WATER BIRTH: MIDWIVES PERCEPTION, ATTITUDE, KNOWLEDGE, AND CLINICAL PRACTICES

By

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Abstract

The purpose of this study is to generate scientific knowledge regarding the midwives and student midwives Knowledge, Attitude and Practice of Waterbirth (WB). Waterbirth has not been a widely accepted method of birth in the US. This may be due to the influence of non-midwifery professional organizations on midwifery practice, the limited and weak evidence, and the lack of national guidelines to support the practice of WB. This study tried to answer the following questions; what are the Midwife and student midwife levels of knowledge and skill with WB, levels of competence and confidence in performing WB, and what sources of WB support or barriers do they have? This study utilized the quantitative descriptive survey method. The study utilized a modified version of the instrument used with Georgia midwives by Meyer et al. (2010). The Internet-based software Survey Monkey was used to administer the study tool. The whole population (6352) of the ACNM active memberships was contacted via email, 919 completed surveys were submitted. In conclusion, waterbirth knowledge was obtained by self-education and was not a job related skill, nor a certification requirement. The participants agreed that they are confident and competent with their WB skills and knowledge. Many of them believe that they are effective in the development and implementation of WB polices. A need for guidelines and policies to offer WB was identified. As well as the need for leadership and organizational support. Patients and midwives were the most supportive to WB. A large percentage of participants do not consider pediatricians supportive at all. The study participants were divided regarding the lack of evidence of WB safety and benefits and the lack of skilled and confident providers as the main barriers to WB.

Dedication

This thesis is dedicated to the memory of my late parents, Mohammad and Izdehar, for nurturing me to be the best person I could be. I also want to thank them for all of the great lessons they taught me on how to work hard, and do well in this life. My parents raised me to reach for the stars and fear nothing. They always made me feel that nothing is impossible and that I have what it takes.

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Chapter I

Waterbirth: Midwives Perception, Attitude, Knowledge, and Clinical Practices

Historically, water has always played an important role in facilitating birth and easing labor pain (Aderhold & Perry, 1991; Brown, 1982; Milner, 1988; Odent, 1983; Waldenstorm & Nilsson, 1992). The use of water and birthing pools in modern times was introduced in the United States around the 1980. Igor Charkowsky, a Russian pioneering midwife, was the first to report the use of Water Birth (WB) after the birth of his preterm daughter around 1960 (Beech, 1996; Napierala, 1994). Charkowsky, a midwife, was a swimming instructor, and physical therapist (Beech, 1996; Napierala, 1994). He was interested in reducing the laboring woman's pain and suffering, decreasing birth lacerations and extent of tearing, shortening the labor time, and easing the passage of the new baby into the world. He combined all the knowledge and expertise he had from his three professional roles by using water as a media to achieve his goals (Beech, 1996; Napierala, 1994). Nowadays Waterbirth (WB) is an option offered to laboring women in many countries around the world; large medical institutions and rural health centers worldwide are offering WB to their patients (Beech, 1996; Napierala, 1994).

Since WB was introduced to the United States, healthcare providers have been divided over the method. From that day to this, the practice of using birthing pools has faced many challenges and resistance despite the many benefits shown by studies for both the mother and the baby (Aderhold & Perry, 1991; Brown, 1982; Odent, 1983; Milner, 1988; Waldenstorm & Nilsson, 1992). In the USA, midwives were the first to use birthing pools and adopt WB into their practices. Still today, segments of the American Congress of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP) harshly criticize the

safety of WB, and challenge many of its known benefits, such as pain control, maternal and fetal comfort, perineal trauma reductions, and positive fetal outcomes. In April 2014, the ACOG and the AAP published Committee Opinion No. 594, Immersion in Water during Labor and Delivery. This Opinion presented many concerns that "the safety and efficacy of immersion in water during the second stage of labor have not been established" (pg.1) and "immersion in water during the second stage of labor has not been associated with maternal or fetal benefit." (pg.1), The Opinion concluded, "the practices of immersion in the second stage of labor (underwater delivery) should be considered an experimental procedure that should be performed within the context of an appropriately designed clinical trial with informed consent" (ACOG & AAP, 2014, p. 1).

In response to this critical opinion, many professional healthcare associations such as the Royal College of Midwives (RCM), the American Association of Birth Centers (AABC), and the American College of Nurse Midwives (ACNM) published opposing position statements. The RCM, the AABC, and the ACNM clarified that the doubts about the safety of WB are not supported by any scientific evidence, and that among the studies the opinion cited were included a rare single case report, or in one instance a theoretical opinion (American Association of Birth Centers, 2014; Royal College of Midwives, 2014; the American College of Nurse Midwives, 2014).

The RCM stated that:

> Research indicates that women who experience uncomplicated pregnancies and labors with limited risk factors and evidence based management have comparable maternal and neonatal outcomes whether or not they give birth in water. Professional liability carriers,

> hospital administrators, health care insures, and regulatory entities should not prevent or disallow maternity care providers or facilities with maternity services from providing immersion hydrotherapy during first and second stage of labor by trained and skilled attendants utilizing evidence based guidelines (RCM, 2014, p. 214).

The RCM concluded there is no reliable evidence to support the assertion that WB introduces risk, and found no reason to deny pregnant women their right to be offered WB as a safe option for the birthing process (RCM, 2014). Similarly, the AABC position statement, Immersion in Water during Labor and Birth (2014), emphatically contradicts the ACOG Committee Opinion stating "the document has the potential to introduce inappropriate fear about the safety of WB to families, providers, facility administrators, insurers, and others who want to make informed decisions regarding immersion in water for labor and birth."(p.1). The ACOG/AAP published another statement in (2016) to replace their previous statement, the new statement only reiterated the same concerns against WB with some minor changes. The Opinion recommended only land birth as a safe method of delivery. The new statement language was less harsh toward the benefits and the safety of WB and stated that, "There are insufficient data on which to draw conclusions regarding the relative benefits and risks of immersion in water during the second stage of labor and delivery" (p.1). The Opinion proceeded to recommend that "Facilities that plan to offer immersion during labor and delivery need to establish rigorous protocols for candidate selection; maintenance and cleaning of tubs and pools; infection control procedures, including standard precautions and personal protective equipment for health care personnel; monitoring of women and fetuses at appropriate intervals while immersed; and moving women from tubs if urgent maternal or fetal concerns or complications develop" (ACOG & AAP, 2016, p.1).

In the 20th Century United States, labor and birth practice underwent many changes in step with revolutions in technology. Specifically, women had previously been able to experience labor and birth in the comfort of their own homes, but this practice shifted mid-century as birth increasingly moved to the controlled environment of hospitals. This shift was accompanied by continuous close monitoring of mothers and babies by doctors and nurses (Meyers, Weible, and Woeber, 2010).

As a result of this move from home to hospital, all laboring women were painted with the same brush, sometimes imposing unnecessary interventions. Modern medicine medicalized the normal physiological process of labor and birth. Starting from the use of standard lists of orders initiated once the laboring woman is admitted to hospital, to the use of bed rest with bathroom privileges, limited hydration with NPO or clear fluid orders, administration of intravenous fluid, and vaginal exams every two hours, women are told what they may or may not do (Shepherd & Cheyne, 2012). Providers artificially rupture the amniotic membranes to speed up the labor, and then take away bathroom privileges from the laboring women for fear of cord prolapse (Smyth, Markham & Dowswell, 2013; Wolomby &Tozin, 2009). More women receive oxytocin to stimulate or augment labor than ever before, around 70% of all labors in the US are now stimulated by pitocin (Agency for Health Care Research and Quality, 2009). Frequent monitoring of vital signs and continuous electronic fetal monitoring have become the norm. When women need help to cope with labor pain, most often pharmacological pain relief methods such as epidural or narcotic analgesia are offered. In some instances, invasive procedures such as internal fetal and uterine monitoring are used. Instrumental and cesarean section rates have drastically increased due to these and multiple other reasons (Agency for Health Care Research and Quality, 2009).

In the hospitalized practices of the US, one in three women gave birth by cesarean section (Agency for Health Care Research and Quality, 2009; ACOG, 2014). Active management of third stage is promoted to reduce post-partum hemorrhage, which requires that the cord is clamped and cut immediately after the baby is born (Rabe, Reynolds & Diaz-Rossello, 2007; Hutton & Hassan, 2007). Delivery of the placenta has been expected to take place within 30 minutes of the birth of the baby, since the early 20th century; if the placenta is not delivered within 30 minutes then it is removed manually (Abalos, 2012).

Unlike WB, many practices taking place in obstetrics require no proof of safety or efficacy. In many instances, practice is based on expert opinion, and not supported by evidence of improved outcomes or safety (Smyth, Markham & Dowswell, 2013; Wolomby &Tozin,2009; Agency for Health Care Research and Quality, 2009; ACOG, 2014; Abalos, 2012; Simpson & Atterbury, 2004; National Collaborating Centre for Women's and Children's Health, 2008). In an effort to improve outcomes, avoid legal litigation and create a more controlled environment, conventional obstetric medical practices consider all laboring mothers and their babies to be at risk unless proven otherwise, and in many instances utilizing multiple unnecessary interventions that have no strong evidence of benefits or safety. However when it comes to the practice of WB which has been shown to carry many benefits, and proven to be a safe practice for many decades, the argument is shifted, and the practice is considered experimental due the insufficient number of published RCT's to support its practice.

This study is intended to replicate a research study that measured the knowledge, attitudes, and practices (KAP) of midwives practicing in Georgia regarding WB (Meyer et al., 2010). This study will be surveying a wider and more representative sample of US midwives, and study the variables of barriers and support facing the midwives offering WB, this will

provide a better understanding of midwives KAP regarding WB and to insure a successful implementation of WB.

Background

Research about the Midwives'/Student Midwives WB KAP is limited. Over the past 30 years publication bias among journal editorial boards has resulted in failure to publish articles about WB, often citing a lack of scientific significance. This publishing bias has resulted in a dearth of evidence to support safety in the practice of WB, which makes the WB KAP of midwives an important focus for research. A few studies have established a modest foundation for the proposed investigation. Meyer et al (2010) investigated KAP of WB using a sample limited to Georgia (US) midwives. Russell (2013) studied Canadian midwives' experiences and clinical practices with WB. Woodward's unpublished dissertation discussed midwives' attitudes and clinical practices about WB (2011). Nicholls, Hauck, Bayes, and Butt explored midwives' perception of their confidence in facilitating WB in Western Australia in 2015. Most of these WB studies were designed to either discuss the benefits of WB as a valuable practice or to support the safety of WB (Jones, Othman, Dowswell, Alfirevic, Gates, NeWBurn, Jordan, 2012 Nutter, Meyer, Shaw-Battisa, Marowitz, 2014). The concepts of Midwives' KAP toward WB were only investigated in Georgia midwives by Meyer et al. in 2010.

Midwives/Student Midwives WB KAP are multidimensional concepts that need to be investigated and clearly identified. If midwives believe that WB is safe and offers numerous benefits, then they will be more likely to strongly, safely, and confidently support and perform WB. However, knowledge and competency to provide WB are not the only factors to be considered. The midwife's confidence in her ability, knowledge, and skills to provide WB would

highly impact her offering and providing WB. Another factor that also plays a crucial role would be the surroundings in which midwives work. These surroundings include but are not limited to the patients and their families, interdisciplinary team members, health care administrations, and insurers. All of them affect whether midwives are supported in their practice of WB. But too many barriers will restrict or prevent them from offering and performing WB. Further studies are needed to document comfort and confidence with WB practice among midwives.

Significance

Due to the ongoing conversation surrounding the practice of WB, further studies are needed to improve the image to all stakeholders of the practice as a reliable and trusted means of giving birth. Potentially, findings of this study will motivate midwives and student midwives to work on improving their WB knowledge and skills, and will empower them to advocate for WB and to implement this practice within their own workplace. Surveying Midwives'/Student Midwives for their education and training needs is important to establish the need for education and support. Expert and confident midwives can strongly advocate for WB as an option for their patients, and will empower and educate their patients to make informed decisions regarding all the available methods of labor support among which WB is one.

The findings of this study could stimulate more WB educational activities, such as midwifery program curriculum, workplace training activities and continuing education requirements to support staff and midwives. The workplace might also implement policies and guidelines to facilitate the safe practice of WB. In order to establish or continue the provision of WB as a valuable support measure, it is important to learn more about the available support and barriers to WB in the workplace. Conferences for healthcare industry stakeholders can be

developed to educate about WB and eliminate misconceptions or myths. This study can possibly help clarify the need for a support campaign to eliminate the barriers this practice is now facing.

