge and skills as evidenced by improved posttest scores. Using humor during the role plays also helped engage midwives. For example, the primary investigator would lie back on a chair, take the demonstrating midwife's hand and plead with her by saying, "Help me, help me (Maria). I just gave birth and I am bleeding too much." Midwives then began to laugh and interact with facilitators. After several demonstrations, the primary investigator would say, "Oh boy, this is the fifth baby I have had today. I hope this one is a girl. I am tired of having boys." Again midwives would laugh and engage in the roll play. In this way, laughter became the universal language that helped bridge the cultural differences between rural, Mayan Guatemala midwives and those from the industrialized United States.

Demographic and background data confirmed literature published regarding characteristics of Guatemalan traditional midwives regarding literacy and Mayan dialect (Goldman & Gleib, 2003; Hinojosa, 2004; Roost et al., 2004). Information regarding age and number of years as a midwife also coincides with literature findings that midwives tend to be older and experienced (Lang & Elkin, 1997; Paul, 1975; Paul & Paul, 1975). However, years as a midwife was a questionable finding because the participant midwives from the same villages said they had been mid-

Goldman & Gleib, 2003). Classic studies done 30 years suggest that women are spiritually called to midwifery and are thus likely to reject interventions (Paul, 1975; Paul & Paul, 1975; Cosminsky, 1977). However, only one midwife who participated in this study said she was spiritually called to midwifery. This observation agrees with a more recent study that found younger midwives were less likely to be spiritually called to midwifery and more accepting of interventions (Cosminsky, 2001). A final important result was that all midwives stated they felt valued during the training program. Studies have reported midwives in government training programs felt degraded, which hindered learning (Goldman & Gleib, 2003; Hinojosa, 2004).

These results cannot be generalized to midwives in more urban, educated areas of Guatemala, such as Guatemala City where nearly 20% of population lives. Positive attributes of this study include the fact that the intervention was delivered to all participants at the same time, and it matches the theory and goals underlying the research. Future studies are needed with this population, and should include more diverse testing methods including whether midwives can look at Take Action Cards during the posttest, can receive credit when asked about putting anything in the vagina, and can have props, such as babies and sanitary napkin pads, during the pre- and posttest.

## Clinical Implications

This study has implications for nursing because it demonstrates that nurses who develop culturally relevant educational programs aimed at improving maternal health in resource-poor countries can have a strong impact on knowledge and behaviors of traditional caregivers. If this knowledge translates into new behaviors with their patients, nurses can be a force in changing the disastrous maternal mortality and morbidity rates in some of these countries. The traditional midwives can be taught to use their hands to perform nursing interventions for PPH rather than relying on medical model interventions that require resources such

as medications and transportation, which are unavailable to most traditional midwives. Additionally, culturally sensitive instruction with the primary providers/traditional midwives made the participants feel valued; it is hoped that this fact would increase retention of the educational content.

The results of this project coincide with findings from Lang and Elkin's study (1997) that recommend changing traditional midwives' knowledge by providing culturally sensitive teaching in an oral format in the primary language of participants. Findings of this project also support evidence the ACNM has documented from implementing the HBLSS in India (Fullerton et al., 2005), Ethiopia (Sibley Buffington, & Haileyesus, 2004; Sibley, Buffington, Tedessa, et al., 2006), and Bangladesh (Dynes et al., 2009). The ACNM has changed knowledge among traditional birth attendants in other third world countries by providing oral teachings from the HBLSS in the primary language of participants.

The HBLSS curriculum that underpins this project covers 12 preventative and lifesaving skills topics. Prevention of PPH was just one of the units, and offering other topics from the HBLSS curriculum in a culturally sensitive manner as described in this project may further help to curtail the country's extremely high Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR). Guatemala's MMR is 156 to 270 per 100,000 live births (Roost et al., 2004), and the IMR is 51 to 100 deaths per 1,000 live births (Lang & Elkin, 1997). It will take dedicated nurses and midwives to bring further interventions and research to these areas where women are at high risk for poor outcomes. ❖

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**American College of Nurse-Midwives' global outreach department at [www.midwife.org/Global-Health](http://www.midwife.org/Global-Health)**  
**Health Outreach Partners' brief overview of Popular Education at [www.http://outreach-partners.org](http://outreach-partners.org)**

**Outlook's guide on preventing PPH at [www.whiteribbonalliance.org/Resource/Documents/Preventing%20Postpartum%20Hemorrhage\\_PATH.pdf](http://www.whiteribbonalliance.org/Resource/Documents/Preventing%20Postpartum%20Hemorrhage_PATH.pdf)**

**United Nations' millennium development goals annual report 2007 at <http://un.org/millenniumgoals/pdf/mdg2007.pdf>**

**World Health Organization's recommendations for the prevention of PPH at [www.who.int/making\\_pregnancy\\_safer/publications/WHORecommendationsforPPHaemorrhage.pdf](http://www.who.int/making_pregnancy_safer/publications/WHORecommendationsforPPHaemorrhage.pdf)**