When patients choose to labor in water, or desire water immersion for giving birth, midwives are expected to be trained and knowledgeable, as well as prepared to support and safely guide them. It is critical to investigate who really supports the practice of WB, and assess their confidence levels, competency, knowledge, training, and the use of evidence based knowledge in their practice.

Problem Statement

Midwives are considered the main providers to offer and provide WB among healthcare providers, it is critical to study Midwives'/Student Midwives KAP toward WB. Because women are very sensitive to their provider's opinions and attitudes, they might sense provider anxiety during discussions which include WB as an option for labor and birth. (Woodward, 2011). As limited research explaining the US Midwives and Student Midwives' KAP of WB practice exists, it is important to generate more knowledge.

The practice of WB has not been a widely accepted method of birth in the US. This is true despite being used for decades as a reliable and well respected practice around the world, especially in most industrialized and European countries (Nutter, Meyer, Shaw-Battisa, Marowitz, 2014). This may be due to the influence of non-midwifery professional organizations on midwifery practice. The problem is additionally compounded by limited and weak evidence, and the lack of national guidelines to support the practice of WB.

Study Purpose

The purpose of this study is to generate scientific knowledge regarding the Midwives (Certified Nurse Midwife /Certified Midwife) and student midwives (Students Nurse Midwife/Student Midwife) Knowledge, Attitude and Practice (KAP) of Waterbirth (WB). The study will specifically assess the Midwives, and Student Midwife's knowledge and clinical experience, competence and confidence, and sources of support and barriers to the practice of WB in the workplace.

Research Questions:

1. What are the Midwife/Students Midwife levels of knowledge and skill with WB?
2. What are the Midwife/Students Midwife levels of competence and confidence in performing WB?
3. What sources of WB support are available for Midwives in the workplace?
4. What barriers to WB do Midwives face in the workplace?

Theoretical Framework:

This study is informed by the Theory of Planned Behavior (TPB) by Ajzen and Madden (1986). The TPB is derived from the Theory of Reasoned Action by Ajzen and Fishbein (1980). The Theory of Planned Behavior Reasoned Action provides a better understanding of human intensions and goals than the Theory of Reasoned Action. The Reasoned Action theory places the personal perceived control (belief of personal ability to perform the behavior) over the behavioral achievements (practicing the behavior successfully) to determine the individual's intentions (personal attitude toward the behavior) (Ajzen and Fishbein, 1980). On the other hand the TPB is trying to explain the human behavior toward a certain action (Ajzen and Madden,

1986). TPB discusses the factors that might influence the person's decision to do or not to do the behavior in question. TPB explains the factors of subjective norms and perceived behavioral control that influences the intentions and the attitudes of the actor, which in turn may predict the actual behavior (Ajzen and Madden, 1986). In two experiments by Ajzen and Madden (1986), the TPB permitted more accurate prediction of intentions than the theory of reasoned action. TPB is the best theory to examine and explain the factors and variables under investigation in this study, because this project will investigate the attitudes and the practices of midwives regarding the practice of WB and offering WB as a method of labor support to their patients. Because patients rely on their providers' assurances and teaching when making their health related choices, the midwife's attitude toward WB is expected to have a great impact on her patient's choice to use WB as a labor and birth support method (Woodward, 2011). The TPB theoretical and conceptual framework is the ideal model to deal with, interpret, and predict multidimensional and complex human social behavior. The concepts used in this theory and their definitions allow for better prediction and understanding of human behavior in any given setting. The theory demonstrates many interactions between its basic concepts. TPB links human Belief around a behavior, to the Attitudes toward the behavior, with Subjective Norms (what is socially accepted and agreed on by the surrounding community), and the Perception of Behavioral Control (ability to perform the behavior). TPB links the person's Behavioral Belief to their Attitude toward the behavior itself. The person's Normative Belief is linked to Subjective Norms, and the person's Control Belief to Perceived Behavioral Control. Then the TPB links all of the concepts to the concept of Behavioral Intention, and finally links the concept of Behavioral Intention to the actual concept of human behavior as a result of the multidimensional

interactions between all of the theory concepts. Based on the TPB, to investigate the midwives' attitudes toward performing WB, the following need to be investigated (see Figure1.1)

I. The midwife's actual personal belief toward the importance, benefits, and safety of WB (behavioral belief) which will lead to the midwife's Attitude toward WB, and subsequently form the midwife's intention to advocate, offer, and provide WB.

II. The midwife's perceived personal ability to perform WB (control belief), to specifically study if the midwife thinks that she has adequate knowledge, skills, and physical ability to provide WB (Perceived Behavioral Control), which may improve the midwife's confidence and intentions to provide and advocate for WB.

III. The Normative beliefs about WB at the midwife's workplace environment (patients, physicians, and employers, etc.). These normative beliefs will lead to sources of support or barriers for midwives who chose to practice WB (Subjective Norms), and influence the midwife's intention to practice WB.

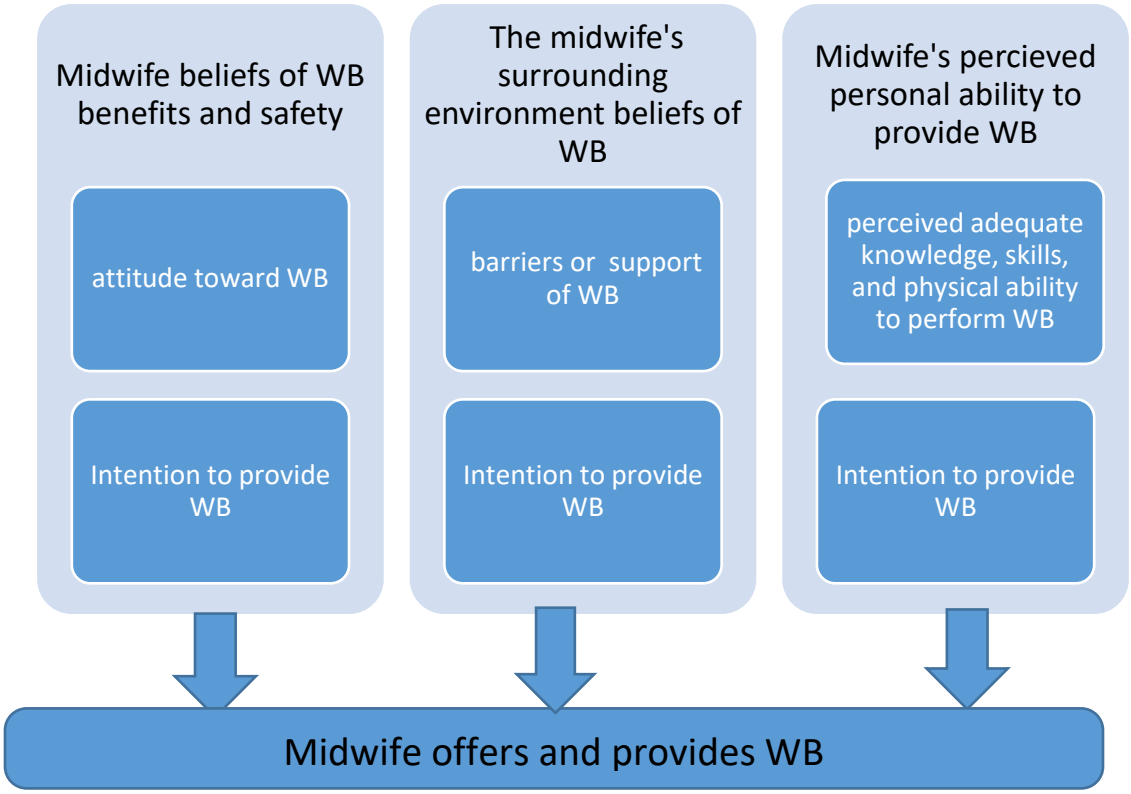

Figure 1 1 Theoretical Model Based on the Theory of Planned Behavior

Definitions

Certified Nurse Midwife in this study "CNMs are educated in two disciplines: midwifery and nursing. They earn graduate degrees, complete a midwifery education program accredited by the Accreditation Commission for Midwifery Education (ACME), and pass a national certification examination administered by the American Midwifery Certification Board (AMCB) to receive the professional designation of a CNM" (ACNM, 2011, p.1)

Certified Midwife (CM) "CMs are educated in the discipline of midwifery. They earn graduate degrees, meet health and science education requirements, complete a midwifery education program accredited by ACME, and pass the same national certification examination as CNMs to receive the professional designation of CM." (ACNM, 2011, p.1)

Midwifery student is the graduate level student who is actively currently enrolled in one of the midwifery programs accredited by the ACME.

Knowledge can be defined as awareness and familiarity. WB knowledge is the set of understandings gained through education, experience, or association with WB practice. It includes theory and the skills to physically perform WB, which can be manifested by being competent and leads to becoming confident with WB.

Attitude, a concept used to refer to a person's opinion or position. For the purpose of this study, attitude would be the midwife's beliefs, intentions, feelings, opinions, and ways of behaving about WB, which can be assessed by personal effectiveness to advocate for WB.

Midwives WB Practice is the combination of the midwives knowledge and attitudes toward WB, within the midwives' surroundings (i.e. Workplace, employers, insurers, guidelines, and the patient's preferences).

Water Birth is giving birth to babies while immersed in warm water, with minimal interference by others.

Summary:

The practice of WB is facing resistance in the US due to shifts in the model of care and modern medical practices in labor and delivery. Non-nursing/non-midwifery organizations have issued an opinion demanding the practice of WB be halted until evidence to support the practice can be collected in RCTs. The available literature shows a significant shortage of scientific evidence to support the many benefits of the WB practice. Midwives are the WB advocates in the United States. The knowledge, attitudes, and practices of providers regarding WB are not

adequately investigated. Only two scientific studies have been published discussing midwives KAP regarding WB. This study proposes a replication of a work previously done with Georgia's midwives. Gaining more information about midwives level of WB knowledge, skills, and attitude can be very useful in measuring their competence and confidence with WB, and will consequently show their willingness to advocate for, offer, and provide WB.

Chapter II

Literature Review

The purpose of this study is to specifically assess the CNM's, CM's, and student midwife's knowledge, attitude, and practices (KAP) regarding WB. The study will also assess the barriers and the sources of support in the workplace for the practice of WB identified by midwives.

Research Questions:

1. What are the Midwife and student midwife levels of knowledge and skill with WB?
2. What are the Midwife and student midwife levels competence and confidence in performing WB?
3. What sources of WB support are available for midwives in the workplace?
4. What barriers to WB do midwives face in the workplace?

This literature review will include all the published and unpublished research that discusses the midwives KAP of WB between the years 1990 to 2017. The practice of WB has been embroiled in controversy since its introduction to the United States; however few scientific articles have been published about this practice. Since the ACOG and AAP 2014 (Committee Opinion NO. 594 Immersion in Water during Labor and Delivery), a few more WB research projects have been launched and the results are currently being peer reviewed. Midwives are strong advocates for WB. More importantly, they are the pregnant woman's advocate for her right to choose and to make an informed decision regarding the birth setting she believes is the best choice for her and her baby (Meyer, 2010; Russell, 2013; Woodward, 2011; Nicolls, 2016).

Based on the theoretical background for this study the Theory of Planned Behavior (TPB) by Ajzen (1991), three main components are identified as the outline for this literature

review (1) The Midwives Knowledge: the midwives perceived personal ability to offer and perform WB, including the knowledge, the skills, and the midwife's physical capabilities to actually perform WB. (2) Midwives Attitude: the midwives personal beliefs regarding the safety of WB, confidence, competence, and the perceived benefits of WB. (3) The Midwives Practice: the environment in which Midwives practice, and their sources of support or barriers to WB.

The Midwives WB Knowledge

A Cochran systematic review summarized the evidence from the available literature that studied the efficacy and safety of pharmacological and non-pharmacological labor pain relief interventions (Jones, Othman, Dowswell, Alfirevic, Gates, Newburn, 2012). The review included 15 Cochrane reviews (255 included trials) and three non-Cochrane reviews (55 included trials). The interventions were classified into: "What works", "What may work", and "Insufficient evidence to make a judgement". WB was placed in the "What may work" category. In the "What works" category are epidural, combined spinal epidural and inhaled analgesia which all effectively manage labor pain but raise the incidence of adverse effects. When compared to opioids or placebo, women receiving epidural experienced more instrumental or cesarean delivery due to fetal distress, and they were more likely to experience hypotension, fever, urine retention, and motor blockade. Women who inhaled analgesia experienced vomiting, nausea and dizziness. The review suggests that WB among few other methods in the "What may work" category may improve the management of labor pain with minimal to no adverse effect. WB was able to relieve pain, and improve satisfaction with pain relief and the childbirth experience when compared to placebo or standard care (Jones et al., 2012).

Many published studies about the benefits and the safety of WB are available for midwives to expand their knowledge and boost their confidence with WB. A good example of this retrospective comparison study of WB practice outcomes and safety with outcomes and safety of normal vaginal deliveries (Otigbah, Dhanjal, Harmsworth, & Chard, 2000) done between 1989 and 1994 at a maternity unit in the UK. Three hundred and one low risk pregnant women who chose WB were compared to the same number of pregnant women from the same age group and parity who chose conventional vaginal births. The variables of the study included the length of labor, the use of analgesia, APGAR scores, perineal trauma, postpartum hemorrhage, infections, and newborn admission to special care. Women who used WB had a shorter first and second stage of labor, used less analgesia, and had fewer episiotomies (Otigbah et al.,2000).The APGAR scores were comparable; there were no documented neonatal deaths or infections in both groups. The study concluded that WB in a low risk population, if performed by experienced professionals, is as safe as normal vaginal births not in water. The study was able to identify some WB benefits, such as improved length of labor, less perineal trauma for primigravida, and reduced use of analgesia (Otigbah et al., 2000). Among many others, the above mentioned published studies in the section of Midwives WB knowledge may shed the light on some good examples of the available literature for midwives to improve their knowledge and perceptions of the safety and benefits of WB.

While most of the published WB studies focus on the benefits and the safety of WB, only one study focused on the midwives' perceptions and experiences with WB (Meyer et al., 2010). The study surveyed a convenience sample of 119 CNMs in the Georgia ACNM chapter email list to understand their beliefs and experiences with WB (Meyer et al., 2010). There was a 45% response rate (53 CNMs) (Meyer et al., 2010). The study focused on three main components

including the midwives' levels of exposure to and experience with WB, the midwives perception of the benefits and the limitations of WB, and the midwives levels of support for the adoption and incorporation of WB into their workplace (Meyer et al., 2010). The majority of the CNMs had previous exposure to WB through self-education or clinical practice. More than half of the CNMs were in favor of the adoption of WB into their practice. The CNMs perceived maternal relaxation and reduced use of analgesia as the most important benefit of WB. Although they were concerned about water temperature modulation, physical stress on the CNMs performing WB, and the inability to clearly visualize the perineum, the CNMs in this study saw no disadvantages to WB (Meyer et al., 2010).

The Midwives WB Attitude

Since the patients rely on their providers' assurances and teaching when making their health related choices, the midwife's attitude toward WB is likely to influence the patient's choice to use WB as a labor and birth support method (Woodward, 2011). The midwife's attitude toward WB is framed by many factors such as knowledge and evidence of benefits and safety, supportive environment, available equipment, available practice guidelines, and previous positive or negative experiences or exposures (Woodward, 2011). Woodword presented a Ph.D. dissertation in 2011that investigated the feasibility of conducting a WB randomized clinical trial, to assess the midwives' attitude toward WB (Woodword, 2011). The study participants were recruited from currently practicing UK registered midwives (Woodword, 2011). In an effort to recruit a representative sample, opportunistic sample recruitment was used, the midwives were contacted either when they were attending midwifery meetings, or by talking to colleagues, or by a midwifery email discussion website. Woodward sampled many levels of practicing midwives, from entry-level midwives to independent or manager midwives. The midwives received an

initial verbal explanation about the Q sort method and the study in general, and then they were allowed to choose the time and the location to complete the Q sort. Some of them choose a face to face interview with the researcher, while others completed the Q sort by themselves then mailed it to the researcher. The Q methodology for this study included statement cards and a Q sorting grid with three choices. The midwives were to read the statements and sort the cards into one of three piles: statements they agreed with, statements they disagreed with, and statements they felt ambivalent about. (Woodword, 2011). The researcher received 31 out of 43 complete Q sort packs. Four main viewpoints were identified. "Motivation": to achieve good birth outcomes, support physiological birth, and increase job satisfaction. "Risk Assessment": to make sure that appropriate risk assessment tools were utilized. "Confidence": including a lack of confidence, competence, and technology. And "Safety": the need for leaders who support WB and on being competent to perform WB (Woodword, 2011). The midwives disagreed on the statement that described WB as being out of the midwives "comfort zone" and the need for WB formal training (Woodword, 2011). Midwives WB confidence and competence varied greatly, but Woodword linked this to the fact that only 61.3% of them participated in WB formal training (Woodword, 2011). The midwives considered WB a part of their normal practice, and they believed that they should be able to perform WB using their basic midwifery skills (Woodword, 2011). The midwives agreed that every suitable woman should be offered the choice of WB (Woodword, 2011). The results from "Safety" explained that even though the midwives were competent to conduct WB they strongly believe that "enthusiastic leaders were needed support the WB service" (p.370). Woodward reports that the midwives in this study were competent, but lacked the confidence to offer WB due to the uncertainty of the leader's views of WB (Woodword, 2011).

Russell, Walsh, Scott, and McIntosh (2014) used an action research workshop to improve the promotion and the organization of WB practice on a maternity unit in England. The study used a project questionnaire that had been developed in a previous stage of this research project (Russell et al., 2013). The questionnaire was developed to measure the midwives personal knowledge of WB practice, WB self-efficacy, WB social support, and the frequency of hydrotherapy and WB. The midwives were divided into two groups, one group attended the WB workshop, the other group did not; 169 questionnaires were distributed. A total of 96 questionnaires were returned. The results showed a significant difference between the two groups regarding their personal knowledge of WB practice (Russell et al., 2013). The group that attended the workshop showed better knowledge scores than those who were not part of the workshop. However, there was little variance in self-efficacy in performing WB between the midwife groups (Russell et al., 2013). In general, the coordinator workshop attendees showed higher social support, and frequency of WB. Midwives are greatly influenced by their practice settings. Russell et al (2013) reports in a hospital setting midwives tend to show a difference between the observed behavior and the perceived levels of confidence in providing support to WB (Russell et al., 2013).

The Midwives WB Practice.

In the United States, the main barrier the practice of WB faces is the resistance of the American Congress of Obstetricians and Gynecologists (ACOG), and the American Academy of Pediatrics (AAP). In Committee Opinion NO.594, the authors concluded that the practice of water birth in the second stage of labor "should be considered an experimental procedure" and "should be performed within the context of an appropriately designed clinical trial with informed consent" (ACOG & AAP, 2014). The evidence to support this opinion statement is weak; much

of it anecdotal, opinions, or old poorly designed or reported studies. Nevertheless, this Committee Opinion has played an important role in discouraging providers, hospitals, and patients from choosing WB as method of birth (Gilbert, 1999; Grunebaum & Chervenak, 2004).

Despite the many advantages of WB, the practice of WB is not utilized frequently (Stark & Miller, 2009). A comparative descriptive survey was conducted to assess nurse's perceptions of barriers to WB and hydrotherapy (Stark & Miller, 2009). The survey was distributed to a convenience sample at a national convention (n=225), and sent to the participants on a perinatal listserve (n=176). Institutional characteristics were associated with the nurse's perception of barriers rather than individual characteristics. Nurses, who worked in hospitals that reported higher Cesarean Section and epidural rates identified more barriers to WB (Stark & Miller, 2009). Significantly, nurses who worked in facilities where CNMs were the providers that attended the most births reported fewer barriers (Stark & Miller, 2009). The authors concluded that the culture of the birthing unit influenced the perception of barriers to WB existence. The birthing unit requires a supportive environment, policies, staffing, and collaboration among the intrapartum team members to properly adopt and provide WB (Stark & Miller, 2009).

Russell concluded in an action research study that clinical leadership that promotes a patient-centered care approach is more likely to provide strong social support to midwives to practice WB, and will lead to the perception of WB as a desirable activity (Russell et al., 2013). Midwives practicing in hospitals are highly influenced by medical philosophy to meet the required uniformity and unit routines in which midwives have "limited clinical autonomy".

Although the practice of WB became very popular during the past two decades in United Kingdom and across Europe, it is still very limited in Western Australia (Nicholls, 2016). Due to

great need in 2009, the Western Australian Women's and Newborns' Health Network (WNHN) developed clinical guidelines for midwives to provide safe care for women who choose WB (Nicholls, 2016). Implementation of the guidelines required the midwife to be both confident and competent in assisting the laboring patient during WB (Nicholls, 2016). A qualitative descriptive study was conducted to collect more information about the midwives' perceptions of becoming and being clinically confident in providing WB as an option for giving birth (Nicholls, 2016). The study also explored what factors might improve the perception of clinical confidence, as well as the factors that might inhibit the midwives clinical confidence regarding performing WB (Nicholls, 2016). The author interviewed 16 midwives employed at four public maternity service centers offering WB, between 2011 and 2013. An additional 10 midwives participated in a focus group interview (Nicholls, 2016). Three themes developed from the interviews: (Nicholls, 2016). The first theme, (What came before the journey), was made up of three subcategories: (1) attitude towards WB and the preconceived views that the midwives held based on their social and cultural backgrounds and values (Nicholls, 2016). Previously held views did not prevent the midwives from becoming confident in WB when they were given an opportunity to practice WB. (2) Midwifery initiation where the midwifery basic philosophy of natural birth helped the midwives develop confidence in WB. The philosophical attitude along with their midwifery education encouraged them to continuously improve their clinical judgment. (3) WB education - all the midwives agreed on the great benefits they gained from WB training prior to their initial personal experience with WB (Nicholls, 2016).

The second theme (becoming confident - the journey) has five subcategories: (1) Trust in the guidelines - the guidelines helped the midwives develop confidence in WB practice and provided them with strong and reliable guidance to safely practice and support WB. (2) Another

midwife in the room - having an experienced midwife support in the same room was reassuring and very helpful to strengthen the sense of confidence in WB. (3) Consistent exposure - the more opportunities to practice WB the higher confidence the midwives achieved. (4) Inner confidence - the inner personal confidence of the midwives influenced how they developed new WB skills. (5) Unlearning old skills for new ones - the midwives felt they needed to unlearn what they considered old school learning in order to consider using the option of WB (Nicholls, 2016).

The third theme (staying confident) was comprised of three subcategories. (1) Its just birth - the midwives seemed to be more confident in providing WB if they were able to support natural physiological birth within their practice. (2) Mother and midwife enthusing each other - the midwives' positive personal experiences and the women's positive feedback improve the midwives' confidence and enthusiasm for WB as an option for birth. (3) Knocking confidence - in some cases, negative experience may impact the midwife's confidence in performing WB, but after subsequent positive experience the midwives tend to overcome their fears and rebuild their confidence in WB (Nicholls, 2016). Finally the study proposed three suggestions to support WB practice. Nurse midwife students need to be in clinical placements where normal physiological birth takes place. Second, experienced midwives need learning opportunities to address their clinical needs. Finally, midwives should be expected to complete continuous mandatory education to support their role when providing WB and be up to date with the current evidence and practice updates (Nicholls, 2016).

Summary:

The extensive search for WB literature demonstrates that little is known about the midwives Knowledge, Attitude, and Practices regarding WB. There is also little published regarding the

midwives' sources of support or barriers within their work environments. Since June 2014 after the publication of the ACOG & AAP (Committee Opinion NO. 594) Immersion in Water during Labor and Delivery there has been a growing interest to further investigate WB. Most of the published literature has investigated the benefits for patients or the safety of this practice, while only four published studies worldwide investigated one or two variables of the midwives Knowledge, Attitude, and Practices regarding WB. All four studies agreed on the importance of the concepts of confidence and competency with WB, in addition to the need for leadership support to WB, and a workplace WB favorable culture. Waterbirth training and strong guidelines helped the midwives to be more confident and safely provide WB (Meyer, 2010; Russell, 2013; Woodward, 2011; Nicolls, 2016).

Chapter III

Study Methodology

This chapter contains the study design, setting, sample and sampling technique, data collection, study limitations, subject protection, and a summary.

Study Purpose

The purpose of this study is to generate scientific knowledge regarding the US CNM's/ CM's and student midwife's Knowledge, Attitude, and Practice (KAP) of water birth (WB). The study specifically assesses Midwife and midwifery students' knowledge and clinical experience, competence and confidence, and sources of support versus barriers to the practice of WB in the workplace.

Research Questions:

1. What are the Midwife and student midwife levels of knowledge and skill with WB?
2. What are the Midwife and student midwife levels competence and confidence in performing WB?
3. What sources of WB support are available for midwives in the workplace?
4. What barriers to WB do midwives face in the workplace?

Research Design

This study utilized the descriptive survey method. The quantitative approach was found to be the best match for this proposed study to assess the midwife and student midwife's KAP regarding WB for two reasons. First, descriptive study design collects information without manipulating the subject's environment. A descriptive study can gather information about a

group's features, and characteristics (Nebeker, Simon, Kalichman, Talavera, Booen, & Lopez-Arenas, 2015). Second, quantitative descriptive design is often used to capture numerical data regarding knowledge, attitude, and behaviors instead of words as data (qualitative research) (Bonnel & Smith, 2014). Due to the limited amount of knowledge of Midwife and student midwife KAP regarding WB, this descriptive study will contribute information to build knowledge about the practice of WB. The study will provide a clearer picture regarding midwives competence and confidence with WB, and what issues they identify within their workplace that facilitates or hinders the incorporation of this practice within their work environment.

Sample

The ACNM membership database currently holds 6650 members that are comprised of CM's (Certified Midwives), CNM (Certified Nurse Midwives), and Midwifery Students. The whole population of the ACNM active memberships of midwives and student midwives were contacted via email. The ACNM sent the study survey to the 6352 members by email. Studying the whole population helped generate more generalizable findings.

Inclusion and exclusion criteria

Only midwives, currently actively practicing midwifery in the United States and midwifery students actively enrolled part or full time in an ACME accredited midwifery program were allowed to participate in this study. To ensure adherence to the inclusion criteria the first item was "Select the answer that applies best to you", the choices were "I am currently eligible to practice midwifery in the United States", "I am actively enrolled in full/part time in an ACME accredited midwifery program", or "none of the above". Participants that choose the first or the

second choices were allowed to start the survey. The survey stopped for any participant that picked the last choice. Midwives were excluded if they are not eligible to practice midwifery in the United States, and student midwives were excluded if not actively enrolled as a part/full time student in an ACME accredited midwifery program.

Instrument

The instrument used in this study (Appendix A) was a modification of the instrument used with Georgia midwives by Meyer et al. (2010). Meyer granted permission to use the tool and to modify it (Appendix F). The old tool was modified to answer the study questions (Appendix E). The tool briefly introduced the study main purpose and variables, followed by the inclusion/exclusion question. The survey included a demographic section to verify the participant's age, certification, level of education, years of experience, and practice settings. The study verified the midwifery student's program progression, by asking in which year the students were when they completed the survey. The tool contained forty six question divided into four main sections that reflected the four study questions. The first section investigated the midwives knowledge and experiences with WB. The second section assessed the midwives confidence and competence with WB. The third section measured the midwives personal effectiveness. The fourth section questioned the surroundings of the midwives in relation to WB.

I. Knowledge and Experience with WB, provided more information about the midwives/student midwife's sources of WB knowledge using a select that all apply (i.e. workshops, formal training during school or at the workplace, video, articles, previous experience). In addition to "Yes or No" questions that verified the exposure to a set of different educational skills/resources.

II. Confidence and competence providing WB had five questions with six levels "agree, somewhat agree, neutral, somewhat disagree, disagree, and not applicable".

III. Personal Effectiveness (with WB), the first four questions had six levels "always, often, sometimes, rarely, never, and not applicable". The last two questions had "agree, somewhat agree, neutral, somewhat disagree, and disagree".

IV. Work Environment related to WB, included rating questions with four levels "not supportive at all, mildly supportive, strongly supportive, and not applicable". The next six questions in this section had six levels "agree, somewhat agree, neutral, somewhat disagree, disagree, and not applicable". Two open ended questions were added to provide study participants the freedom to share any other sources of support or barriers variables that the study survey missed.

Reliability Analysis of Survey Instrument

The modified tool was piloted by four practicing CNM's working in midwifery practices in the Cleveland Ohio area. Feedback was collected from the pilot study participants regarding the time they spent to complete the survey questions and the clarity of the survey language/questions. To assess the content validity of the instrument the four midwives in the pilot study acted as subject matter experts to review the content and complete the survey. The reliability assessment of this survey was done using a field test, a simple check on the instrument, ensuring that each item made sense to participants and that, as a result, they were able to respond appropriately. The researcher received the pilot study participant's feedback by phone conversation or text messages. The tool was modified based on the pilot study feedback and a thorough revision was applied to the instrument. A few linguistic modifications were made to some questions to aid in readability and help with more on-target responses. In addition a

"Not Applicable" option was added to some questions to provide a neutral choice for participants to whom the question content did not apply.

Setting

The internet based software Survey Monkey was used to administer the study tool. The survey questions were uploaded to the Survey Monkey software, then study web link was created. The Secure Sockets Layer (SSL) of Survey Monkey software allowed the encryption of data. The collection of Internet Protocol (IP) addresses was turned off to aid in human subject protection. Survey Monkey (logic) functionality ensured the exclusion of any participant that did not meet the two inclusion criteria. The survey was designed to allow the participants to change or edit their responses on any question until they submitted the survey. The participants were allowed to freely move between pages and questions; they were able to skip any question, move back to a previous question, or move on to the next page of the survey. The anonymous survey was allowed to be taken only one time from the same device.

Procedure

The researcher obtained the Case Western Reserve University Institutional Review Board (IRB) approval (Appendix C). The ACNM Division of Research (DOR) was then notified for permission to contact ACNM members. Once the DOR approval was granted (Appendix D), the ACNM Membership and Marketing Department sent the study survey to the ACNM members via email. An email containing the participant's information about the study with a link to the survey was sent to the study participants (Appendix B). In order to increase the response rates, a follow up reminder was sent by the ACNM to the study participants one week after the initial email.

Data collection

The online survey took an average of six to seven minutes to complete all of the 46 questions. There was a91.8 % completion rate. The study achieved a response rate of 15.05%. Out of the whole population of 6352 recipients, 1001 participants started the survey before the researcher terminated the study. Survey Monkey automatically closed the collection at the preset subscription plan limitation of 1000 responses per month. Only 919 completed surveys were submitted. Partial or incomplete surveys were excluded from the statistical analysis.

Data storage

Survey Monkey allowed the data to be exported in an excel spreadsheet format. This allows easier uploading of the data into the SPSS software to run the statistical tests. The study data is stored in an encrypted file saved to the researcher's password protected personal computer. The file is only accessible to the researcher and to the supervising professor. The data of this study will be kept for two years after the last publication

Protection of Human Subjects

The approval of Case Western Reserve University Institutional Review Board (IRB) was obtained before conducting this study. Participation in this study was 100% voluntary and posed no physical, psychological, or social risks. Consent was implied by the completion and submission of the study survey. Participants had the right to not participate, and at any point participants were free to stop responding or not complete the study survey.

Approval to contact ACNM members was granted by ACNM DOR before the survey was deployed. Since The ACNM Membership and Marketing Department administered the study

tool, the researcher had no direct contact with the study participants, no access to their email addresses, IP addresses, and no access to any identifying information. The data cannot be linked to the individuals who choose to respond.

The first line of protection is that the ACNM sent the email with the survey link to the participants. The second line of protection is that no identifying information was collected from the study participants. The study instrument was administered using Survey Monkey software which utilized the Secure Sockets Layer (SSL). SSL works on encrypting sensitive information transmitted through the internet. The survey was designed to collect anonymous responses with no collection of the IP address. This provided a secure transmission of private information. Confidentiality was maintained since the ACNM did not disclose any of the participants's identifying/contact information to the researcher. There were no explicit or direct benefits for the study participants.

Summary

Surveying US Midwives regarding their WB Knowledge, Attitude, and Practices is crucial currently due to the many challenges this practice is facing. This study utilized the descriptive survey method because it can capture knowledge and attitudes data and transform it into numerical data without manipulating the subject's environment. The ACNM has a large data base of and provides electronic access to the study participants of Midwives and student midwife. The nearly whole population of the active membership was contacted via email; the survey was deployed using the Survey Monkey internet based software. This study used a modified copy of the instrument used on Georgia midwives research by Meyer et al. (2010),

obtained and modified by Meyer permission. Prior to deployment, the revised survey was pilot tested by four midwives.

Chapter IV

Analysis

This chapter includes the study data analysis and results. The initial section offers a description of the Purpose, Research Questions, and Demographics of the study participants. Then the discussion of the research questions variables analysis, with a focus on the levels of knowledge and skill, competence and confidence, support and barriers for midwives relative to water births.

Study Purpose

The purpose of this study is to generate scientific knowledge regarding the US CNM's/ CM's and student midwife's Knowledge, Attitude, and Practice (KAP) of WaterBirth (WB). The study specifically assesses Midwife and midwifery students' knowledge and clinical experience, competence and confidence, and sources of support versus barriers to the practice of WB in the workplace.

Research Questions:

1. What are the Midwife/student midwife levels of knowledge and skill with WB?
2. What are the Midwife/student midwife levels competence and confidence in performing WB?
3. What sources of support to WB are available for midwives in the workplace?
4. What barriers to WB do midwives face in the workplace?

Data Processing/Analysis

Survey Monkey facilitated data analysis, and created percentages tables and graphs. The researcher was able to download excel sheets for all of the responses. The Statistical Package for the Social Sciences (SPSS) program was used to process the data. Data was filtered based on completed and submitted responses only, and excluded incomplete or partial responses. This facilitated an easier data collection, transfer to SPSS, and analysis. The data was cleaned and the variables values were properly labeled. Descriptive statistics of the central tendency was employed in the data analysis "Yes or No" questions and the "Likert scale/ Likert like scale items" were analyzed using frequencies and percentages. The first question in the knowledge section included a "select all that apply" was treated as "Yes or No" questions. The "NA" responses were treated as legitimate answers, and were included in the statistical analysis. Missing responses were excluded from any statistical analysis. Questions that had "Other, specify" as an option were treated similarly to the last two open ended questions. The Qualitative study questions data were carefully reviewed, categorized, and coded into themes that emerged from the participant's responses, and then descriptive statistics were used to generate frequencies and percentages as well.

About 1001 participants approached the survey. While 764 of them were midwives eligible to practice midwifery in the US, 197 of them were midwifery students actively engaged in a full/part time midwifery program accredited by the ACME.

Demographics

The participants' demographics are summarized in Table 1. The first age group 20 to 29 years old 7.5% is the smallest. Midwives 30-39 years old were the largest group. The other groups were almost equally distributed.

Out of the 919 respondents, 787 (85.6%) have a CNM certification, 17 (1.8%) are Certified Midwives (CM). Additional certifications are held by 102 (11.1%) Women's' Health Nurse Practitioner, 33 (3.6%) have a Family Nurse Practitioner, and 78 (8%) answered with various responses.

Of the 875 participants, the majority (78.2%) has a MS/MSN, 7.2% have a DNP, 5.1% have a PhD, and 1.7% has MPH, and 7.5 % other (BSN 56, Certificate 6, EdD 2, Diploma 2). Years of practice as a midwife were answered by 879 participants. The largest group, 37.3%, had less than 10 years of experience, while 19.7% had 10-20 years, 19.9% had 20-30 years, and 9.6% had more than 30 years (9.67%).

Table 4. 1

Frequency and Percentage Summaries of Responses on Demographics

	f	Percent
Age		
20-29	69	7.50
30-39	239	26.0
40-49	182	19.8
50-59	194	21.1
60 or above	193	21.0
Missing	42	4.60

Certification		
Midwife	804	93.9
WHNP	102	11.1
FNP	33	3.60
Other	78	8.00
The highest degree ever earned		
Other	66	7.50
MS/MSN	648	78.2
PhD	43	5.10
DNP	59	7.20
MPH	14	1.70
Missing	70	7.60
Years of practice as a Midwife		
NA	102	11.1
Less than 10	358	37.3
10-20	181	19.7
20-30	183	19.9
More than 30	85	9.20
Missing	40	4.40
For Midwifery students		
Other	1	0.1
This is my first year in midwifery program	39	35.4
This is my second year in midwifery program	44	40.0
This is my third year in midwifery program	27	24.5
Missing	806	13.6

Most midwifery students, 44 (40%) are in the second year of their midwifery program, 39 (35.4%) are in first year, and 27 (24.5%) are in the third year of the midwifery program. The remaining 684 responses with "NA" or "other" choices were excluded from the analysis for this question and were treated as missing responses (See Table 4.1).

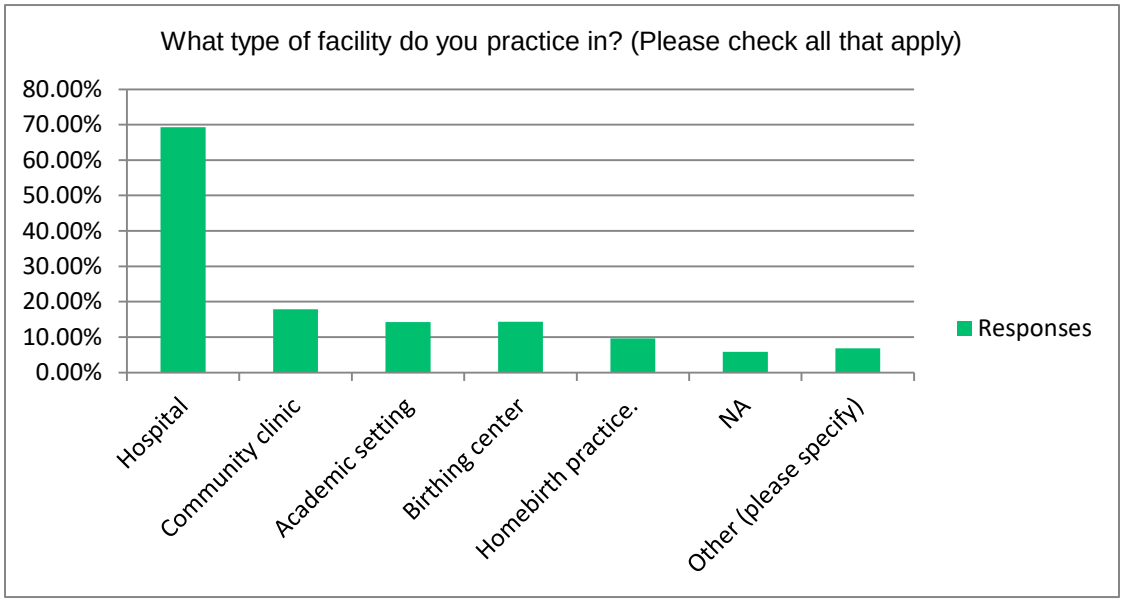

Figure 4. 1 the distribution of the participants based on the Type of Facility Practicing

More than half of the respondents (66.3%) practice in hospitals, (18.8%) in community clinics, (14.6%) in academic settings, and (9.2%) in homebirth practice. The other responses (n=47) were 26 in private OB practice, six retired, three unemployed currently, three students, and three midwives not attending births. NA responses from 51 found that none of the previously mentioned practice setting matched their current workplace. See Figure 4.1

Levels of knowledge and skills with WB

Table 4.2 summarizes the responses on the participant's levels of knowledge and skill with WB. The responses in this section address Research Question One. If the participants wanted

information about WB, majority (85.1%) responded that they would go to other midwives (n=782) and academic journals (n=703; 76.5%).

Table 4. 2

Frequency and Percentage summaries of Responses on Knowledge and Experience with WB

	f	Percent
If you wanted information about WB, who would you go to:		
Other Midwives	782	85.1
Nurses	55	6.0
Academic journals	703	76.5
Videos	136	14.8
Newspapers	4	0.40
Internet web sites	373	40.6
Blogs	58	6.30
Conferences	546	59.4
Obstetricians	57	6.20
Pediatricians	21	2.30

A significant number of participants (n=546) also attended conferences (59.4%) or use internet web sites (n=373; 40.6%). The majority of the participants (n=721; 78.5%) have read a scholarly article or research paper on WB. The majority of participants (86.1%) has watched a video about labor in water or has watched a video about birth in water (86.8%). The majorities of the participants (73.3%) have witnessed a WB or have helped with the birth of a baby in water (69.3%). The majority of the participants (88.9%) have helped a woman labor in water (see Table 4.2).

Less than half of the participants (445; 48.4%) were taught about WB in their midwifery education program. Just 35.3% have had any continuing education focused on WB. About one-third of the participants (32.1%) have had formal WB training. About one-third of the participants (33.5%) were able to attend water births during their midwifery education program. Only 10.1% of the participants have personally given birth in water.

Levels of competence and confidence in performing WB

The responses in this section address Research Question Two. More than half of the participants either agreed (242; 26.3%) or somewhat agreed (242; 26.3%) that they need formal training to provide WB. More than half of the participants either agreed (347; 37.8%) or somewhat agreed (166; 18.1%) that they need a midwife mentor and support to become confident with WB. The majority of the participants agreed (712; 77.5%) that they are physically capable of providing WB. More than half of the participants either agreed (487; 53%) or somewhat agreed (155; 16.9%) that they are confident that they have the required skills and knowledge to provide WB. More than half of the participants either agreed (469; 51%) or somewhat agreed (137; 14.9%) that they are competent to provide WB. Table 4.3 summarizes the responses of the participant's levels of competence and confidence in performing WB.

Table 4. 3

Frequency and Percentage Summaries of Responses on Confidence and Competence Providing WB

	Frequency	Percent
I need formal training to provide WB		
Agree	242	26.3
Somewhat agree	242	26.3

Neutral	106	11.5
Somewhat disagree	81	8.8
Disagree	176	19.2
NA	27	2.9
Missing	45	4.9
I need a midwife mentor and support to become confident with WB		
Agree	347	37.8
Somewhat agree	166	18.1
Neutral	85	9.2
Somewhat disagree	50	5.4
Disagree	190	20.7
NA	37	4
Missing	44	4.8
I am Physically capable to provide WB		
Agree	712	77.5
Somewhat agree	77	8.4
Neutral	24	2.6
Somewhat disagree	19	2.1
Disagree	21	2.3
NA	21	2.3
Missing	45	4.9
I am confident that I have the required skills & knowledge to provide WB.		
Agree	487	53
Somewhat agree	155	16.9

Neutral	64	7
Somewhat disagree	58	6.3
Disagree	93	10.1
NA	16	1.7
Missing	46	5
I am competent to provide WB		
Agree	469	51
Somewhat agree	137	14.9
Neutral	73	7.9
Somewhat disagree	61	6.6
Disagree	110	12
NA	27	2.9
Missing	42	4.6

More than half of the participants responded that their patients often (294; 32%) or sometimes (277; 30.1%) ask them about WB. Many of the participants responded that they often (200; 21.8%) or sometimes (166; 18.1%) recommend WB to their patients. Half of the participants responded that they often (233; 25.4%) or sometimes (271; 23.6 %) recommend WB to their friends and family. Table 4.4 summarizes the responses on the personal effectiveness of participants.

Table 4. 4

Frequency and Percentage Summaries of Personal Effectiveness on Patients

	Frequency	Percent

My patients ask me about WB		
Always	90	9.8
Often	294	32
Sometimes	277	30.1
Rarely	137	14.9
Never	16	1.7
NA	62	6.7
Missing	43	4.7
I recommend WB to my patients		
Always	59	6.4
Often	200	21.8
Sometimes	166	18.1
Rarely	102	11.1
Never	163	17.7
NA	186	20.2
Missing	43	4.7
I recommend WB to my friends and family		
Always	89	9.7
Often	233	25.4
Sometimes	217	23.6
Rarely	107	11.6
Never	132	14.4
NA	98	10.7
Missing	43	4.70

Nearly 20% of the participants (n=179; 19.5%) report that they have always advocated for the introduction of WB at their workplace. About 40% of the participants responded that their participation in developing workplace policy always (228; 24.8%) or often (146; 15.9%) made a difference in decisions for WB. Nearly 60% of the participants (n=546; 59.4%) responded that they will always implement the policy when their organization adopts policies supporting WBs. See table 4. 5

Table 4. 5

Frequency and Percentage Summaries of Personal Effectiveness on Workplace Policy

	Frequency	Percent
I have advocated for the introduction of WB at my workplace.		
Always	179	19.5
Often	127	13.8
Sometimes	136	14.8
Rarely	63	6.90
Never	153	16.6
NA	218	23.7
Missing	43	4.70
My participation in developing workplace policy makes a difference in decisions that are made regarding WB.		
Always	228	24.8
Often	146	15.9
Sometimes	111	12.1
Rarely	59	6.40
Never	140	15.2

NA	192	20.9
Missing	43	4.70
When my organization adopts policies supporting WBs, I will implement that policy		
Always	546	59.4
Often	64	7.0
Sometimes	44	4.8
Rarely	6	0.7
Never	17	1.8
6 NA	201	21.9
Missing	41	4.50

Sources of WB support available for midwives in the workplace

The responses in this section address Research Question Three. The majority of the participants described their patients as either strongly supportive (409; 44.5%) or mildly supportive (414; 45%) of WB. A total of more than half of the participants described labor and delivery nurses in their organizations as either mildly supportive (400; 43.5%) or strongly supportive (149; 16.2%) of WB. Almost half of the other midwives in the organizations of participants are strongly supportive (457; 49.7%) of WB, while more than a quarter are mildly supportive (248; 27%) of WB. Over 40% of the pediatricians in the organizations of the participants are not supportive (407; 44.7%) of WB. Only 20% of pediatricians are either mildly supportive (18.5%) or strongly supportive (2.2%) of WB. Administrative support of participants is low (341; 37.1%) in relationship to WB. The participants described the insurers for their organization as not supportive at all (260; 28.3%) or mildly supportive (137; 18.8%) of WB. About 40% of participants were unable to answer this question, so they responded with NA.

Table 4. 6 summarize the responses on sources of WB support available for midwives.

Table 4. 6

Frequency and Percentage Summaries of Responses on Sources of WB Support Available in workplace

	f	Percent
Rate the Labor and delivery nurses' in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?		
Not Supportive at all	183	19.9
Mildly supportive	400	43.5
Strongly supportive	149	16.2
NA	143	15.6
Missing	44	4.80
Rate the other Midwives in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?		
Not Supportive at all	27	2.90
Mildly supportive	248	27.0
Strongly supportive	457	49.7
NA	144	15.7
Missing	43	4.70
Rate the Pediatrician's in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?		
Not Supportive at all	407	44.3
Mildly supportive	170	18.5
Strongly supportive	20	2.20
NA	279	30.4

Missing	43	4.70
Rate the Administration in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?		
Not Supportive at all	341	37.1
Mildly supportive	213	23.2
Strongly supportive	143	15.6
NA	178	19.4
Missing	44	4.80
Rate the Insurer's in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?		
Not Supportive at all	260	28.3
Mildly supportive	173	18.8
Strongly supportive	56	6.10
NA	365	39.7
Missing	65	7.10

Majority of the participants, 69.6% either agreed or somewhat agreed that they need organizational support to offer WBs. Leadership support to offer WB is needed by 70.8%. Seventy-five percent of participants need polices and guideline to provide WB (see table 4.7).

Table 4.7

Frequency and Percentage Summaries of Workplace Leadership/Organizational Support to WB

	f	Percent
I need organizational support to offer WB		
Agree	549	59.7
Somewhat agree	91	9.90

Neutral	39	4.20
Somewhat disagree	6	0.70
Disagree	41	4.50
NA	148	16.1
Missing	45	4.90
I need leadership support to offer WB		
Agree	534	58.1
Somewhat agree	117	12.7
Neutral	35	3.8
Somewhat disagree	5	0.50
Disagree	37	4.0
NA	146	15.9
Missing	45	4.90
I need policies and guidelines to provide WB		
Agree	577	62.8
Somewhat agree	116	12.6
Neutral	27	2.9
Somewhat disagree	5	0.50
Disagree	37	4.0
NA	112	12.2
Missing	45	4.90

Table 4.8 summarizes the open responses of the participants on the possible sources of WB support available in their workplace. The participants rated some possible sources of WB

support. However, the largest group, 47.7% was information from other midwives. Either NA or None had combined (35.1%) response rate.

Table 4. 8

Frequency and Percentage Summaries of Responses Categories of WB Sources of Support in workplace

	f	Percent
Category		
Guidelines	15	2.4
Nurses	50	7.99
Hospital polices	62	9.99
National associations	11	1.76
Medical staff	66	10.54
Management	84	13.42
Insurers	2	0.32
Research only	8.0	1.28
Patients	67	10.7
Midwives	299	47.7
None/NA	220	35.14

Barriers to WB midwives face in the workplace

The responses in this section address Research Question Four. The majority of the participants responded that they either disagree or somewhat disagree (63.8%) that the high cost is a main barrier to WB implementation in their workplace. A large percentage, 44%, responded that they either agree or somewhat agree that lack of scientific evidence to support the safety/benefits is a main barrier to implementing WB in their workplace. Nearly the same

percentage, 44.6% responded that they either disagree or somewhat disagree that the lack of skilled and confident providers to provide WB is a main barrier to WB implementation in their workplace. Table 9 summarizes the responses on the participants on barriers to WB midwives face in their workplace.

Table 4. 9

Frequency and Percentage Summaries of Responses on Barriers to WB Midwives Face in Workplace

	f	Percent
The main barrier to WB implementation in your workplace is the high cost?		
1 Agree	37	4.0
2 Somewhat agree	65	7.1
3 Neutral	179	19.5
4 Somewhat disagree	110	12.0
5 Disagree	476	51.8
Missing	52	5.7
The main barrier to WB implementation in your workplace is the lack of scientific evidence to support its safety/benefits?		
1 Agree	169	18.4
2 Somewhat agree	235	25.6
3 Neutral	142	15.5
4 Somewhat disagree	97	10.6
5 Disagree	222	24.2
Missing	54	5.9
The main barrier to WB implementation in your workplace is the lack of skilled and confident providers to provide WB?		

1 Agree	144	15.7
2 Somewhat agree	192	20.9
3 Neutral	120	13.1
4 Somewhat disagree	126	13.7
5 Disagree	284	30.9
Missing	53	5.8

Participants were given the opportunity to identify possible barriers to WB. The answers were categorized by themes. Table 4.10 summarizes the themes of the open responses of the participants on the barriers of WB support in their workplace.

Table 4. 10

Frequency and Summary of Responses Categories of barriers to WB in workplace

	f	Percent
Category		
ACOG	41	5.99
Body Mechanics	7.0	1.02
Safety Concern	39.0	1.02
Unwelcoming Environment	256	37.37
Tubs issues	153	22.4
Patients lack of interst	13	1.90
Nurses	89	12.9
No training	17	2.48
Medical staff	228	33.28
Lack of research	8.0	1.17

Hospital policy	71	10.36
Administration	34	4.96
Cost	36	5.26
None	100	14.6

Summary

The responses collected from the 1001 participants were refined and filtered. Partially completed, or incomplete were excluded. The filtered data included 919 completed surveys. Descriptive analysis was used to generate the percentages and frequencies. Analysis of the questions that has "select all that apply" answers was treated as "Yes" or "No" responses and percentages and frequencies were generated for each option. Since the participants could have omitted the question if they didn't want to leave a response, "NA" responses were treated as usable data. "NA" responses were included in the statistical analysis, and were not considered missing responses. The responses from the last two open ended questions were carefully reviewed, manually coded into categories, and reexamined again. Then more categories were created, until the researcher reached confidence that all responses were coded properly. This allowed for using the data collected from the qualitative questions to be analyzed using the descriptive statistics of frequencies and percentages.

Chapter V

Discussion

This chapter includes a discussion of major study findings, implication for practice, limitations, strength, recommendations, and conclusion. The Major Findings discussion starts with the participant's levels of knowledge and skill with WB, moves to participant's levels of competence and confidence in performing WB, and concludes with sources of support for WB that are available for midwives and the barriers to WB midwives face in the workplace.

Study Purpose

The purpose of this study is to generate scientific knowledge regarding the US CNM's/ CM's and SNM's KAP of WB. The study specifically assesses CNM/CM and midwifery students' knowledge and clinical experience, competence and confidence, and sources of support versus barriers to the practice of WB in the workplace.

Research Questions

1. What are the CNM/CM and SNM levels of knowledge and skill with WB?
2. What are the CNM/CM and SNM levels competence and confidence in performing WB?
3. What sources of support to WB are available for midwives in the workplace?
4. What barriers to WB do midwives face in the workplace?

Discussion of Major Study Findings

The demographics of this study showed 903. participants were midwives eligible to practice in the United States, and 170 were student's midwives. Midwives age 30-39 years old were the largest group. Regarding certification and education, about 85% reported they have

CNM certification and 70.5% of the participants have a MS/MSN degrees. More than half of the midwives in this study were employed in a hospital setting. Almost half of the Midwifery students were in the second year of their program.

Research question 1: levels of knowledge and skill with WB.

The study's conceptual framework, the TPB theory, identified Knowledge as the perceived personal ability to offer and provide WB, which also includes knowledge, skills, and physical capabilities to perform WB (Control belief) (Ajzen, 1991). This study identified academic journals and other midwives as the main sources of knowledge the midwives/students midwives relied on to learn about WB. Other sources included conferences and internet websites. Similar to the (Meyer et al., 2010) study findings, midwives/student midwives actively participated in self-education using multiple educational sources, such as reading WB articles, or watching videos of labor or birth in water. Clearly, the identified WB educational resources depended mainly on the midwives personal motivation and interest in WB. Most do not identify a job related skill requirement or a certification requirement for the practice.

A larger percentage of midwives have witnessed (73.3%) or helped with (69.3%) WB. A majority of these midwives (88.9) helped a woman labor or give birth in water, this may indicate high levels of knowledge and skills with WB among practicing midwives.

The study findings suggest that midwifery programs should consider the incorporation of more WB focused activities in the curriculum. Almost half of the midwives/student midwives have received some education regarding WB during their formal midwifery program. However, more than half did not attend or witness WB during their midwifery program. This indicates a room for improvement.

Only a small percentage of midwives/student midwives have attended WB continuing education or received any formal training. The majority of these participants are not certified WB providers. This may indicate workplaces could require implementation of some requirements for WB competencies and continuous education to maintain adequate levels of WB knowledge and skills.

The last question in the knowledge section asked if the midwives had personally given birth in water. About 85% of the midwives answered negatively. This question assed the midwives knowledge and exposure to WB. One could also assess their levels of confidence with WB by personally considering the experience of WB themselves.

Research question 2: levels of competence and confidence in performing WB.

The study's conceptual framework defined the midwives attitude toward WB (Behavioral belief) as WB personal belief of safety, perceived benefits, confidence, and competence (Ajzen, 1991). Understanding midwives confidence and competence is integral to predicting their influence on the patient's choices (Woodword, 2011). More than half of the participants (52.6%) agreed on the need for formal WB training. Also, more than half of the respondents agreed on the need for a midwife mentor to become confident with WB. The majority (85.9%) agreed that they are physically capable, competent, and confident in their knowledge and skills to provide WB.

Confidence in perceived WB safety and benefits was assessed using the personal effectiveness section of the study instrument. The great patient interest in WB was clear by reviewing the midwives responses, 71.9% of their patients always, often, or sometimes asked

about WB. Many midwives (46.3%) recommended WB to their patients, and more of the midwives (49.6%) are more likely to recommend WB to family and friends.

The midwives responses in this study showed strong advocacy of WB in their work environment, as (48.1%) have advocated for the introduction of WB into their workplace. Fortunately, 52.8% believe that their enthusiasm and involvement in policies was effective in making a difference within their workplace WB policies. Nearly three-quarters (70.8%) of the participants are eager to implement policies that support WB within their work environment if their workplace were to adopt them.

Research question 3: sources of support to WB are available for midwives in the workplace.

Based on the study's conceptual model (Ajzen, 1991), the sources of support in the midwives' environment (Normative belief) are more likely to encourage them to provide WB more often and become more comfortable discussing WB with their patients. Since the culture of birthing units significantly affects the perception of WB barriers (Stark & Miller, 2009), it is important to study the available sources of support for midwives to provide WB. Russel et al. (2013) explained that patient centered work environments would provide more clinical leadership and social support to midwives to practice WB. This research question regarding the midwives surroundings acceptance and support of WB were assessed using two different methods. The first method was a Likert like scale questions. The second method was an open-ended question to give the participants the freedom to add any missing variables.

The findings from the scaled responses was divided into two subcategories, the first category being a rating scale of the perceived support for WB from patients, other midwives,

nurses, pediatricians, insurers, and administrations. Within the midwives' environment, patients were the most supportive component, with 89.5% of the participants describing the patients to be mildly or strongly supportive of WB. The majority of participants (76.7%) described other midwives as mildly or strongly supportive of WB, but just over 20 % were unable to answer this question. While nearly 60% of the participants described nurses as mildly or strongly supportive of WB, almost 20% described nurses as not supportive at all. Pediatricians are not perceived as being supportive: 20.7% described pediatricians in their workplace as mildly or strongly supportive of WB, while 44.3% described pediatricians in their workplace as not supportive at all of WB. However 35% were unable to answer the question. The study participants gave some conflicting percentages regarding their perception of their administration and insurers support, and many were unable to answer the question. Therefore, it is difficult to draw a conclusion regarding administration and insurers support of WB.

The second category in the scaled section included a scale to assess the midwives need for organizational support, leadership, and guidelines to offer WB. The need for guidelines and policies to offer WB was the greatest component (75.4%) that the participants agreed or somewhat agreed on. The majority of participants (69.9%) agreed or somewhat agreed that they need organizational support to offer WB, but 21% of them did not answer the question. The same applies to leadership support. Seventy percent agreed or somewhat agreed on the need for leadership support to offer WB, but 20.8% did not answer the question.

Coding of the open ended question identified 12 categories of WB support; patients, national midwifery associations, guidelines mainly in home birth and birthing centers, hospital policies if WB was allowed, independent midwife in private midwifery practices, insurers, management, medical staff (obstetricians, pediatricians, or anesthesiologists), nurses, and

research only. The largest group of support (47.7%) was midwives. However, 35% indicated either NA or None.

Research question 4: barriers to WB midwives face in the workplace.

As previously discussed, the TPB identified the concept of normative belief. Normative belief is that the midwives' surroundings accept, rather than the environment rejects WB (Ajzen, 1991). A positive environment would highly influence the intentions of offering WB to patients. Following TPB theory, if there are many barriers to WB, or if the environment is unwelcoming to WB, this will negatively impact the midwives' intentions to offer WB. The literature documents the negative impact of the ACOG/AAP Joint Committee Opinion NO.594 on availability of WB in the US. The ACOG/AAP Joint Committee Opinion recommends that WB be allowed under one condition: if it is part of a research project requiring IRB approval and participants consent forms (ACOG & AAP, 2014). This Joint Committee Opinion had a great impact in discouraging many providers, hospitals, and patients from using WB (Gilbert, 1999; Grunebaum & Chervenak, 2004). The barriers section was assessed using two methods, the first method utilized the Likert scale questions, and the second method used an open-ended question.

Most of the study participants (63.8%) disagreed that cost is the main barrier to WB. The study participants were almost divided on the lack of evidence of WB safety and benefits, however, 44% of the participants agreed or somewhat agreed that lack of evidence is the main barrier to WB, while 34.8% of participants disagreed or somewhat disagreed with this statement. The same division on the lack of skilled and confident providers as a barrier to WB statement existed, when 44.6% of participants disagreed or somewhat disagreed with the statement and 36.6% agreed or somewhat agreed with the statement.

The open-ended question responses were categorized into 15 categories including ACOG (WB done in the context of a research study only), administration, body mechanics, cost, the dislike of WB, hospital policy, lack of research, medical staff (pediatricians, obstetricians, and anesthesiologists), no training (at workplace), nurses (added work load to maintain tubs and clean them), patients' lack of interest (not asking about WB), safety concerns (ACOG recommendations), tub issues (space, maintaining, cleaning, cost), and unwelcoming environment (all of the above). The largest percentage (37.3%) of participants identified unwelcoming environment as the main barriers that keep them from offering WB to their patients, followed respectively by medical staff (33.2%) and tub issues (22.3%).

Implications for Practice

The study findings identified a need for formal WB training during midwifery education and in the workplace. The small percentage of WB certified midwives may indicate a need for the workplace to require WB certification to offer and provide WB. Certifying bodies may also require a certain number of WB continuous education credits to grant certification renewal.

The data showed a significant number of responses that clearly indicated the need for workplace WB guidelines. The study finding also established the need for multi-disciplinary national WB guidelines lead by ACNM, but produced in collaboration with ACOG and AAP using evidence based approaches to critique the available evidence.

Leadership and organizational support of midwifery practice is integral. For organization that aims at adopting the trending national initiatives of patient centered care would benefit from the introduction of WB within their organizations. Leadership support greatly influence

midwives intensions to provide WB. Organizational leadership can be empowering and enabling to midwives to excel and provide best practice care.

Limitations

While the descriptive design of this survey study provided a timely, quick, and easy research method, there are limitations to this method. Although the study achieved a 92% completion rate, the large number of missing responses (skipped, or NA) might influence the study analysis. Due to non-response error in survey studies, there is no guarantee that all of the study participants will be contacted, indeed, for this study, while all active members were contacted, life members were not. The sample may be biased because not all ACNM members may respond to the email. Sadly, not all of the practicing US midwives/students midwives have an active membership. Descriptive studies are unable to draw a cause effect relationship or assess correlations between the study variables.

The self-reporting in survey studies may pose some exaggeration or attribution bias. To reduce the self-reporting bias, the study introduction email attempted to explain the tool to clarify the purpose and inform the study participants. The researcher email address and phone number was made available to the study participant to request clarification or give feedback about the study.

The researcher initially planned to conduct the study over the course of six weeks, and prompts for answers every 2 weeks. But due to the unexpected extended delays in processing and obtaining the IRB and the ACNM approvals, the researcher was under time constrains and sent the study over two weeks with only one prompt for responses. Also, the fact that the researcher under financial constrains had to purchase the standard plan which restricted the number of

responses to only one thousand response per month, or Survey Monkey would charge extra fees if more than one thousand responses were collected during the same month.

Study Strength

This is the first national study that tried to address all of the US midwives/midwives students. The study used the whole population of the ACNM membership. Using the entire data base allowed a broader collection of data and more generalizable findings.

Descriptive studies are unique in their approaches because data is collected about study participants without manipulation of their environment. Descriptive studies try to understand what is already happening. The study allowed the participant feedback to be collected in both a quantitative and qualitative approaches. The analysis of data was done by quantitative statistics, which enabled the researcher to draw conclusion based on numbers.

Recommendations

As explained in the implications section, the need for national WB guidelines is probably overdue. National guidelines to support and guide the practice of WB based on best evidence need to be created and disseminated nationally. The collaboration of healthcare leaders, midwives, nurses, obstetricians, pediatricians, and anesthesiologist collaboration to create these guidelines is essential. Free access to these guidelines should be granted to all US WB providers. It is recommended that midwifery education programs try to incorporate more hand-on WB clinical experience and exposure during the midwifery program. Incorporating WB training and continued education by AMCB, should be considered to ensure adequate WB training for the new generations of midwives.

There is a scarcity of well-designed WB research articles. More research is needed to guide and support practicing midwives with the most recent evidence. Educational and healthcare institutions should initiate and fund more randomized controlled trial projects to resolve any safety concerns. National midwifery organization should hold more WB conferences to disseminate the new evidence and knowledge about WB. Also, national WB information conferences and workshops should be undertaken not just for the midwife practitioners of WB, but also directed to pediatricians, obstetricians, anesthetists, anesthesiologists and nurses to spread awareness of WB benefits and safety and defeat myths regarding WB. In addition, the birthing public should be educated on the myths, benefits and safety of WB.

Also WB can be incorporated within the continuous education credits needed for recertification. To improve the numbers of provider that offer and provide WB, workplaces can reinforce a requirement of WB training, and need to implement policies to guide WB.

Conclusion

This study assed the midwives/student midwives WB Knowledge, Attitude, and clinical practices. Midwives/student midwives self-educate on WB by reading WB articles or watching videos of labor/birth in water. Through personal motivation and interest, WB learning activities have been used by midwives to develop knowledge in WB. In most cases the knowledge obtained was not a job related skill requirement, or a certification requirement.

The study participants agreed that they are confident and competent with their WB skills and knowledge. Most of them perceived themselves to be personally effective in recommending WB to their patients, family, and friends. Participants agreed on their effectiveness in advocating

for WB. Many of them were not only effective in WB policies and decision making, but also were eager to implement those policies.

Patients were identified by the participants as the most supportive component, followed by other midwives. A good percentage of participants described nurses to be supportive of WB. A large percentage of participants do not consider pediatricians supportive at all, but due to the large number of missing responses it was hard to draw a definite conclusion about pediatric colleagues. A need for guidelines and policies to offer WB was identified by this study. The study also identified the need for leadership and organizational support to offer WB. The open-ended question identified twelve categories of WB support; patients, national midwifery associations, guidelines, hospital policies, independent midwife, insurers, management, medical staff, nurse, and research only. The largest source of support was other midwives.

Most of the study participants disagreed that cost is a significant barrier to WB. However, the study participants were divided on whether the lack of evidence of WB safety and benefits and the lack of skilled and confident providers are the main barriers to WB. The open-ended question responses were categorized into 15 categories including ACOG, administration, body mechanics, cost, the dislike of WB, hospital policy, lack of research, medical staff, no training, nurses, and patients' lack of interest, safety concerns, tub issues, and unwelcoming environment. The largest percentage distinguished the unwelcoming environment as the main barrier that keep them from offering WB to their patients, as well as medical staff, followed by tubs issues.

Finally, the study findings were able to answer the four research questions. The study identified a need for more WB learning activities at both educational and healthcare facilities. Also a need for WB guidelines, organizational and leadership support is established. The lack of

evidence to defeat myths regarding WB benefits and safety calls for more research in this important field of interest.

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Appendix A

WATER BIRTH

The US Midwives and Midwifery Students Waterbirth Survey

Waterbirth provide an option to mothers who have uncomplicated pregnancies and desire a delivery with less medical intervention. Despite the growing scientific evidence about the benefits of WB, only a small percentage of hospitals in the United States offer WBs as an option to women and families. This study purpose is to survey the US Midwives/Midwifery students about their Waterbirth knowledge, attitude, and clinical practices, in addition to assessing Waterbirth sources of support or obstacles within the midwives environment.

WATER BIRTH

Inclusion Questions

* Select the answer that applies best to you

- ◯ I am actively enrolled in full/part time midwifery program accredited by the Accreditation Commission for Midwifery Education
- ◯ I am currently eligible to practice midwifery in the United States
- ◯ None of the above

WATER BIRTH

Demographic

Your age?

- ◯ 20-29
- ◯ 30-39
- ◯ 40-49
- ◯ 50-59
- ◯ 60 or above

Certification (Please check all that apply)

- ☐ CNM
- ☐ CM
- ☐
- ☐

WHNP

FNP

The highest degree ever earned?

- ◯ MS/MSN
- ◯ PhD
- ◯ DNP
- ◯ MPH
- ◯ Other. Specify _____

Number of years practicing as a Midwife

- ◯ NA
- ◯ Less than 5
- ◯ 5-10
- ◯ 10-20
- ◯ 20-30
- ◯ More than 30

For Midwifery students

- ◯ This is my first year in midwifery program
- ◯ This is my second year in midwifery program
- ◯ This is my third year in midwifery program
- ◯ Other (please specify)

What type of facility do you practice in? (Please check all that apply)

- ☐ Hospital
- ☐ Community clinic
- ☐ Academic setting
- ☐ Birthing center
- ☐ Homebirth practice.
- ☐ Other (please specify)

WATER BIRTH

Knowledge/Experience with WB

If you wanted information about WB, who would you go to: (Please check all that apply)

- ☐ Other Midwives
- ☐ Nurses
- ☐ Academic journals
- ☐ Videos
- ☐ Newspapers
- ☐ Other (please specify)
- ☐ Internet web sites
- ☐ Blogs
- ☐ Conferences
- ☐ Obstetricians
- ☐ Pediatricians

Have you ever read a scholarly article or research paper on WB?

- ○ Yes
- ○ No

Have you ever watched a video about labor in water?

- ○ Yes
- ○ No

Have you ever watched a video about birth in water?

- ○ Yes
- ○ No

Were you taught about WB in your midwifery education program?

- ○ Yes

○ No

Have you ever done any continuing education focused on WB?

○ Yes

○ No

Have you ever received any formal WB training?

○ Yes

○ No

Are you certified as a WB provider?

○ Yes

○ No

Were you able to attend births in water during your midwifery education program?

○ Yes

○ No

Have you ever witnessed a WB?

○ Yes

○ No

Have you ever helped with the birth of a baby in water?

○ Yes

○ No

Have you ever helped a woman labor in water?

○ Yes

○ No

Have you personally given birth in water?

- ◯ Yes
- ◯ No

WATER BIRTH

Confidence and Competence providing WB

I need formal training to provide WB

- ◯ Agree
- ◯ somewhat disagree
- ◯ Somewhat agree
- ◯ Disagree
- ◯ Neutral
- ◯ NA

I need a midwife mentor and support to become confident with WB

- ◯ Agree
- ◯ somewhat disagree
- ◯ Somewhat agree
- ◯ Disagree
- ◯ Neutral
- ◯ NA

I am physically capable to provide WB

- ◯ Agree
- ◯ Somewhat disagree
- ◯ Somewhat agree
- ◯ Disagree
- ◯ Neutral
- ◯ NA

I am confident that I have the required skills & knowledge to provide WB.

- ◯ Agree
- ◯ somewhat disagree
- ◯ Somewhat agree
- ◯ Disagree
- ◯ Neutral
- ◯ NA

I am competent to provide WB

◯ Agree ◯ somewhat disagree

◯ Somewhat agree ◯ Disagree

◯ Neutral ◯ NA

WATER BIRTH

Personal Effectiveness

My patients ask me about WB

◯ Always ◯ Rarely

◯ Often ◯ Never

◯ Sometimes ◯ NA

I recommend WB to my patients

◯ Always ◯ Rarely

◯ Often ◯ Never

◯ Sometimes ◯ NA

I recommend WB to my friends and family

◯ Always ◯ Rarely

◯ Often ◯ Never

◯ Sometimes ◯ NA

I have advocated for the introduction of WB at my workplace.

◯ Always ◯ Rarely

◯ Often ◯ Never

◯ sometimes ◯ NA

My participation in developing workplace policy makes a difference in decisions that are made regarding WB.

◯ Agree ◯ Somewhat Disagree

◯ Somewhat Agree ◯ Disagree

◯ Neutral

When my organization adopts policies supporting WBs, I will implement that policy

◯ Agree ◯ Somewhat Disagree

◯ Somewhat Agree ◯ Disagree

◯ Neutral

WATER BIRTH

Work Environment related to WB

How would you rate the Obstetricians in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?

◯ Not Supportive at all

◯ Mildly supportive

◯ Strongly supportive

How would you rate the Labor and delivery nurses' in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?

◯ Not Supportive at all

◯ Mildly supportive

- [ ] Strongly supportive

How would you rate the Other CNMs in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?

- [ ] Not Supportive at all
- [ ] Mildly supportive
- [ ] Strongly supportive

How would you rate the Pediatrician's in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?

- [ ] Not Supportive at all
- [ ] Mildly supportive
- [ ] Strongly supportive

How would you rate the Administration in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?

- [ ] Not Supportive at all
- [ ] Mildly supportive
- [ ] Strongly supportive

How would you rate the Patient's in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?

- [ ] Not Supportive at all
- [ ] Mildly supportive
- [ ] Strongly supportive

How would you rate the Insurer's in your organization, on a scale of not supportive at all to strongly supportive in relationship to WB?

- [ ] Not Supportive at all
- [ ] Mildly supportive

◯ Strongly supportive

The main barrier to WB implementation in your workplace is the high cost?

◯ Agree ◯ Somewhat Disagree

◯ Somewhat Agree ◯ Disagree

◯ Neutral

The main barrier to WB implementation in your workplace is the lack of scientific evidence to support its safety/benefits?

◯ Agree ◯ Somewhat Disagree

◯ Somewhat Agree ◯ Disagree

◯ Neutral

The main barrier to WB implementation in your workplace is the lack of skilled and confident providers to provide WB?

◯ Agree ◯ Somewhat Disagree

◯ Somewhat Agree ◯ Disagree

◯ Neutral

I need organizational support to offer WB

◯ Agree ◯ Somewhat Disagree

◯ Somewhat Agree ◯ Disagree

◯ Neutral

I need leadership support to offer WB

◯ Agree ◯ Somewhat Disagree

◯ Somewhat Agree ◯ Disagree

◯ Neutral

I need policies and guidelines to provide WB

- ○ Agree
- ○ Somewhat Agree
- ○ Neutral
- ○ Somewhat Disagree
- ○ Disagree

Please list all the sources of WB support that are available for you in your workplace

Please list all the barriers to WB that you face in your workplace

Appendix B

Dear Midwives and Midwifery Students,

I am a DNP student enrolled at the Frances Bolton School of Nursing Case Western Reserve University/ in Cleveland/Ohio. This research is conducted in partial fulfillment of the requirements for the degree.

This study, Water Birth: Midwives Perception, Attitude, Knowledge, and Clinical Practices, is needed due to the ongoing conversation surrounding the practice of Water birth. Studies are needed to improve the image of this practice to all birth stakeholders. The study will generate scientific knowledge regarding the US Certified Nurse-Midwives /Certified Midwives and Student Nurse-Midwives/Student Midwives Knowledge, Attitude and Practice of Waterbirth. Your participation in the study will be completely anonymous; no identifying information will be collected or linked to participants. The researcher will receive data without identifying information. This study has NO risk for you. Your participation is 100% voluntary, and your consent to participate is implied by clicking on the survey link.

You can access the study survey by clicking on the link below. The online survey will take approximately 15-20 minutes or less to complete. Initially you will answer two inclusion questions. If you meet the inclusion criteria you will be able to access and complete the survey. If you have questions about this research project you may contact me at: hma11@case.edu or my advisor, Gretchen Mettler, PhD, CNM at 216 368-3821 or ggm@case.edu .

https://www.surveymonkey.com/r/7GX9T7F

Thank you for your participation

Hannoud Almoghrabi, RN, MSN, WHNP-BC

DNP student Frances Payne Bolton School of Nursing

Case Western Reserve University

Email: hma11@case.edu

Appendix C

CASE WESTERN RESERVE UNIVERSITY EST. 1826

NOTICE OF EXEMPTION #2

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior.

CWRU IRB Protocol Number:	**IRB-2017-2163**
Protocol Title:	***Copy of WATER BIRTH: MIDWIVES PERCEPTION, ATTITUDE, KNOWLEDGE, AND CLINICAL PRACTICES***
Responsible Investigator (RI):	**Gretchen Mettler**
Co-Investigator (CI):	**Hannoud Al Moghrabi**
RI Department:	**Case Western Reserve University IBC and SBER IRB - NUR - Nursing General**
Exemption Date:	12/14/2017

The CWRU Institutional Review Board (IRB) has deemed the above protocol EXEMPT under 45 Code of Federal Regulations (CFR) part 46.101(b)(2). The IRB will not conduct subsequent reviews of this protocol.

IF YOU WISH TO CHANGE THIS EXEMPTED PROTOCOL IN ANY WAY, YOU MUST SUBMIT AN ADDENDUM REQUEST AND WAIT FOR IRB APPROVAL PRIOR TO IMPLEMENTING ANY PROTOCOL CHANGE.

Any changes to the protocol that put it under the purview of the IRB would require a formal application to, and approval of, the IRB prior to implementation of the change.

Appendix D

Almoghrabi, Hannoud

From:	Anisa Yusuf <AYusuf@acnm.org>
Sent:	Friday, February 09, 2018 2:33 PM
To:	Almoghrabi, Hannoud
Subject:	Re: Water Birth: Midwives Perception, Attitude, Knowledge and Clinical Practices Survey
Attachments:	120417_ACNM_Researcher_Agreement_FINAL.pdf

Dear Hannoud,

I am happy to confirm that our ACNM Division of Research has approved your survey request; congratulations!

As previously discussed, I have attached our agreement form.

Our membership database currently holds 6650 members are that comprised of:

- CM's (Certified Midwives)
- CNM (Certified Nurse Midwives)
- Students.

Our fee for deploying your survey will be $30.00 per 1000 emails.

The total comes to **$221.66**

You may send the form back to us with payment either by mail or fax; our contact information is contained therein.

We will then prepare your survey for deployment to our ACNM members.

Let me know if you have any questions.

Best regards,

Anisa Yusuf
Membership & Affiliate Specialist
American College of Nurse-Midwives
8403 Colesville Road, Suite 1550
Silver Spring, MD 20910
(240) 485-1825

Appendix E

Certified Nurse Midwife Waterbirth Survey

Waterbirths provide an option to mothers who have uncomplicated pregnancies and desire a delivery with less medical intervention. Despite the growing scientific evidence about the benefits of WB, only a small percentage of hospitals in the United States offer WBs as an option to women and families. This survey asks certified nurse-midwives about their opinions of the obstacles of making WB a viable option to women and families in the metropolitan Atlanta area.

What is your age? □ 20-29

□ 30-39

□ 40-49

□ 50-59

□ 60 or above

Level of formal education/type of degrees (Please check all that apply)

□ CNM

□ FNP

□ Ph.D.

□ MPH

□ other

Number of years practicing as a CNM:

□ less than 5

□ 5-10

□ 10-20

□ 20-30

□ more than 30

Number of years living in Atlanta/practicing in Atlanta

□ less than 5

□ 5-10

□ 10-20

□ 20-30

□ more than 30

What type of facility do you practice in? (Please check all that apply)

□ hospital

□ community clinic

□ academic setting

□ birthing center

□ other

Do you have any children?

□ Yes

□ No

Topic: Experience with WBs

	Yes	No
Have you ever read an article on WB?	□	□

Have you ever watched a video on WB?	□	□
Were you taught about WB in your CNM program?	□	□
Have patients ever asked you about WB?	□	□
Have you ever suggested WB to a patient?	□	□
Have you ever recommended WB to a friend?	□	□
Have you ever proposed that WB be an option at your hospital/place of business?	□	□
Have you ever helped a woman labor in water?	□	□
Have you ever witnessed a WB?	□	□
Have you ever helped deliver a baby in water?	□	□
Have you ever delivered in water?	□	□

Topic: Work Environment related to WBs

How would you rate each of the following in your organization, on a scale of supportive to nonsupportive in relationship to WB?.

	Not supportive at all	mildly supportive	strongly supportive
Obgyns	□	□	□
Labor and delivery nurses	□	□	□
Other CNMs	□	□	□
Pediatricians	□	□	□
Administration	□	□	□
Patients	□	□	□

Does the cost of WBs make it an unrealistic option for mothers in Atlanta hospitals?

□ Yes

□ No

If you had the opportunity would you be willing to introduce WB in your practice?

□ Yes

□ No

Topic: Personal Effectiveness

Do you think your participation in hospital affairs makes a difference in how births/hospital policies are made?

□ Yes

□ No

If your hospital adopted policies supporting WBs, do you think it has the capacity to implement that policy?

□ Yes

□ No

If you wanted information about WB, who would you go to: (Please check all that apply)

□ Obgyns

□ Pediatricians

□ Other CNMs

□ Nurses

□ Academic journals

□ Newspapers

Topic: Research on Waterbirth

Is the scientific approach the best way for understanding if WB should be incorporated into practice?

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
□	□	□	□	□

Experience and knowledge is just as valuable as research in ensuring the healthy delivery of a baby.

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
□	□	□	□	□

The research supporting WB is adequate to inadequate

Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
□	□	□	□	□

Topic: Concern about Waterbirths

To what extent do you worry about the following in relation to WBs?:

	No worry at all	A little worry	Neutral	A lot of worry	Tremendous worry
Aspiration	□	□	□	□	□
Maternal infection	□	□	□	□	□
Newborn infection	□	□	□	□	□

	Not advantageous at all		Somewhat advantageous		Highly advantageous

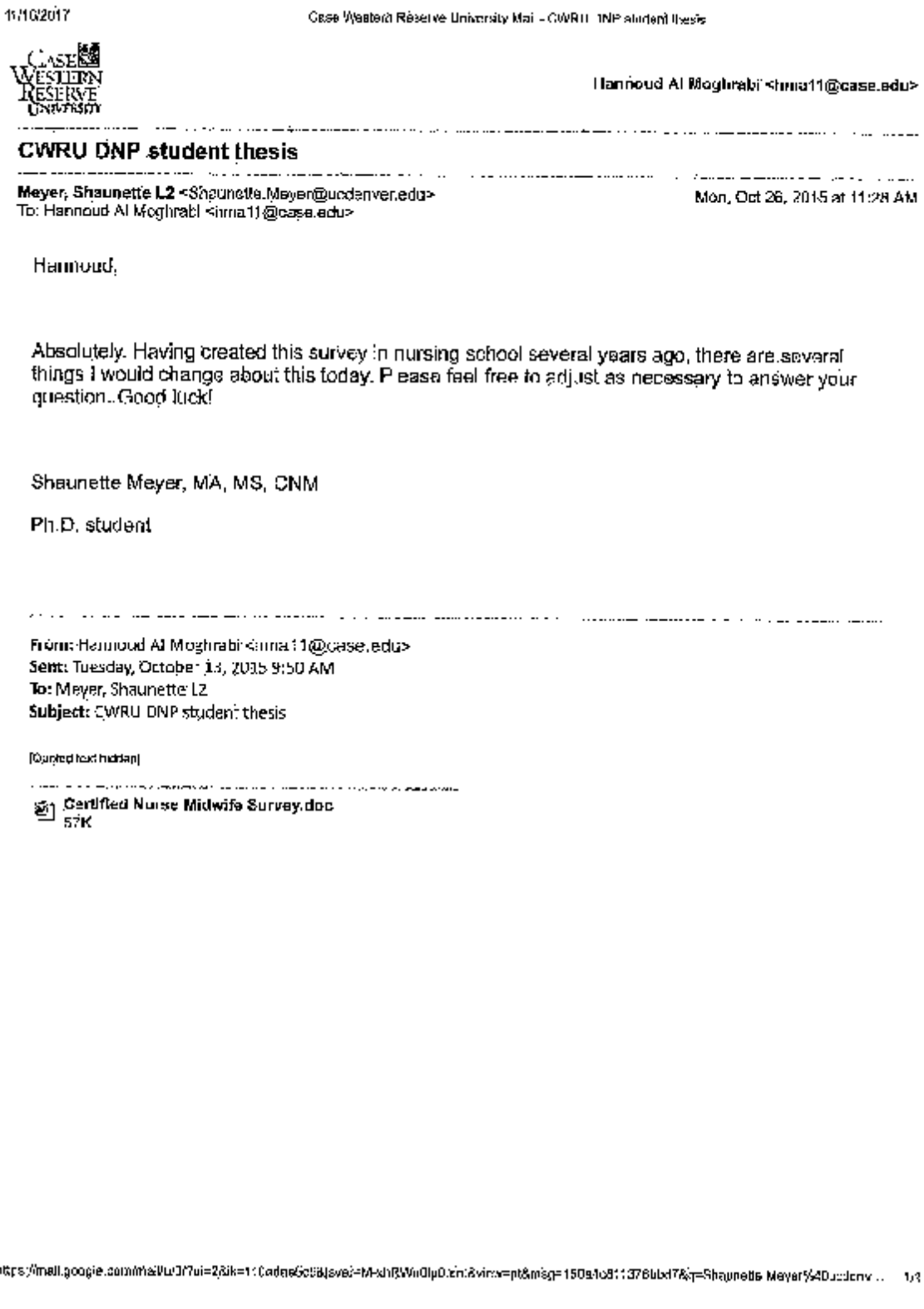
Hypothermia of newborn	□	□	□	□	□
Stress on the CNM related to body mechanics	□	□	□	□	□
Maintenance of water temperature	□	□	□	□	□
Inconvenience of getting wet	□	□	□	□	□
Inconvenience of wearing shoulder length gloves	□	□	□	□	□
CNM infection	□	□	□	□	□
Difficult to see	□	□	□	□	□
Difficult to estimate blood loss	□	□	□	□	□

Topic: Advantages of Waterbirths

To what extent do you feel WBs have the following advantages:

Relief from back pain					
Quicker labor					
Patients use less analgesia					
Lower incidence of perineal trauma					
Babies are calmer/more peaceful					
Babies are more alert					
Patients are more relaxed					
Less intervention is needed					

Appendix F



11/10/2017 Case Western Reserve University Mail - CWRU DNP student thesis

Hannoud Al Moghrabi <hma11@case.edu>

CWRU DNP student thesis

Meyer, Shaunette L2 <Shaunette.Meyer@ucdenver.edu> Mon, Oct 26, 2015 at 11:28 AM
To: Hannoud Al Moghrabi <hma11@case.edu>

Hannoud,

Absolutely. Having created this survey in nursing school several years ago, there are several things I would change about this today. Please feel free to adjust as necessary to answer your question. Good luck!

Shaunette Meyer, MA, MS, CNM

Ph.D. student

From: Hannoud Al Moghrabi <hma11@case.edu>
Sent: Tuesday, October 13, 2015 9:50 AM
To: Meyer, Shaunette L2
Subject: CWRU DNP student thesis

[Quoted text hidden]

Certified Nurse Midwife Survey.doc
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